

Monday, June 8

SYMPOSIA AND ORAL SESSION 1

Active AMD Treatment 10:30 AM - 12:00 PM		
10:30 AM	97183	Geochemical modeling of specific conductance and net acidity for mine water treatment. Charles A Cravotta* ¹ , Ana Barroso ² , and Blaine R McCleskey ³ , ¹ <i>Cravotta Geochemical Consulting, LLC, Bethel, PA, USA</i> , ² <i>Universidade do Minho, Campus de Gualtar, Institute of Earth Sciences, Braga, Portugal</i> , ³ <i>U.S. Geological Survey, Boulder, CO, USA</i> .
11:00 AM	97185	The Little Conemaugh Mine Drainage Treatment Plant Project, Portage Township, Cambria County, Pennsylvania. Eric E. Cavazza*, <i>Tetra Tech, Inc., Pittsburgh, PA USA</i> .
11:30 AM	98760	Belt, MT Water Treatment Plant. James R Flesher*, <i>Montana Department of Environmental Quality, Helena, MT USA</i> .
Reclamation Across Borders: International 10:30 AM - 12:00 PM		
10:30 AM	97562	Delivering Social Closure through Community Engagement: Insights from African Mining Contexts. J Pryor* and C McCall, <i>Digby Wells Environmental, Johannesburg, Gauteng, South Africa</i> .
11:00 AM	98762	Surface Soil Management for Native Plant Restoration: From Theory to Practical Operations. Dean D Mackenzie*, <i>University of Alberta, Edmonton, Alberta, Canada</i> .
11:30 AM	97242	Assessment of the ecological integrity of reclaimed mine sites at Newmont Ghana Gold Limited-Ahafo South project. P. K. Nsiah* ¹ , S. Kumi ¹ , J. Gyamfi ⁴ , B. Ofori-Bamfo ² , D. Adusu ¹ , and H. K. Ahiabu ³ , ¹ <i>Department of Environmental Management, University of Energy and Natural Resources, Sunyani - Ghana</i> , ² <i>Department of Biological Science, University of Energy and Natural Resources, Sunyani - Ghana</i> , ³ <i>Environmental Protection Authority, Accra, Ghana</i> , ⁴ <i>The Forestry Commission, Accra, Ghana</i> .
Innovative Reclamation Design 10:30 AM - 12:00 PM		
10:30 AM	98729	Geomorphic Reclamation at the Walker Coal Mine. Stephanie J. Mitchell* ¹ and Taran Triplett ¹ , ¹ <i>Colorado Division of Reclamation, Mining & Safety, Grand Junction, CO USA</i> , ² <i>Respec Engineering, Cheyenne, WY USA</i> .
11:00 AM	97596	J19 West reclamation project at Kayenta Mining Complex. G. Altsisi* and M. Shepherd, <i>Peabody Western Coal Company, Kayenta, AZ, USA</i> .
11:30 AM	97568	DESIGN AND RECLAMATION OF POSTMINING PLAYAS IN THE POWDER RIVER BASIN. SUCCESSFUL EXAMPLES FROM THE NORTH ANTELOPE ROCHELLE MINE, CAMPBELL COUNTY, WYOMING¹. P.A. Murphree*, <i>Peabody Energy, Gillette, WY, USA</i> .
Reclamation Planning (no location assigned) 10:30 AM - 12:00 PM		
10:30 AM	97527	Importance of pre-mining baseline data for sustainable reclamation efforts, surface coal mines, USA. Anna Krzyszowska Waitkus*, <i>Environmental Consulting, Laramie, WY 82070, USA</i> .
11:00 AM	97755	ReclaimNet: Curating collaborative efforts to identify and mitigate barriers to successful dryland reclamation. Katie Eckhoff* ^{1,2} , Rebecca Mann ¹ , Gregory Penn ^{1,2} , Rebecca Finger-Higgins ¹ , John Bradford ³ , Seth Munson ³ , Sasha Reed ¹ , Miguel Villarreal ⁴ , and Michael Duniway ¹ , ¹ <i>U.S. Geological Survey, Southwest Biological Science Center, Moab, UT 84532</i> , ² <i>Northern Arizona University, Flagstaff, AZ 86011</i> , ³ <i>U.S. Geological Survey, Southwest Biological Science Center, Flagstaff, AZ 86001</i> , ⁴ <i>U.S. Geological Survey, Western Geographic Science Center, Moffett Field, CA 94035</i> .
11:30 AM	98736	Standards-based Reclamation Evaluation and Action Framework for Adaptive Management. Gavin Kenney* and Joe M Schroeder, <i>Tetra Tech Inc., Lander, Wyoming, US</i> .

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SYMPOSIA AND ORAL SESSIONS 2

Abandoned Mine Land Section 1 1:30 PM - 3:00 PM		
1:30 PM	98767	Temporal Projections of Land Use Patterns and Ecosystem Services Valuations for Mine Closure Alternatives: A Case Study. Y N LI ¹ , J LI* ¹ , Y P Chugh ² , Y Han ¹ , and Z Q Hu ³ , ¹ China University of Mining and Technology-Beijing, Beijing 100083, China, ² Southern Illinois University, Carbondale, Carbondale, Illinois 62901-6603, USA, ³ China University of Mining and Technology, Xuzhou 221116, China.
2:00 PM	98775	Dynamic Cost Effectiveness and Recovery Trajectory Estimation in a Post-mining Reclamation Chronosequence in Central Wyoming. R. Coupal*, C. Johnson, M. Oreshkina, F. Nippgen, and K.M. Hufford, <i>University of Wyoming, Laramie, Wy, US.</i>
2:30 PM	98739	From Field Metrics to Decisions and Refinements: Scalable Reclamation Portfolio Monitoring, Analysis, and Refinement. Joe M Schroeder and Randy Walsh*, <i>Tetra Tech Inc., Lander, Wyoming, US.</i>
Oil and Gas 1:30 PM - 3:00 PM		
1:30 PM	97551	St. Clairsville, OH - Carbon Dioxide Gas Investigation. Omar M Beckford* ¹ and Paul J Huemmerich ¹ , ¹ U.S. Office of Surface Mining, Pittsburgh, PA, USA, ² U.S. Office of Surface Mining, Pittsburgh, PA, USA.
2:00 PM	97585	Restoration of oil and gas pads in the Chihuahuan Desert of West Texas. Kendall E Christensen* ^{1,2} , Julie R Myers ^{1,2} , Carlos E Gonzalez-Gonzalez ^{1,2} , Jose S Avila ^{2,3} , and Antonio Cantu ^{1,2} , ¹ Sul Ross State University, Alpine, Texas, USA, ² Borderlands Research Institute, Alpine, Texas, USA, ³ Texas A&M AgriLife Extension Service, College Station, Texas, USA.
2:30 PM	98789	Net primary productivity and native vegetation cover exceed reference conditions three years post-reclamation on abandoned roads and well pads in a semi-arid natural gas field in the Powder River Basin, WY. Michael F Curran* ¹ , Zachary D Farmer ¹ , Timothy J Robinson ² , LB Myers ³ , and Jeb Tachik ³ , ¹ Abnova Ecological Solutions LLC, Laramie, WY, USA, ² University of Wyoming, Laramie, WY, USA, ³ EOG Resources Inc., Denver, CO, USA.
Water Quality Issues Section 1 1:30 PM - 3:00 PM		
1:30 PM	97211	Electro-Biochemical Treatment for Selenium and Trace Metals in Coal-Impacted Waters. Ola Opara*, <i>WesTech Engineering.</i>
2:00 PM	97572	Speciation and sequestration of manganese in organic wetland substrates. A. M. Hardgrave* and J. LaBar, <i>Oklahoma State University, Stillwater, Oklahoma, USA.</i>
2:30 PM	97576	Leaching tests suggest that lake dredge could have positive chemical outcomes for coal mine reclamation. Natalie A. Kruse Daniels, Edward Abbiw, Jen Bowman, Jacob Pensky*, and Leigh Sloane, <i>Ohio University, Athens, Ohio, USA.</i>
Wildlife 1:30 PM - 3:00 PM		
1:30 PM	97494	Incorporating wildlife habitat in mine reclamation design. T.S Cross* and M.E Gentry, <i>Herrera Environmental Consultants.</i>
2:00 PM	97194	Tracking reclamation progress- a wildlife approach. Paxton L Hunter* ¹ and Chris Kirol ² , ¹ Herrera Environmental Consultants Inc., Casper, Wyoming, USA, ² Kirol Applied Ecological Research, Sheridan, Wyoming, USA.
2:30 PM	98273	Coexisting with Industry: Ferruginous Hawk Nesting at a Navajo Mine. Trevor Harvey*, <i>NTEC, Fruitland, NM, USA.</i>

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SYMPOSIA AND ORAL SESSIONS 3

Abandoned Mine Land Section 2 3:30 PM - 5:00 PM		
3:30 PM	97614	High-Resolution Microgravity for Detection and Delineation of Abandoned Mine Voids: A Rapid, Non-Intrusive Tool for Optimized Subsidence Risk Assessment. Lincoln Steele* and Will Levandowski, <i>Tetra Tech Inc, Lakewood, CO, USA.</i>
4:00 PM	98781	Design of bat gates and culverts to protect bat habitat on abandoned mine land reclamation projects. Aaron J Pontzer*, <i>Kleinfelder, State College, PA, USA.</i>
4:30 PM	97570	Evaluating impacts of legacy hard-rock mining on a watershed scale. Justine I. McCann* and Robert W. Nairn, <i>University of Oklahoma, Norman, OK, USA.</i>
Data Innovation in Reclamation 3:30 PM - 5:00 PM		
3:30 PM	97874	Improving Visibility and Professional Engagement in Reclamation Through Social Media. L Van Hise* ¹ and M Curran ² , ¹ <i>Speak Media, Columbus, NJ, USA,</i> ² <i>Abnova Ecological Solutions, Laramie, WY, USA.</i>
4:00 PM	97179	Coupling optimized sampling algorithms with GIS and cell phone technologies to rapidly collect and report data over vast linear features. Michael F Curran and Zachary D. Farmer*, <i>Abnova Ecological Solutions, Laramie, WY, USA.</i>
4:30 PM	97607	Quantifying Ecosystem Services in Post-Mining Pit Lakes: A Meta-Database Function Transfer Approach. Z Iranmanesh* and B Abbasi, <i>University of Nevada, Reno, Reno, Nevada, USA.</i>
Seed Availability 3:30 PM - 5:00 PM		
3:30 PM	97099	Increasing native seed availability for restoration through the Wyoming Seed Partnership. Michaela Owens ¹ and Ariel Nelson* ² , ¹ <i>The Nature Conservancy, Lander, WY, USA,</i> ² <i>The Institute for Applied Ecology, Lander, WY, USA.</i>
4:00 PM	97574	The Role of the Wyoming Seed Strategy in Improving Reclamation Outcomes. K. Wahl-Villarreal ¹ , E. Freeland ¹ , B. Norton ³ , C. Eckman ⁴ , M. Pokorny ⁴ , M. Graham ⁵ , M. Eshleman* ² , M. Owens ² , K. Clause ⁶ , K. Skeen ⁶ , B. Fowers ⁷ , D. Harris ⁷ , K. Hufford ⁷ , B. Mealar ⁷ , S. Franklin ⁸ , ¹ <i>Bureau of Land Management, WY, USA,</i> ² <i>The Nature Conservancy, Lander, WY, USA,</i> ³ <i>Institute of Applied Ecology, Lander, WY, USA,</i> ⁴ <i>Natural Resources Conservation Service, Bridger, MT, USA,</i> ⁵ <i>Teton Conservation District, Jackson, WY, USA,</i> ⁶ <i>United States Forest Service, WY, USA,</i> ⁷ <i>University of Wyoming, WY, USA,</i> ⁸ <i>Wyoming Department of Agriculture, Cheyenne, WY, USA,</i> ⁹ <i>Wyoming Department of Environmental Quality, Lander, WY, USA,</i> ¹⁰ <i>Wyoming Department of Transportation, Cheyenne, WY, USA,</i> ¹¹ <i>Wyoming Game and Fish Department, Cheyenne, WY, USA,</i> ¹² <i>Wyoming State Forestry Division, Cheyenne, WY, USA,</i> ¹³ <i>Wyoming Seed Production Consultant, Powell, WY, USA.</i>
4:30 PM	97617	The "Art of the possible": Enhancing biodiversity through a dedicated native seed nursery. Scott Jensen*, <i>EcoPoint, Rifle Colorado USA.</i>
Water Quality Issues Section 2 3:30 PM - 5:00 PM		
3:30 PM	97611	Improving the Accuracy of Mineral Scaling Risk Assessments: Insights from a NW Colorado Coal Mine. Kevin Wright*, Logan Schultz, and Anthony Gilden, <i>Trihydro Corporation, Austin, Texas, United States.</i>
4:00 PM	97096	Geochemical Ensemble Modeling for Bracketing Uncertainty in Pit Lake Water Quality Predictions. Meghan Blair* ¹ and Larry Breckenridge ² , ¹ <i>Barr Engineering Company, Duluth, Minnesota, USA,</i> ² <i>Global Resource Engineering, Golden, Colorado, USA.</i>
4:30 PM	98773	Life Cycle Analysis of a Nearly 37 Year Old AMD Passive Treatment System. K J Green* ¹ , T P Danchy ¹ , C F Denholm ² , and N M Lamagna ² , ¹ <i>Bio Most Inc.,</i> ² <i>Stream Restoration Inc.</i>

Tuesday, June 9

SYMPOSIA AND ORAL SESSIONS 4

Disturbance Impacts on Pollinators		
10:30 AM - 12:00 PM		
10:30 AM	97602	Do actively or passively reclaimed roads support more pollinators? Lusha M. Tronstad* ¹ , Bryan P. Tronstad ¹ , Mike Curran ² , and LB Myers ³ , ¹ <i>University of Wyoming, Laramie, WY, USA</i> , ² <i>Abnova Ecological Solutions, Cheyenne, WY, USA</i> , ³ <i>EOG Resources, Inc., Denver, CO, USA</i> .
11:00 AM	97604	Bees and butterflies use an inactive bentonite mine prior to restoration: vane traps are useful tools in ecosystems with few floral resources. Lusha M. Tronstad*, Bryan P. Tronstad, and Tresize L. Tronstad, <i>University of Wyoming, Laramie, WY, USA</i> .
11:30 AM	98786	Insect Response to Reclamation Efforts on an Abandoned Road in Wyoming's Powder River Basin. Michael F Curran* ¹ , Zachary D Farmer ¹ , Miles Milbrath ² , Lusha Tronstad ² , and LB Myers ³ , ¹ <i>Abnova Ecological Solutions LLC, Laramie, WY, USA</i> , ² <i>University of Wyoming, Laramie, WY, USA</i> , ³ <i>EOG Resources Inc., Denver, CO, USA</i> .
Geomorphic Reclamation Case Study in Wyoming		
10:30 AM - 12:00 PM		
10:30 AM	97537	McIntosh uranium mine dewatering and backfill. C. Warren* and H. Hutson, <i>BRS Inc.</i>
11:00 AM	97535	McIntosh pit habitat enhancements. R. Lockyear* and H. Hutson, <i>BRS Inc., Riverton, Wyoming, USA</i> .
11:30 AM	97513	McIntosh Uranium Pit Geomorphic Reclamation Project Overview. Harold J. Hutson*, <i>BRS, Inc.</i>
Rare Earth and Critical Mineral Recovery Section 1		
10:30 AM - 12:00 PM		
10:30 AM	97223	Reclamation and Ecological Restoration Practices Around Rare Earth and Critical Minerals Mining Areas and Possible Use of Previous Experiences With Non-Ferrous Metals Experiences For Restoration. Marcin Pietrzykowski* ¹ , Vairamuthu-Ajeeth Prakash ¹ , and Paul Chugh Yoginder ¹ , ¹ <i>University of Agriculture, Department of Ecologica Engineering and Forest Hydrology, Krakow, Poland</i> , ² <i>University of Agriculture, Department of Ecologica Engineering and Forest Hydrology, Krakow, Poland</i> , ³ <i>College of Engineering, Southern Illinois University, Carbondale, IL</i> .
11:00 AM	97497	Integrated Remediation and Critical Minerals Recovery through Co-Processing of Acid Mine Drainage Sludge and Coal-Derived Solid Wastes. Ilija Miskovic* and Sanja Miskovic, <i>Novex, LLC, Bellingham, WA, Whatcom.</i>
11:30 AM	97684	EMRTAI: Technologies for characterizing critical minerals in solid mining and mineral processing waste at legacy sites. D Krishnan Nair* and J Heisler-White, <i>Battelle Memorial Institute, Columbus, OH, USA</i> .
Watershed Scale Reclamation Management		
10:30 AM - 12:00 PM		
10:30 AM	97210	A watershed scale approach to mine drainage management. Paul Ziemkiewicz*, <i>TetraTech, Pittsburgh, PA, USA</i> .
11:00 AM	98782	How many mine drainage discharge flows are really enough? A cautionary tale of trusting an immense data set. Thomas Clark and Sami Stahle*, <i>Kleinfelder, State College, PA, USA</i> .
11:30 AM	97594	Impacts of sediment ponds on hydrochemistry of headwater streams in reclaimed surface mine sites in Central Appalachia. Mikayla DeMatt*, Robert Cantrell, and Amir Hass, <i>West Virginia State University, Institute, WV, USA</i> .

Tuesday, June 9

SYMPOSIA AND ORAL SESSIONS 5

Coal Reclamation Section 1 1:30 PM - 3:00 PM		
1:30 PM	97579	Influences of reclaimed mines on landscape-level ecosystem services: a case study from Appalachia. Jennifer A. Franklin* ¹ , Yoginder P. Chugh ² , Zhenqi Hu ³ , Xiao Wu ⁴ , and Atticus Moore ¹ , ¹ <i>University of Tennessee, Knoxville, TN, USA</i> , ² <i>Southern Illinois University, Carbondale, IL, USA</i> , ³ <i>China University of Mining and Technology, Xuzhou, China</i> , ⁴ <i>Zhejiang University, Hangzhou, China</i> .
2:00 PM	97198	Theory, Principle, and Key Technologies of Concurrent Mining and Reclamation. Zhenqi Hu* ¹ , Zhen Mao ¹ , Wu Xiao ² , Jennifer Franklin ³ , Yoginder P Chugh ⁴ , and Brenda K Schladweiler ⁵ , ¹ <i>China University of Mining and Technology, Xuzhou, Jiangsu, China</i> , ² <i>Zhejiang University, Xihu District, Hangzhou, China</i> , ³ <i>University of Tennessee, Knoxville, TN, USA</i> , ⁴ <i>Southern Illinois University at Carbondale, Carbondale, IL, USA</i> , ⁵ <i>BKS Environmental Associates, Inc., Gillette, WY, USA</i> .
2:30 PM	97209	Principles and key technologies for the large-scale ecological utilization of coal gangue. Z. Mao* ¹ , Y. Zhao ² , and Z. Hu ¹ , ¹ <i>China University of Mining and Technology, School of Environment and Spatial Informatics, China University of Mining and Technology, Xuzhou 221116, China</i> , ² <i>China University of Mining and Technology (Beijing), School of Earth Sciences and Surveying and Mapping Engineering, China University of Mining and Technology (Beijing), Beijing 100083, China</i> .
Rare Earth and Critical Mineral Recovery Section 2 1:30 PM - 3:00 PM		
1:30 PM	97598	The effects of microbial presence and pH on major and trace metal attenuation in passive AMD treatment systems. T. J. Boothe-Lordon* ^{1,2} , B. C. Hedin ³ , B. W. Stewart ¹ , R. C. Capo ¹ , and M. A. G. Hinkle ⁴ , ¹ <i>University of Pittsburgh, Pittsburgh, PA, USA</i> , ² <i>Battelle Memorial Institute, Columbus, OH, USA</i> , ³ <i>Hedin Environmental, Pittsburgh, PA, USA</i> , ⁴ <i>Washington & Lee University, Lexington, VA, USA</i> .
2:00 PM	97626	Computational approaches assist in critical mineral recovery and remediation effort prioritization within mining-impacted systems. R. R. Terra* ^{1,2} , D. M. Gulliver ² , P. DiGirolamo ¹ , N. Dalgaard ¹ , J. Rahman ¹ , J. Bowman ¹ , C. Crawford ¹ , K. Kelly ¹ , I. Cann ¹ , and N. J. Trun ¹ , ¹ <i>Duquesne University, Pittsburgh, PA, USA</i> , ² <i>National Energy Technology Laboratory, Pittsburgh, PA, USA</i> , ³ <i>Oak Ridge Institute for Science and Education, Oak Ridge, TN, USA</i> .
2:30 PM	97591	Recovery of critical minerals from mining influenced water during legacy Superfund Site remediation: advancing innovative technologies through the EMRTAI. Jana Heisler-White*, Slawomir Winecki, and Tashane Boothe-Lordon, <i>Battelle Memorial Institute, Columbus, OH, USA</i> .
Reclamation by, with, and for Indigenous Communities 1:30 PM - 3:00 PM		
1:30 PM	97595	Community engagement in winter grazing and the native seed program at Kayenta Mining Complex. A. L. Taugher* ¹ , R. F. Bay ¹ , and M. Shepherd ² , ¹ <i>HMI, LLC., Englewood, CO, USA</i> , ² <i>Peabody Western Coal Company, Kayenta, AZ, USA</i> .
2:00 PM	97603	Restoring Hozho on the Navajo Nation with Geomorphic Reclamation . Dacia Jacquez*, <i>NTEC, Fruitland, NM, USA</i> .
2:30 PM	97605	Blending Indigenous Knowledge and Ecological Restoration in Mine Reclamation. Rayanna Benally*, <i>NTEC, Fruitland, NM, USA</i> .
Technology and Innovation 1:30 PM - 3:00 PM		
1:30 PM	97747	Engineered wood strand erosion control mulch - technical and performance update from 20 years of use. James Dooley* ¹ , Trent Jones ² , and Matt King ³ , ¹ <i>Forest Concepts, LLC, Auburn, WA, USA</i> , ² <i>Mountain Pine Mfg., Craig, CO, USA</i> , ³ <i>Heartwood Biomass, Wallowa, OR, USA</i> .
2:00 PM	98018	The use of polymers for dust and Erosion Control on mine sites. . Jeremiah Vermillion*, <i>Environmental Products & Applications</i> .
2:30 PM	98737	Experiments to Assess the Environmental Impact of Fire Retardant. David Barnett* ¹ , Kristoph Kinzli ¹ , James Ranville ¹ , Thomas Wildeman ¹ , and Alan Leak ⁵ , ¹ <i>Colorado School of Mines, Golden, CO 80401 USA</i> , ² <i>1</i> , ³ <i>1</i> , ⁴ <i>1</i> , ⁵ <i>Respec Company, Denver, CO 80246 USA</i> .

Tuesday, June 9

SYMPOSIA AND ORAL SESSIONS 6

Geospatial Issues 3:30 PM - 5:00 PM		
3:30 PM	97187	Temporal visibility bias in earth observation distorts global mining footprints and reclamation. Wu Xiao* ^{1,2} , Jiwang Guo ¹ , and Zhenqi Hu ² , ¹ <i>School of Public Affairs, Zhejiang University, Hangzhou, 310058, China, School of Public Affairs, Zhejiang University, Hangzhou, 310058, China,</i> ² <i>Institute of Land Reclamation and Ecological Restoration, China University of Mining and Technology, Beijing, 100083, China.</i>
4:00 PM	97550	A remotely sensed approach to assess riparian vegetation development and flow pathways in relation to remediation approaches at a historic bentonite mining site. Patrick Kozak* ^{1,2} , Jennifer Walker ^{1,2} , Michael Beason ³ , and Lisa Kunza ^{1,2} , ¹ <i>Center for Sustainable Solutions at South Dakota School of Mines, Rapid City, South Dakota, USA,</i> ² <i>Department of Chemistry, Biology, and Health Sciences, South Dakota School of Mines, Rapid City, South Dakota, USA,</i> ³ <i>South Dakota Wing Civil Air Patrol, Rapid City, South Dakota, USA.</i>
4:30 PM	97609	Machine learning integration with remote sensing for reclamation planning and restoration monitoring at mining sites. Andrew C Reicks*, <i>CDM Smith, Milwaukee, WI, United States.</i>
Post Large-Scale Disturbance Issues 3:30 PM - 5:00 PM		
3:30 PM	97515	Designing for Recovery: Streambank Restoration on the Pigeon River After Helene. Taylor L Wishart* and Michael L McKinney, <i>University of Tennessee-Knoxville, Knoxville, TN, United States.</i>
4:00 PM	97577	Flood mitigation planning in a heavily mined community: Insight from a community driven planning process. Natalie A. Kruse Daniels* ¹ , Chloe Partlow ¹ , and Zak Ruehman ² , ¹ <i>Ohio University, Athens, Ohio, USA,</i> ² <i>University of Georgia, Athens, Georgia, USA.</i>
4:30 PM	97542	Sharing is Caring: How Multi-Stakeholder Collaboration Accelerates Hurricane Helene Restoration. Dana Mills* and Michael McKinney, <i>University of Tennessee, Knoxville, TN, USA.</i>
Reclamation: A Long-term View 3:30 PM - 5:00 PM		
3:30 PM	98777	Natural infrastructure addresses legacy and emergent challenges in reclamation, remediation, and restoration. Robert W. Nairn*, <i>University of Oklahoma, Norman, OK, USA.</i>
4:00 PM	97516	What can the Reclamation Industry Learn from Organic Farmers? Caitlin Youngquist* ^{1,2} , ¹ <i>Dirt Works Wyoming, Worland, Wyoming, USA,</i> ² <i>Not affiliated with an institution, USA.</i>
4:30 PM	97592	40 years of revegetation monitoring and success at Kayenta Mine Complex. R. F. Bay* ¹ , A. L. Taugher ¹ , and M. Shepherd ² , ¹ <i>HMI, LLC., Englewood, CO, USA,</i> ² <i>Peabody Western Coal Company, Kayenta, AZ, USA.</i>
Vegetation Issues 3:30 PM - 5:00 PM		
3:30 PM	98962	Effectiveness of sagebrush reduction treatments for greater sage-grouse in Wyoming big sagebrush habitats. Jeffrey L Beck* ¹ , Jason R LeVan ^{1,2} , Jennifer E Hess ^{1,3} , Anna D Chalfoun ⁴ , Stanley R Harter ⁵ , Thomas J Christiansen ⁶ , Sue Oberlie ⁷ , and Kurt T Smith ^{1,8} , ¹ <i>Department of Ecosystem Science and Management, University of Wyoming, Laramie, Wyoming, United States,</i> ² <i>Natural Resources Conservation Service, Pinedale, Wyoming, United States,</i> ³ <i>HWA Wildlife Consulting, LLC, Laramie, Wyoming, United States,</i> ⁴ <i>Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming, United States,</i> ⁵ <i>Wyoming Game and Fish Department, Lander, Wyoming, United States,</i> ⁶ <i>Wyoming Game and Fish Department, Green River, Wyoming, United States,</i> ⁷ <i>Bureau of Land Management, Lander, Wyoming, United States,</i> ⁸ <i>Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming, United States.</i>
4:00 PM	97606	Reclamation and noxious weed control on a large-scale wind energy project. Nathan J Wojcik* ¹ , Jon Kehmeier ¹ , and Kelly Cummins ² , ¹ <i>SWCA Environmental Consultants (SWCA), Oak Creek, CO, USA,</i> ² <i>Power Company of Wyoming, LLC, Denver, CO, USA.</i>
4:30 PM	98766	Vegetation Change Along a Post-mining Reclamation Chronosequence in Central Wyoming. Maria V. Oreshkina* ¹ , Kristina Fufford ¹ , Fabian Nippgen ¹ , Roger Coupel ¹ , and Carolyn Johnson ¹ , ¹ <i>University of Wyoming, Laramie, Wyoming, United States,</i> ² <i>University of Wyoming, Laramie, Wyoming, United States,</i> ³ <i>University of Wyoming, Laramie, Wyoming, United States,</i> ⁴ <i>University of Wyoming, Laramie, Wyoming, United States,</i> ⁵ <i>University of Wyoming, Laramie, Wyoming, United States.</i>

Tuesday, June 9

POSTER PRESENTATIONS

Poster Session 5:30 PM - 7:30 PM	
97203	Reclamation with Biotic Soil Media. R. Reynolds*, <i>Profile Products LLC, Denver, CO, USA.</i>
97529	Heavy metal transfer in smelter-contaminated forest ecosystems. A. P. Vairamuthu* ¹ , M. Pietrzykowski ¹ , and Y. P. Chugh ² , ¹ <i>Department of Ecological Engineering and Forest Hydrology, Faculty of Forestry, University of Agriculture in Krakow, Krakow, Malopolskie, Poland,</i> ² <i>College of Engineering, Southern Illinois University, Carbondale, Illinois, United States of America.</i>
97549	Soil Properties from Traditional and Geomorphic Reclamations at an Abandoned Uranium Mine in Wyoming. L.M. Farver* and J. Bell, <i>University of Wyoming, Laramie, Wyoming, United States.</i>
97552	Assessing coal char as an alternative soil amendment in Wyoming semi-arid agroecosystems. L. Sielski*, R. Thapa, and J. Bell, <i>University of Wyoming, Laramie, WY, USA.</i>
97580	Rapid site screening with high-resolution microgravity: non-intrusive void detection in Colorado's abandoned mine lands. A McDonald*, W Levandowski, L Steele, L Clyne, and Z Spence, <i>Tetra Tech Inc., Lakewood, Colorado, USA.</i>
97601	Insects are More Abundant and Diverse Along Reclaimed Roads and Pipelines? Miles Milbrath* ¹ , Mike Curran ² , and Lusha Tronstad ¹ , ¹ <i>University of Wyoming, Laramie, Wyoming,</i> ² <i>Abnova Ecological Solutions, Cheyenne, Wyoming.</i>
97647	Evaluating Coal Char as a Carbon-Based Amendment for Semi-Arid Mine Land Reclamation. Resham B Thapa*, Lauren Julia Sielski, and Jennifer Kay Bell, <i>University of Wyoming, Laramie, WY, USA.</i>
98095	Integrating Multi-Temporal UAS Photogrammetry and Terrestrial LiDAR for Monitoring Underground Coal Fire Induced Surface Deformation. Jessie L. Hiatt* ^{1,2} , Wendy Zhou ¹ , Lesli Wood ¹ , and Max Johnson ² , ¹ <i>Colorado School of Mines, Golden, Colorado, United States,</i> ² <i>Tetra Tech, Lakewood, Colorado, United States.</i>
98723	State of the Art Reclamation Monitoring System for Large Portfolio Reclamation Programs. Joe M Schroeder*, <i>Tetra Tech Inc., Lander, Wyoming, US.</i>
98738	Design and Application of a Monitoring Geodatabase for Statewide Reclamation Programs and a Portfolio-wide Dashboard Communication System. Joe M Schroeder*, <i>Tetra Tech Inc., Lander, Wyoming, US.</i>
98763	Managing soil for successful reclamation: Addressing the biological and physical processes. Hannah L. Farrell* ¹ and Russell Waldron ² , ¹ <i>SWCA Environmental Consultants, Fort Collins, CO, USA,</i> ² <i>SWCA Environmental Consultants, Tucson, AZ, USA.</i>
98778	Challenges to creating seed mixes in the "Pipeline State". J.S. Crumpler* and A.D. Falk, <i>Texas A&M University-Kingsville, Kingsville, TX, USA.</i>
98791	Invertebrates in the Diet of Greater Sage-grouse: A Systematic Map. Faron Bott* ^{1,3} , Nyssa Whitford ² , Steven Bower ¹ , and Michael F Curran ¹ , ¹ <i>Abnova Ecological Solutions LLC, Laramie, WY, USA,</i> ² <i>Wyoming Game and Fish Department, Cheyenne, WY, USA,</i> ³ <i>Colorado State University, Fort Collins, CO, USA.</i>

Wednesday, June 10

SYMPOSIA AND ORAL SESSIONS 7

Abandoned Mine Land Section 3		
8:00 AM - 10:00 AM		
8:00 AM	98964	Long-Term Review of Reclamation and Vegetation Management at Colorado's Underground Coal Mine Fire Sites. Tara Tafi ¹ and Jeff Nuttall* ² , ¹ Colorado DNR – Division of Mining Reclamation and Safety, Denver, Colorado, United States, ² Tetra Tech, Gillette, Wyoming, United States.
8:30 AM	98788	From Remedial Investigation to Remedy Focus, Lessons Learned at an Abandoned Mercury Mine. Steve Dent*, CDM Smith, Helena, Mt, USA.
9:00 AM	97616	Remediation efforts of abandoned mine land in central Idaho. E. M. Hurley* ² and F. E. Cassidy ¹ , ¹ Alta Science & Engineering, Inc., Kellogg, ID, USA, ² Alta Science & Engineering, Inc., Boise, ID, USA.
9:30 AM	97575	Abandoned and active coal mine reclamation using micronutrient fertility strategies to improve soil health. Tara Tafi* ¹ and Stuart Jennings ² , ¹ CO Division of Reclamation Mining and Safety, Denver, CO, US, ² Edaphix, LLC, Bozeman, MT, US.
Post-mining Soil Issues		
8:00 AM - 10:00 AM		
8:00 AM	97231	Uranium Mine Soils and Spoils - Characterization and 3D Modeling. S. M. Cude*, Rockwell Science, Lexington, KY, USA.
8:30 AM	97190	From Model to Field: Constructible Soil Planning. C. J. Sloan*, Herrera Environmental Consultants, Cheyenne, WY, United States.
9:00 AM	97045	Impact of Biochar on Reclaimed Mine Soils. Amir Hass*, Ameris Chadband, and Robert Cantrell, West Virginia State University, Institute, WV, USA.
9:30 AM	97583	Microbial Community Reshaping Drives Straw Degradation and Functional Enhancement in Reclaimed Mining Soils. X. Wang ¹ , Z. Li* ¹ , C. Li ¹ , F. Li ² , and Z. Hu ¹ , ¹ China University of Mining and Technology, Xuzhou, Jiangsu, China, ² Northeast Agricultural University, Harbin, Heilongjiang, China.
Sagebrush Reclamation Impacts on Wildlife		
8:00 AM - 10:00 AM		
8:00 AM	97071	Modeling greater sage-grouse habitat suitability, habitat potential and risks in Wyoming through an interactive web-based map. Gavin Kenney* ¹ and Chris Kiroi ² , ¹ Tetra Tech, Inc., Lander, Wyoming, United States, ² Kirol Applied Ecological Research, Sheridan, Wyoming, United States.
8:30 AM	98963	Trends in Lek Attendance for Greater Sage-Grouse Before and After Wind Energy Development. Jace A Cobb* ¹ , Kyle Ebenhoch ² , Carly Kelly ² , Chad LeBeau ² , Simon Weller ² , Aaron C Pratt ³ , and Jeffrey L Beck ¹ , ¹ Department of Ecosystem Science and Management, University of Wyoming, Laramie, Wyoming, United States, ² Western EcoSystems Technology, Inc., Laramie, Wyoming, United States, ³ George Miksch Sutton Avian Research Center, Bartlesville, Oklahoma, United States.
9:00 AM	98745	Assessing the taxonomic and functional response of soil microbial communities to sagebrush steppe restoration efforts in Grand Teton National Park. Dillon M Romero*, Linda TA van Diepen, and Jennifer K Bell, University of Wyoming, Laramie, WY, USA.
9:30 AM	98719	Restoring Big Sagebrush Islands with Wildling Plantings and Microtopography to Enhance Sage-Grouse Habitat. Nathan J Wojcik* ¹ , Liz Bailey ² , Jon Kehmeier ¹ , and Kelly Cummins ³ , ¹ SWCA Environmental Consultants (SWCA), Oak Creek, CO, USA, ² SWCA Environmental Consultants (SWCA), Logan, UT, USA, ³ Power Company of Wyoming, LLC, Denver, CO, USA.

Wednesday, June 10

SYMPOSIA AND ORAL SESSIONS 8

Mine Reforestation 10:30 AM - 12:00 PM		
10:30 AM	97062	Tree Establishment and Growth in an FRA-Reclaimed Mine 17 years Post-Establishment. Chris W Fields-Johnson* ¹ , Sara K Klopff ² , and Jason Holliday ² , ¹ <i>Davey Institute, Kent, Ohio, United States</i> , ² <i>Virginia Polytechnic Institute and State University, Blacksburg, Virginia, United States</i> .
11:00 AM	97207	Native Tree Community Establishment in a 17-Year Old FRA-Reclaimed Coal Mine. Sara K. Klopff* ¹ and Chris Fields-Johnson ² , ¹ <i>Virginia Tech, Blacksburg, VA, USA</i> , ² <i>Davey Institute, Charlottesville, VA, USA</i> .
11:30 AM	97206	Identification and Spatial Characterization of a Novel Autumn Olive Pathogen in Southwestern Virginia. Sara K. Klopff* ¹ , Carrie Fearer ¹ , Daniel Putnam ¹ , Pat Donovan ¹ , Jacob Barney ¹ , and Chris Fields-Johnson ² , ¹ <i>Virginia Tech, Blacksburg, VA, USA</i> , ² <i>Davey Institute, Charlottesville, VA, USA</i> .
Stream Restoration 10:30 AM - 12:00 PM		
10:30 AM	97615	Clark Fork River Operable Unit (CFROU) Reach A Phase 7: Building on Decades of River Remediation and Restoration to Advance Streambank Stabilization. R. English*, M. Hatten, and M. Barnes, <i>Tetra Tech, Helena, MT, USA</i> .
11:00 AM	97622	Process-Based Design (PBR) as an integral part of Post-Fire Disturbance Recovery. Colin Barry*, <i>Ayres Associates, Fort Collins, Colorado, USA</i> .
11:30 AM	97557	Beaver Dam Analogs for Stream Reclamation: Influences on Food Web Structure, Function, and Water Quality. Miles Milbrath* and Lusha Tronstad, <i>University of Wyoming, Laramie, Wyoming</i> .
Weed Management on Reclaimed Areas 10:30 AM - 12:00 PM		
10:30 AM	98895	Is indaziflam a good fit for weed control on reclamation projects? Brian A. Mealor*, Jaycie N. Arndt, and Beth Fowers, <i>University of Wyoming Institute for Managing Annual Grasses Invading Natural Ecosystems, Sheridan, WY, USA</i> .
11:00 AM	97225	Cheatgrass monoculture treatment in coal mine reclamation. Allen Wellborn* ^{1,2} , ¹ <i>Navajo Transitional Energy Company, Decker, Mt, USA</i> , ² <i>Spring Creek Mine, Decker, Mt, USA</i> .
11:30 AM	98718	Sustained cheatgrass suppression using Rejuvra in bentonite mine reclamation in the Big Horn Basin, Wyoming. D.H. Call* and L.S. Triplett, <i>Wyo-Ben Inc., Greybull, Wyoming, USA</i> .

Wednesday, June 10

SYMPOSIA AND ORAL SESSIONS 9

**SHERPA Training
1:30 PM**

1:30 PM	97104	Mastering Reclamation Cost Estimates with SHERPA. Krista Noyes*, <i>Costmine Intelligence, Spokane Valley, WA USA.</i>
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