

West Virginia Mine Drainage Task Force Symposium & 15th International Mine Water Association Congress

April 21–26, 2024 | Morgantown, WV, USA

Session Overview

Date: [Sunday, 21/Apr/2024](#)

8:00am - 9:00am	Breakfast for Workshop attendees only Location: Foyer FGH		
9:00am - 5:00pm	PHREEQ-N-AMDTreat model to evaluate water-quality effects from passive and active treatment of mine drainage Location: Wharf A Chair: Charles A Cravotta III This workshop starts at 10 am Brad Schultz & Brent Means	Hydrogeological Tracer Techniques for Ground, Surface and Mine Water Location: Salons FGH Chair: Christian Wolkersdorfer Chair: Elke Mugova	Geochemist’s Workbench Workshop Location: Wharf B Chair: Brent Means Brent Means & Tom Meuzelaar
12:00pm - 1:00pm	Lunch for Workshop attendees only Location: Foyer FGH		
6:30pm - 8:30pm	IMWA Executive Council Meeting Location: Puskar Boardroom Chair: Christian Wolkersdorfer Attendance is limited to Executive Council Members and invitees.		

Date: [Monday, 22/Apr/2024](#)

7:30am - 8:45am	Breakfast Location: MEC B
8:45am - 10:25am	Opening Ceremony + Plenary Session Location: Salons D & E Chair: Jeff Skousen <ul style="list-style-type: none"> Ben Faulkner – WVTF Christian Wolkersdorfer – IMWA Steve Feldgus – Welcome from OSMRE / IOS, sponsor, and a brief update on OSM’s efforts in mine drainage Jonathan Rorrer – Welcome from WVDEP, brief update on WVDEP’s efforts in mine drainage <p style="margin-top: 10px;">Performance of natural and residual materials for mine water treatment and mine sites rehabilitation</p> <p>Carmen Mihaela Neculita, Isabelle Demers, Flavia Lega Braghiroli UQAT - University of Quebec in Abitibi-Temiscamingue, Canada</p>

	<p>Distribution of flow in sedimentation and AMD treatment ponds <u>Tiff Hilton</u>¹, <u>Jeff Skousen</u>² 1: WOPEC, Lewisburg, WV, United States of America; 2: West Virginia University, United States of America</p>		
10:25am - 10:55am	<p>Coffee break Location: Platinum and MEC Lobbies where exhibitors are set up</p>		
10:55am - 12:10pm	<p><u>Plenary session (continued)</u> Location: Salons D & E Chair: Jeff Skousen 1. First speaker: 10:55-11:20 2. Second speaker: 11:20-11:45 3. Third speaker: 11:45-12:10</p> <p>Integrated treatment of acid mine drainage and rare earth critical materials production <u>Paul F. Ziemkiewicz</u>, <u>Jeff G. Skousen</u> West Virginia University, United States of America</p> <p>Nature-based solutions for mine water challenges: Linking mining reclamation, environmental remediation, ecological restoration, and sustainable resource extraction <u>Robert W. Nairn</u>, <u>Dayton M Dorman</u>, <u>Justine I. McCann</u>, <u>Leif H. Olson</u>, <u>Hailey N. Seago</u>, <u>Cheyenne M. Morgan</u>, <u>Nicholas L. Shepherd</u>, <u>Robert C. Knox</u> University of Oklahoma, United States of America</p> <p>A phased approach to mine dewatering – updated from IMWA 1993 <u>Kym Lesley Morton</u> KLM Consulting Services, South Africa</p>		
12:10pm - 1:15pm	<p>Lunch Location: MEC B</p>		
1:15pm - 2:30pm	<p><u>Mine Hydrology</u> Location: Salons A–C Chair: Henning Jasnowski-Peters 1. First speaker: 1:15-1:40 2. Second speaker: 1:40-2:05 3. Third speaker: 2:05-2:30</p> <p>Tracer dilution profiles for mine dewatering: approach and case study <u>Michael Verreault</u> Hydro-Ressources Inc, United States of America</p> <p>Advancing sustainable mine water management through understanding stratification in flooded underground mines <u>Elke Mugova</u>¹, <u>Christian Wolkersdorfer</u>² 1: TU Bergakademie Freiberg, Germany; 2: Tshwane University of Technology, South Africa</p>	<p><u>Stream Renewal and Treatment</u> Location: Salon D Chair: Ben B Faulkner Chair: Gene Tiff Hilton 1. First speaker: 1:15-1:40 2. Second speaker: 1:40-2:05 3. Third speaker: 2:05-2:30</p> <p>A watershed-based NPDES approach to AMD treatment in Muddy Creek, Cheat River, West Virginia, USA <u>Gregory Willard Phillips</u> West Virginia Department of Environmental Protection, United States of America</p> <p>The engineering of truly passive mine water treatment systems using recycled concrete aggregate <u>Adrian Brown</u> Adrian Brown Consultants, Inc., United States of America</p>	<p><u>Stream Contamination and Restoration</u> Location: Salon E Chair: Heather Trexler 1. First speaker: 1:15-1:40 2. Second speaker: 1:40-2:05</p> <p>Sandy Creek restoration – the tale of two acid mine drainage treatment systems <u>Benjamin Ross Fancher</u> West Virginia Department of Environmental Protection, United States of America</p> <p>Biomagnification of potentially toxic elements from Tahmoor Colliery, Bargo NSW, from water and sediment into the surrounding biota and fur of the iconic Australian platypus (Ornithorhynchus anatinus)</p>

	<p>Various rainfall forecasting methods for estimation of pit lake flooding duration in Indonesia</p> <p><u>Ginting Jalu Kusuma</u>, Abie Badhurahman, Sendy Dwiki, Salmawati Salmawati, Rudy Sayoga Gautama, IK Dwika Paramananda Institut Teknologi Bandung, Indonesia, Indonesia</p>	<p>Beyond reclamation and remediation, next steps in a recovered watershed</p> <p>Amy Mackey, <u>Nora Sullivan</u>, Natalie A Kruse Daniels, Jennifer Bowman Ohio University, United States of America</p>	<p><u>Katherine G Warwick</u>, Michelle Ryan, Ian A Wright Western Sydney University, Australia</p>
<p>2:30pm - 3:00pm</p>	<p>Coffee break Location: Platinum and MEC Lobbies where exhibitors are set up</p>		
<p>3:00pm - 4:40pm</p>	<p>Mine Hydrology Location: Salons A-C Chair: <u>Linda Figueroa</u> 1. First speaker: 3:00-3:25 2. Second speaker: 3:25-3:50 3. Third speaker: 3:50-4:15 4. Fourth speaker: 4:15-4:40</p> <p>Hydrogeochemical investigations in the vicinity of the former Havelock asbestos mine near Bulembu, eSwatini (formerly Swaziland)</p> <p><u>Christian Wolkersdorfer</u>¹, Kagiso Samuel More¹, Elke Mugova², Nokuthula Nchabeleng³, Anna Johanna Sotiralis⁴ 1: Tshwane University of Technology (TUT), South Africa; 2: TU Bergakademie Freiberg, Germany; 3: University of Pretoria, Südafrika; 4: Artist, Südafrika</p> <p> Intergrated groundwater management model for underground coal gasification plants</p> <p><u>Lehlohonolo Mokhahlane</u> Wits University, South Africa</p> <p>Upper He Creek water balance hydraulic and hydrogeologic solutions in east central Tennessee</p> <p><u>Terry W. Schmidt</u> Earthres Group, Inc., United States of America</p> <p> A workflow to evaluate hydraulic barriers during</p>	<p>Stream Renewal and Treatment Location: Salon D Chair: <u>Tim Danehy</u> Chair: <u>Gene Tiff Hilton</u> 1. First speaker: 3:00-3:25 2. Second speaker: 3:25-3:50 3. Third speaker: 3:50-4:15 4. Fourth speaker: 4:15-4:40</p> <p>The Barnes & Tucker #20 Mine Drainage Treatment Facility: optimization case study in consideration of variable flow and water chemistry</p> <p><u>Bradley Shultz</u>¹, Richard Beam¹, Dean Baker², Roger Rummel², Stephen Fisanick III² 1: Office of Surface Mining Reclamation and Enforcement, United States of America; 2: Pennsylvania Department of Environmental Protection Bureau of Abandoned Mine Reclamation</p> <p>Pell road doser upgrade project</p> <p><u>Michael Stephen Kearns</u> Tetra Tech, Inc., United States of America</p> <p>Harvesting the Energy of Mine Water</p> <p><u>Terry Edward Ackman</u> MT Water Management, Inc., United States of America</p> <p>Stream restoration solutions for challenging environments</p> <p><u>Mary Beth Berkes</u></p>	<p>Stream Contamination and Restoration Location: Salon E Chair: <u>Ana Raquel Barroso</u> 1. First speaker: 3:00-3:25 2. Second speaker: 3:25-3:50 3. Third speaker: 3:50-4:15 4. Fourth speaker: 4:15-4:40</p> <p>The Transport of toxic elements from the Marie-Louise landfill site and nearby gold mine dumps to waterbodies</p> <p><u>Alseno Mosai</u>¹, Heidi Richards², Hlanganani Tutu² 1: Department of Chemistry, University of Pretoria; 2: School of Chemistry, University of the Witwatersrand</p> <p>Floodplain reconnection stream restoration in longwall mined watershed increases water and nutrient retention</p> <p><u>Natalie A Kruse Daniels</u>, Nora Sullivan, Jen Bowman, Tatiana Burkett, Annika Gurrola, Red Pazol, Kelly Love, Nichole Mazzone, Morgan Vis, Kelly Johnson Ohio University, United States of America</p> <p>Influences on Mine Water Quality that are not related to Acid Mine Drainage</p> <p><u>Robel Gebrekristos</u>, Graham Trusler Digby WELLS Environmental, South Africa</p>

	<p>mine water rebound: A holistic approach <u>Till Genth</u>, Lisa Rose, Henning Jasnowski-Peters, Sebastian Westermann, Christian Melchers Technische Hochschule Georg Agricola Bochum, Germany</p>	<p>GAI Consultants, Inc., United States of America</p>	<p>Tracking AMD trace metals in an anthracite passive treatment system in the Shamokin Creek watershed <u>Molly M. McGuire</u>¹, Hannah M. Schultheis¹, Ellen K. Herman² 1: Department of Chemistry, Bucknell University, United States of America; 2: Department of Geology, Bucknell University, United States of America</p>
<p>5:00pm - 7:15pm</p>	<p>Opening Reception – Monday evening Location: Platinum and MEC Lobbies where exhibitors are set up Chair: Jeff Skousen Food, drinks, and Appalachian music</p>		
<p>7:00pm - 9:00pm</p>	<p>IMWA Journal Editorial Meeting Location: Puskar Boardroom Chair: Robert Lawrence Kleinmann</p>		
<p>7:00pm - 9:00pm</p>	<p>Early Career Professional Social Chair: Elke Mugova</p>		

Date: Tuesday, 23/Apr/2024

<p>7:30am - 8:30am</p>	<p>Breakfast Location: MEC B</p>			
<p>8:30am - 9:45am</p>	<p>Active Treatment Location: Salons A–C Chair: Jonathan Dietz 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45</p> <p>Case Study – The Gladden acid mine drainage (AMD) treatment facility and Fishing Run stream sealing project <u>Katie Wood</u> Tetra Tech, United States of America</p> <p>Using iron oxidation and decarbonation to enhance inorganic carbon removal in coal mine drainage <u>Brent Means</u>, Richard L. Beam OSMRE, United States of America</p>	<p>Mine Water Treatment and Management Location: Salon D Chair: Robert Lawrence Kleinmann 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45</p> <p>Teaching hydrogeology in a mined site: a case study on West Run, Morgantown, WV <u>Lisa Lohr</u> West Virginia University, United States of America</p> <p>The Banning/West Newton Coal Logistics coal refuse pile reclamation project, Rostraver Township, Westmoreland</p>	<p>Circular Economy Location: Salon E Chair: Teresa Maria Valente 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45</p> <p>Recovery of copper as “clean” nanoparticles of CuS from acid rock drainage and mine process water Gonzalo Recio¹, Aileen Segura¹, Alex Schwarz², Ivan Nancucheo¹ 1: Universidad San Sebastián, Chile; 2: Universidad de Concepción, Chile</p> <p>Hydrochar for metal removal from acid mine drainage <u>Natalie A Kruse Daniels</u>, Benjamin Quardey, Sana</p>	<p>Tailings and Tailings Management Location: Salons F–H Chair: Gwendelyn Geidel 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45</p> <p>Hydrogeological inputs to stability analysis of tailings storage facilities <u>Altus Huisamen</u>¹, John Edward Glendinning² 1: Jones & Wagener, South Africa; 2: Jones & Wagener, South Africa</p> <p>Saturated-unsaturated seepage characteristics and stability analysis of tailings dam under different rainfall pattern <u>Jun Cai</u>, Haibo Huang, Riqiang Wen, Shangsong Han, Lijuan Lu, Wenkai Lei Hezhou University, China, People's Republic of</p> <p>Hyperspectral UAS-sensing for tailing ponds</p>

	<p>Restoring the north branch Blacklick Creek with a centralized mine drainage treatment facility</p> <p>Heather Trexler Tetra Tech, United States of America</p>	<p>County, Pennsylvania</p> <p>Eric Cavazza Tetra Tech, Inc., United States of America</p> <p>Ongoing case study, Berry Branch selenium pilot treatment system using sulfur modified iron, former Hobet Surface Mine, Lincoln County, WV</p> <p>R. B (Barry) Doss ERP Environmental Fund Receivership Estate</p>	<p>Jamshidifard, Aliching Marma, Blake Madden Ohio University, United States of America</p> <p>Double burden of mine water resources and the prospect of corporate sustainability as adaptation strategy: perspectives from Ghana, West Africa</p> <p>Salamatu Joana Tannor University of Bonn, Center for Development Research (ZEF), Germany</p>	<p>monitoring: Towards responsible resource repurposing</p> <p>Hernan Flores¹, Bastian Reker¹, Marcin Pawlik^{1,2}, Benjamin Haske^{1,2}, Tobias Rudolph¹</p> <p>1: Research Center of Post-Mining (FZN), Technische Hochschule Georg Agricola (THGA); 2: Faculty of Geoscience, Geoengineering and Mining, Technical University Bergakademie Freiberg (TUBAF)</p>
<p>9:45am - 10:15am</p>	<p>Coffee break Location: Platinum and MEC Lobbies where exhibitors are set up</p>			
<p>10:15am - 11:55am</p>	<p>Active Treatment Location: Salons A-C Chair: Brent Means</p> <ol style="list-style-type: none"> 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55 <p>Pilot plant testing to determine the process effects of treating net alkaline mine water using the high density sludge process.</p> <p>Michael Alan Cox¹, Catherine Dale¹, Christopher Satterley¹, Richard Coulton², Richard D Coulton², Richard Morgan²</p> <p>1: The Coal Authority, United Kingdom; 2: Materials Recovery Systems Limited, United Kingdom</p> <p>Using state point analysis and settling flux theory to design and</p>	<p>Mine Water Treatment and Management continued Location: Salon D Chair: John Brady Gutta</p> <ol style="list-style-type: none"> 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55 <p>Datashed: an online tool for managing AMD treatment systems and restoration of impacted watersheds</p> <p>Cliff Denholm¹, Natalie Lamagna¹, Shaun Busler²</p> <p>1: Stream Restoration Incorporated, Slippery Rock, Pennsylvania, United States of America; 2: BioMost, Inc, Mars, Pennsylvania, United States of America</p> <p>Passive Treatment using Drainable</p>	<p>Circular Economy Location: Salon E Chair: Rosemary C. Capo</p> <ol style="list-style-type: none"> 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55 <p>Sorption of metals from low-iron acid mine drainage using agricultural waste materials</p> <p>Edward Abbiw, Natalie A Kruse Daniels Ohio University, United States of America</p> <p>Implementing water conservation and water demand management in South Africa's mining industry</p> <p>Givarn Singh¹, Nivi Juggath², William Pulles², Stephinah Mudau³</p> <p>1: WSP UK; 2: WSP South Africa; 3:</p>	<p>Tailings and Tailings Management Location: Salons F-H Chair: Kym Lesley Morton</p> <ol style="list-style-type: none"> 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55 <p>Forecasting opportunities for co-management of Cu-Ni tailings with byproducts of iron ore mining</p> <p>Joel Bandstra, Tamara Diedrich MineraLogic, United States of America</p> <p>Reclamation of two kyanite mine tailings ponds with different surface topographies</p> <p>Gwendelyn Geidel University of SC, United States of America</p> <p>Assessment of AMD Potential and Prediction of a long-term Sulfate Plume of a Tailing Storage Facility Decades after its Decommissioning</p> <p>Thomas R. Rude¹, Julia Becker¹, Dirk Sahle², Franz-</p>

	<p>operate mine water treatment clarifiers <u>Harley Schreiber</u>, Jaron Stanley, Mike Chambers WesTech Engineering, United States of America</p> <p>Mine Water Pinch - increasing reuse/recycle efficiency while optimising water treatment on a mine sites <u>Priyal Dama-Fakir</u>¹, Trevor Coleman¹, Grace Yungwirth², Peter Wille³ 1: WSP, South Africa; 2: WSP, UK; 3: iX engineers, South Africa</p> <p> Potential of continuous electrocoagulation for the treatment of coal mine water containing colloidal clays <u>Faiz Hasan</u>¹, Muhammad Sonny Abfertiawan², Mindriany Syafila², Yoseph Palinggi³, Kris Pranoto³ 1: Environmental Engineering Master Program, Faculty of Civil and Environmental Engineering, Bandung Institute of Technology; 2: Water and Wastewater Research Group, Faculty of Civil and Environmental Engineering, Bandung Institute of Technology; 3: Environmental Department, PT. Kaltim Prima Coal, Indonesia</p>	<p>Limestone Beds: Lessons from 13 Years of Design and Maintenance <u>Neil Wolfe</u>, Robert Hedin, Benjamin Hedin, Olivia Weaver Hedin Environmental</p> <p>Expanding possibilities for the co-treatment of mine drainage with municipal wastewater <u>William Strosnider</u>¹, Benjamin Roman², Charles Spellman Jr.³, Joseph Goodwill⁴, Travis Tasker⁵ 1: University of South Carolina, United States of America; 2: U.S. Office of Surface Mining, Reclamation and Enforcement; 3: Narraganset Bay Commission; 4: University of Rhode Island; 5: Saint Francis University</p> <p>Acid mine drainage active treatment solutions options and evaluation <u>Robert Loken</u> Envirogen Technologies, Inc, United States of America</p>	<p>Minerals Council South Africa</p>	<p>Josef Chmielarczyk³, Michael Heitfeld⁴, Peter Rosner⁴, Ernst-Werner Hoffmann², Thomas Demmel¹ 1: RWTH Aachen University, Institute of Hydrogeology, Germany; 2: AAV – Association for Land Recycling and Remediation of Contaminated Sites, Germany; 3: Bezirksregierung Arnsberg Dezernat 63 - Abschlussbetriebsplanverfahren, Germany; 4: IHS – Ingenieurbüro Heitfeld-Schetelig GmbH, Germany</p>
<p>11:55am - 1:00pm</p>	<p>Lunch Break Location: MEC B</p>			
<p>1:00pm - 2:40pm</p>	<p>Active Treatment Location: Salons A–C Chair: Michael Alan Cox</p>	<p>Passive Treatment of Mine Water Location: Salon D Chair: William Strosnider</p>	<p>Tailings and Tailings Management Location: Salons F–H Chair: Lisa Bithell Kirk</p>	

1. First speaker: 1:00-1:25
2. Second speaker: 1:25-1:50
3. Third speaker: 1:50-2:15
4. Fourth speaker: 2:15-2:40

Active treatment of high strength acid mine drainage at a clay mine and coal refuse sites

Jonathan Dietz

Iron Oxide Technologies, United States of America

Underestimation of alkaline dosage and precipitate amount during water treatment: Role of inorganic carbon and use of PHREEQ-N-AMDTreat

Duk-Min Kim¹, Hye-Lim Kwon¹, Mi-Sun Park²

1: Sangji University, Korea, Republic of (South Korea); 2: Korea Mine Rehabilitation and Mineral Resources Corporation (KOMIR), Korea, Republic of (South Korea)

Treatment of coal mine leachate for neutralization and metal removal

Mokgadi Rapeta, Johannes Maree, Thabo Nkambule

University of South Africa, South Africa

Development of a single stage High Density Sludge (HDS) process for the reopening of South Crofty Tin Mine, Cornwall, UK

1. First speaker: 1:00-1:25
2. Second speaker: 1:25-1:50
3. Third speaker: 1:50-2:15
4. Fourth speaker: 2:15-2:40

Successful acid mine drainage abatement – a case study

Joseph Edward Mills

Skelly and Loy, a Terracon Company, United States of America

Carbonation of mine water to increase calcite dissolution

Robert S Hedin, Benjamin C Hedin

Hedin Environmental, United States of America

Passive treatment of Mn: results from an experimental pilot system

Benjamin Hedin, Neil Wolfe, Robert Hedin

Hedin Environmental, United States of America

Comparison of Midwestern U.S. conventional and hybrid vertical flow ponds to previous performance data

Paul T Behum Jr., Andrew Ripley, Daniel Wedemeyer

US Dept. Interior, United States of America

1. First speaker: 1:00-1:25
2. Second speaker: 1:25-1:50
3. Third speaker: 1:50-2:15
4. Fourth speaker: 2:15-2:40

Tailings dam breach assessment – a review

Hossein Kheirkhah

Gildeh¹, Uthra Sreekumar², Abdolmajid Mohammadian², Ioan Nistor², Colin Rennie²

1: Barr Engineering Co.; 2: University of Ottawa

Geochemical controls on mobilization of metals from tailings and implications for cover amendments

Linda Figueroa¹, Sarah Doyle²

1: Colorado School of Mines; 2: Itasca Denver Inc.

The potential of reprocessing Au and by-products from a tailing dam in the Iron Quadrangle – The case of the Cuiaba Dam, Sabará, Minas Gerais

Mariana Lemos^{1,3}, Teresa Valente¹, Amélia Marinho-Reis¹, Amália Sequeira Braga¹, Rita Fonseca², José da Mata Filho³, Marcus Magalhães³

1: University of Minho, Institute of Earth Sciences, Portugal; 2: University of Évora, Institute of Earth Sciences; 3: Anglogold Ashanti, Mining & Technical, COO International

	<p>Richard Morgan¹, Richard Coulton¹, Steve Kingstone², Naomi Watson² 1: Materials Recovery Systems, United Kingdom; 2: Cornish Metals, United Kingdom</p>		<p>Short water recirculation during the flotation of a UG2 Cu-Ni-PGM ore: Implications on tailings dewatering and quality of the recovered water Malibongwe Shadrach Manono University of Cape Town, South Africa</p>	
<p>2:40pm - 3:10pm</p>	<p>Coffee break Location: Platinum and MEC Lobbies where exhibitors are set up</p>			
<p>3:10pm - 5:00pm</p>	<p>Active Treatment of Mine Water Location: Salons A-C Chair: Dorothy J Vesper 1. First speaker: 3:10-3:35 2. Second speaker: 3:35-4:00 3. Third speaker: 4:00-4:25 4. Fourth speaker: 4:25-4:50</p> <p>Removal of selenium by biological reduction and surface complexation: removal efficiencies and speciation results Myriam De Ladurantaye-Noel, Marc Laliberté Veolia Water Technologies Canada, Canada</p> <p>Electrolytic manganese removal from acid rock drainage Sarah Doyle¹, Linda Figueroa² 1: Itasca Denver Inc.; 2: Colorado School of Mines</p> <p>Economical and Environmentally Friendly Adsorption of</p>	<p>Passive Treatment of Mine Water Location: Salon D Chair: Robert S Hedin 1. First speaker: 3:10-3:35 2. Second speaker: 3:35-4:00 3. Third speaker: 4:00-4:25 4. Fourth speaker: 4:25-4:50</p> <p>Feasibility of the scale-up of a semi-passive biological Sulfate Reduction Process Treating High Sulfate Mine-Influenced Water Kerri du Preez, Mothusi Marumo Mintek, South Africa</p> <p>A toolbox for characterizing organic media in passive biotreatment cells Logan Schultz. Ph.D.¹, Brian Park¹, Lauren Stanford¹, Kevin Pfeifer¹, Irene Montero. Ph.D.², Terry Moore. Ph.D.², Alex Wing⁴, Sandy Riese. Ph.D.³ 1: Alloy, Inc.; 2: Remediation Management Services Company; 3: EnSci, Inc.; 4: Astalagus Environmental</p>	<p>Water Management / Mine Hydrology Location: Salon E Chair: Christian Wolkersdorfer 1. First speaker: 3:10-3:35 2. Second speaker: 3:35-4:00 3. Third speaker: 4:00-4:25 4. Fourth speaker: 4:25-4:50</p> <p>Applicability of machine learning in agile decision making in open pit dewatering: A case study at Antamina mine (Peru) Eduardo Ruiz¹, Aitor Iraola¹, Lizardo Huamani¹, Maria Pool¹, Alejandro Sanchez², Marco Irribarren², Bertha Llanos¹, Milton Cairo¹, Albert Nardi¹, Ester Vilanova¹, Luis Lozada² 1: Amphos 21 Consulting Peru, Peru; 2: Antamina Mine</p> <p>Cooperative mine land reclamation operations & comprehensive managed watershed planning Michael Haney¹, Branden Diehl², Todd Coleman³ 1: Pennsylvania Department of Environmental</p>	

Arsenic from Mine Drainage: Comparison between CMDS-Bead and GFH

Ki-Rim Lee, Duk-Min Kim, Hye-Lim Kwon, Nam-Kyu Kim, Young-Min Kim, Dae-Gyu Im, Oh-Hun Kwon
Sangji university, Korea, Republic of (South Korea)

Innovative data collection and management strategies for improved water treatment efficiency

Tom Meuzelaar¹, Shannon D. Zahuranec¹, Alice Alex², James P. Jonas¹
1: Life Cycle Geo, United States of America; 2: Canadian Nuclear Safety Commission

Lambert Run: a passive treatment approach to watershed remediation

Jason Fillhart¹, John Brady Gutta²
1: WV Water Research Institute, United States of America; 2: WVU Institute for Sustainability and Energy Research, United States of America

Development of an un-powered remote monitoring system of mine waste water

Tetsuo Yasutaka, Hiromitsu Furukawa, Kenro Kuroki, Tsukasa Fujita
National Institute of Advanced Industrial Science and Technology, Japan

Protection, United States of America; 2: Earth Wise Consulting, LLC; 3: Minetech Engineers, Inc.

Flow and load accretion study improved understanding of hyporheic exchange plus contaminant plume sources and transport at an operating mine

Isaac Guld, Kate Robey, Sharon Blackmore, Andrea Chong
BGC Engineering Inc., Canada

Metal loads accounting at a legacy mine site: The Tar Creek Superfund Site, Oklahoma, USA

Justine Inez McCann, Robert W. Nairn
Center for Restoration of Ecosystems and Watersheds, School of Civil Engineering and Environmental Science, University of Oklahoma, United States of America

5:00pm
-
7:00pm

Poster & Networking Session

Location: [Salon Lobby between registration and Platinum Lobby](#)
Chair: **Robert Lawrence Kleinmann**
Chair: **Jeff Skousen**

Monday creek restoration, snow fork dosers

Gregory Paul Hynes
Tetra Tech Inc., United States of America

📄 Application of statistical models to estimate total dissolved solids in acid mine drainage

Ana Raquel Barroso¹, Teresa Maria Valente¹, Amélia Paula Reis^{1,2}, Isabel Margarida Antunes¹
1: ICT – Institute of Earth Sciences, pole of University of Minho, University of Minho, Braga, Portugal; 2: GEOBIOTEC, Geosciences department, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal

Characterizing cobalt sequestration in manganese-rich coal mine drainage treatment solids

Camille Rose Schaffer^{1,2}, Mengling Y. Stuckman², Christina L. Lopano², Rosemary C. Capo¹, Brian W. Stewart¹, Gita Bhandari²

1: University of Pittsburgh, United States of America; 2: National Energy Technology Laboratory, United States of America

Column experiments on the settling characteristics of suspended solids in mine water treatment facilities

Seong-Sook Park¹, Ga-Hyeon Lee¹, Duk-Min Kim², Mi-Sun Park³, Sun-Joon Kim¹

1: Hanyang University, Republic of Korea; 2: Sangji University, Republic of Korea; 3: Korea Mine Rehabilitation and Mineral Resources Corporation, Republic of Korea

Post-mining water-sediment interaction on U-mine area – a contribution to water management

Margarida Antunes¹, Bilel Abdelkarim^{1,2}, Teresa Valente¹, Antonio Tavares³

1: ICT – Institute of Earth Sciences, pole of University of Minho, University of Minho, Braga, Portugal; 2: Higher Institute of Water Sciences and Techniques, University of Gabes, University Campus, 6033 Gabes Applied - Hydrosiences Laboratory; 3: University of Coimbra, Portugal

Effect of different sources and local conditions in the post-mining contamination by acid mine drainage: three case studies in Iberian Peninsula (SW Europe)

Raquel Fernandes¹, Ana Barroso¹, Patricia Gomes¹, Joana Araujo², Raphael de Vicq¹, Isabel Margarida Antunes¹, Rita Fonseca², Teresa Maria Valente¹

1: ICT - Institute of Earth Sciences, pole of University of Minho, Portugal; 2: ICT - Institute of Earth Sciences, pole of University of Évora, Portugal

Conservation and promotion of the Coal Mining Heritage as Europe's Cultural legacy: Ruhr Area Examples

Hernan Flores, Tansel Dogan, Julia Haske

Research Center of Post-Mining (FZN), Technische Hochschule Georg Agricola (THGA), Herner Straße 45, 44787 Bochum, Germany

Analysis of a base-load-capable heat supply of quarters considering aquifers in disused mines as heat storages for locally specific renewable (waste) heat potentials

Patrick Heinrich¹, Thomas Wenzel¹, Mareike Bleidießel¹, Robert Manig¹, Lukas Oppelt², Ebel Tom², Wunderlich Timm², Thomas Grab²

1: DBI Gas- und Umwelttechnik GmbH, Germany; 2: TU Bergakademie Freiberg, Germany

Determination of cyanide and potentially toxic elements in gold tailings at Barberton, Mpumalanga, South Africa

Deogratius Maiga¹, Sazini Makamu³, Mokgehe Letsoalo¹, Khuthadzo Mudzanani¹, Terence Phadi¹, Shonisani Limani¹, Titus Msagati²

1: Council for Mineral Technology (MINTEK) Private Bag X3015, Randburg 2125, Johannesburg, South Africa.; 2: Institute for Nanotechnology and Water Sustainability, College of Science Engineering and Technology, Science Campus, University of South Africa, Roodepoort, 1710 Johannesburg, South Africa; 3: Maelgwyn South Africa, Building A - Stand 221A, Paddock Lane, Boundary Park, North Riding, Randburg 2188, Johannesburg, South Africa

Considering residual flocculants and coagulants in recycled mine water on the surface chemistry of talc: Implications on flotation performance

Malibongwe Shadrach Manono, Lisa Louise October, Resoketswe Martha Manenzhe, Kirsten Claire Corin

University of Cape Town, South Africa

In-situ testing and data applications for upstream-constructed coal refuse impoundments

Abeera Batool, Blaise Genes

GAI Consultants, Inc., United States of America

A review of the reducing and alkalinity-producing passive treatment system for remediating acid mine drainage

Mafeto Malatji¹, Elvis Fosso-Kankeu²

1: Council for geoscience; 2: University of Johannesburg

Assessing the cost and applicability of passive treatment and risk-based point-of-use management for 26 legacy mine drainages

Kohei Doyama¹, Yuichi Iwasaki¹, Takaya Hamai², Tetsuo Yasutaka¹, Shingo Tomiyama³

1: National Institute of Advanced Industrial and Science Technology; 2: Japan Oil, Gas and Metals National Corporation; 3: Division of Sustainable Resources Engineering, Faculty of Engineering, Hokkaido University

Abandoned Mine Pools: a Threat to the Environment or a Water Resource for Beneficial Uses

Wanfang Zhou, Jeff Zoeckler, Scott Bailey, Marcus Kim

Hana Engineers and Consultants, LLC., United States of America

Sulfide-rich waste classification using a fast and cost-effective reactivity index

Patricia Gomes, Mayara Cordeiro, Teresa Valente

University of Minho, Institute of Earth Sciences, pole of the University of Minho, Portugal

Date: Wednesday, 24/Apr/2024

7:00am - 8:00am	Breakfast for field trip attendees Location: Platinum Foyer				
8:00am - 12:00pm	Field Trip 4 CANCELLED	Field Trip 5 CANCELLED	Field Trip 1 Humphrey Mine and Mylan Park Location: Lobby near the Registration Table Chair: Jeff Skousen	Field Trip 2 Active Treatment Systems Location: Lobby near the Registration Table Chair: Paul Ziemkiewicz	Field Trip 3 Passive Treatment of Acidic Mine Drainage (half day, West Virginia) Location: Lobby near the Registration Table Chair: Tim Danehy
8:00am - 5:00pm	Field Trip 6 Passive treatment (full day, Pennsylvania) Location: Lobby near the Registration Table Chair: Robert S Hedin				
12:00pm - 1:00pm	Lunch (for Field Trip Attendees only) Location: Platinum Foyer				
1:10pm - 5:00pm	Field Trip 1 CANCELLED	Field Trip 2 Active Treatment Systems Location: Lobby near the Registration Table	Field Trip 3 Passive Treatment of Acidic Mine Drainage (half day, West Virginia)	Field Trip 4 Longview Power Plant Location: Lobby near the Registration Table	Field Trip 5 Laurel Caverns Location: Lobby near the Registration Table Chair: Robert Lawrence Kleinmann

		Chair: Paul Ziemkiewicz	Location: Lobby near the Registration Table Chair: Tim Danehy	
6:00pm - 8:00pm	Cornhole Tournament & Reception Location: Platinum and MEC Lobbies where exhibitors are set up Chair: Jeff Skousen Chair: Robert Lawrence Kleinmann Informal reception with food and drinks, and cornhole tournament . Interested people will be sorted into 2-person teams to compete. Sponsored by "Kleinfelder – Bright People. Right Solutions." and "Dutchland LLC – Innovation. Experience. Eco-friendly."			

[Date: Thursday, 25/Apr/2024](#)

7:30am - 8:30am	Breakfast Location: MEC B			
8:30am - 9:45am	Geothermal Energy from Mine Water Location: Salons A–C Chair: Elke Mugova 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45 GIS-based development of energy networks using mine water geothermal energy for cross-sectoral heating and cooling supply of municipal quarters Thomas Wenzel¹, Patrick Heinrich¹, Robert Manig¹, Thomas Grab², Lukas Oppelt², Tom Ebel², Timm Wunderlich² 1: DBI Gas- und Umwelttechnik GmbH, Germany; 2: TU Bergakademie Freiberg, Germany WINZER: Multi-scale modelling concept for numerical modelling of seasonal thermal energy storage in groundwater-filled underground coal mines Torsten Seidel¹, Timo König¹, Florian Hahn², Stefan Klein², Mathias Nehler² 1: delta h, Witten, Germany; 2: Fraunhofer	Passive Treatment of Mine Water Location: Salon D Chair: Robert W. Nairn 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45 Navigating difficult site constraints to facilitate ecological recovery of an impaired watershed Timothy A Denicola Civil & Environmental Consultants, Inc., United States of America Sulfate removal from mine drainage at low temperature: effects of three reactive porous media on microbial sulfate reduction Laura Nina Bettoni, Roger Herbert Uppsala University, Sweden Reducing water quality impacts from abandoned mines in Saxony – Challenges and benefits for passive treatment options Eberhard Janneck¹, Mirko Martin¹, Christine Stevens², Axel Hiller³	Prediction & Control of Mine Water Issues Location: Salon E Chair: Benoît Plante 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45 Evaluation of geochemical reaction rates from different wet-dry cycle intervals in laboratory kinetic test Ginting Jalu Kusuma, Abie Badhurahman, Sedy Dwiki, Salmawati Salmawati, Rudy Sayoga Gautama, Gelar Wisnugraha Institut Teknologi Bandung, Indonesia, Indonesia Coal mine drainage contaminant trend prediction in an Appalachian basin, USA Camille Rose Schaffer¹, Charles A. Cravotta III², Rosemary C. Capo¹, Brian W. Stewart¹, Benjamin C. Hedin^{1,3}, Dorothy J. Vesper⁴ 1: University of Pittsburgh, United States of America; 2: United States Geological Survey; 3: Hedin Environmental; 4: West Virginia University, USA	Rare Earth Resources Location: Salons F–H Chair: Nathan Cory DePriest 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45 Application of supported liquid membranes for extraction of rare earth elements from acidic coal mine drainage Helen Hsu-Kim¹, Andrew Middleton¹, Benjamin C. Hedin² 1: Duke University, United States of America; 2: Hedin Environmental, United States of America Generating Rare Earth Element and Critical Mineral hydraulic pre-concentrate from acid mine drainage at remote sites: a case study at Fola Job 5, Clay County, WV Iuri Santos¹, Nathan Depriest², David Hoffman², Caitlin Glascock², Rachel Spirnak², Jason Fillhart², Michael King³, John

	<p>IEG, Bochum, NRW, Germany</p> <p>Geothermal multiple use of mine water from the Wolf – San Fernando – Friedrich Wilhelm composite mine, Rhenish Massiv, Germany</p> <p>Peter Quensel, Georg Wieber Johannes-Gutenberg-University Mainz, Germany</p>	<p>1: G.E.O.S. Ingenieurgesellschaft mbH, Germany; 2: Sächsisches Landesamt für Umwelt, Landwirtschaft und Geologie, Germany; 3: Wismut GmbH, Germany</p>	<p>Geochemical modeling to understand and mitigate aquatic contamination by abandoned mine drainage</p> <p>Charles A Cravotta III U.S. Geological Survey, Pennsylvania Water Science Center, New Cumberland, PA, USA</p>	<p>Quaranta³, Paul Ziemkiewicz² 1: Slippery Rock University, United States of America; 2: West Virginia Water Research Institute; 3: West Virginia University</p> <p>Identification of rare earth element occurrences in mine waste throughout Montana</p> <p>Jackson Tyler Quarles, Matthew Joseph Vitale, Michael William Calhoun Montana Bureau of Mines and Geology, United States of America</p>
<p>9:45am - 10:15am</p>	<p>Coffee break Location: Platinum and MEC Lobbies where exhibitors are set up</p>			
<p>10:15am - 11:05am</p>	<p>Geothermal Energy from Mine Water Location: Salons A–C Chair: Terry Edward Ackman 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55</p> <p>Mine thermal energy storage (MTES) systems in abandoned collieries within the Ruhr area Florian Hahn¹, Stefan Klein¹, Kevin Mannke¹, René Verhoeven¹, Jonas Güldenhaupt¹, Torsten Seidel², Timo König² 1: Fraunhofer IEG; 2: delta h</p> <p>GIS based analysis of heat demand and subsurface potential of abandoned mining infrastructure in the</p>	<p>Passive Treatment of Mine Water Location: Salon D Chair: Benjamin Hedin 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55</p> <p>Treating Fe-rich acid mine drainage with Tasmanian plants as a metal removal mechanism Tamara Lee Herzog¹, Anna Lintern¹, Adam Kessler², Brandon Winfrey¹ 1: Department of Civil Engineering, Monash University, Australia; 2: School of Earth, Atmosphere, and Environment, Monash University, Australia</p> <p>Effect of source water chemical composition on the</p>	<p>Prediction & Control of Mine Water Issues Location: Salon E Chair: Terry W. Schmidt 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55</p> <p>Characterization and modeling of Acid Mine Drainage in a highly acidic Stream (Trimpancho mining complex, SW of Spain) Ana Raquel Barroso¹, Teresa Maria Valente¹, Isabel Margarida Antunes¹, Amélia Paula Reis^{1,2}, Maria Isabel Neves^{3,4} 1: ICT – Institute of Earth Sciences, University of Minho, Portugal; 2: GEOBIOTEC, Geosciences Department, University of Aveiro, Portugal; 3: CQUM, Centre of Chemistry, University of Minho, Portugal; 4: CEB - Centre</p>	<p>Rare Earth Resources Location: Salons F–H Chair: Sarah Kreitzer 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55</p> <p>Lab-based assessment of critical metal adsorption by biotic and abiotic hydrous manganese oxides Tashane Jessica Boothe¹, Rosemary Clare Capo¹, Brian W. Stewart¹, Ben Hedin², Travis Olds³, Carla Rosenfeld³ 1: University of Pittsburgh; 2: Hedin Environmental; 3: Carnegie Museum of Natural History</p>

	<p>Ruhr region, Germany <u>Kevin Mannke</u>, Florian Hahn, René Verhoeven, Stefan Klein Fraunhofer IEG, Germany</p>	<p>mineralogical and chemical properties of resulting iron oxide precipitates in coal and hard-rock mining influenced waters <u>Dayton M Dorman</u>, Robert W Nairn University of Oklahoma, United States of America</p>	<p>of Biological Engineering, University of Minho, Portugal</p> <p>Mining-Influenced Water Treatment Technology Demonstration Program lessons learned from two EPA Superfund sites <u>Lucila Dunnington</u>, Michele Mahoney, Kimberly Prestbo, Barbara Butler Environmental Protection Agency, United States of America</p>	<p>Laboratory and field observations inform geochemical models of treatment strategies to recover rare-earth elements from acid mine drainage <u>Charles A Cravotta III</u>¹, Travis L. Tasker², Benjamin C. Hedin³ 1: U.S. Geological Survey, Pennsylvania Water Science Center, New Cumberland, PA, USA; 2: Saint Francis University, Loretto, PA, USA; 3: Hedin Environmental, Inc., Pittsburgh, PA, USA</p>
11:05am - 12:00pm	<p>Panel Discussion on Mine Water Treatment Location: Salon E Chair: Brent Means Panelists: Orna O'Toole, Bob Hedin, Eric Cavazza, Dave McCoy, and Chuck Cravotta</p>			
12:00pm - 1:00pm	<p>Lunch Break Location: MEC B</p>			
1:00pm - 2:15pm	<p>Passive Treatment of Mine Water Location: Salon D Chair: Paul T Behum Jr. 1. First speaker: 1:00-1:25 2. Second speaker: 1:25-1:50 3. Third speaker: 1:50-2:15</p> <p>Self-organizing wetland bioreactors (SOWBs) application to mining reclamation: direct and indirect bioremediation as a design tool for mine influenced water (MIW) benefaction <u>Colin A Lennox</u> Ecolislands LLC, United States of America</p> <p>Batch operating limestone treatment systems (BOLTS): a novel approach to treating mine drainage at lower cost <u>Travis Lindsay Tasker</u>¹, Ben Roman¹, James</p>	<p>Prediction & Control of Mine Water Issues Location: Salon E Chair: Lucila Dunnington 1. First speaker: 1:00-1:25 2. Second speaker: 1:25-1:50 3. Third speaker: 1:50-2:15</p> <p>Development of a prediction method for contaminated neutral drainage: Case of Lac Tio, QC <u>Vincent Marmier</u>¹, Benoît Plante¹, Isabelle Demers¹, Mostafa Benzaazoua^{2,1}, Mathieu Fillion³ 1: Université du Québec en Abitibi-Témiscamingue; 2: Mohammed VI Polytechnic University; 3: Rio Tinto Fer et Titane</p> <p>Nitrate removal from waste rock drainage with denitrifying bioreactors at the Kiruna iron ore mine <u>Roger B. Herbert</u>¹, Tomas Salmi², Mattias Ylipää²</p>	<p>Water Management / Mine Hydrology Location: Salons F-H Chair: Terry W. Schmidt 1. First speaker: 1:00-1:25 2. Second speaker: 1:25-1:50 3. Third speaker: 1:50-2:15</p> <p>Watergenics AISRAS: addressing the problem of sudden changes in ion concentrations with real-time spectroscopy <u>Bruno Grafe</u>¹, <u>Henning Jasnowski-Peters</u>², Liviu Mantescu¹, Sebastian Stolzenberg¹ 1: Watergenics GmbH, Germany; 2: Technische Hochschule Georg Agricola, Germany</p> <p>Determination of groundwater level using advanced machine learning methods <u>Amirhossein Najafabadipour</u></p>	

	<p>Eckenrode¹, Nicole Himes¹, Henry Warner¹, Buck Neely², Cliff Denholm³, William Strosnider⁴, Julie LaBar⁵, Tim Danehy² 1: 1 Saint Francis University, Loretto, PA, USA; 2: BioMost, Inc. Mars, PA, USA; 3: Stream Restoration Inc, Slippery Rock, PA, USA; 4: University of South Carolina, Baruch Marine Field Laboratory, Georgetown, SC, USA,; 5: Oklahoma State University, Stillwater, OK, USA</p> <p>Crossville coal passive treatment system – the redesign of a non-functioning iron and manganese treatment system</p> <p>Wesley Con Smith, Adam Ramsey, Rick Mann OSMRE, United States of America</p>	<p>1: Uppsala University, Sweden; 2: Luossavaara-Kiirunavaara Aktiebolag (LKAB), Sweden</p>	<p>Shahid Bahonar University of Kerman, Iran.</p>	
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2:15pm - 2:45pm	<p>Coffee break Location: Platinum and MEC Lobbies where exhibitors are set up</p>			
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2:45pm - 4:45pm	<p>IMWA General Assembly Meeting Location: Salon D</p>			
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6:00pm - 9:00pm	<p>Gala dinner & Awards Banquet Location: MEC B Chair: Christian Wolkersdorfer</p> <p>It is expected that you will dress appropriately for an Awards Banquet.</p>			
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Date: Friday, 26/Apr/2024

7:30am - 8:30am	<p>Breakfast Location: MEC B</p>			
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8:30am - 9:45am	<p>Mine Water Geochemistry Location: Salons A–C Chair: Charles A Cravotta III 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45</p> <p>The release of dissolved inorganic carbon (DIC) and CO₂ from coal mine drainages</p>	<p>Mine Closure & Legacy Issues Location: Salon D Chair: Adrian Brown 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45</p> <p>Challenges of defining what ‘success’ looks like for</p>	<p>Water Management / Mine Hydrology Location: Salon E Chair: Natalie A Kruse Daniels 1. First speaker: 8:30-8:55 2. Second speaker: 8:55-9:20 3. Third speaker: 9:20-9:45</p> <p>Banning No. 4 Mine, a tale of Title V facility retrofit project development.</p>	
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	<p>Dorothy J Vesper¹, Charles A Cravotta III², Kyle Fredrick³, Ellen K Herman⁴, Lili Lei⁵, Jill L Riddell⁶, Mathew L Bell¹, Lauren J Rockwell¹, Camille R Schaffer⁷ 1: West Virginia University, USA; 2: USGS; 3: Penn West University, USA; 4: Bucknell University, USA; 5: Sweet Brier College, USA; 6: Chatham University, USA; 7: University of Pittsburgh, USA</p> <p>Improving Fe oxidizing/removal process by limestone addition to rice husk bed on large scale passive treatment test for AMD in Japan</p> <p>Masataka Kondo, Yusei Masaki, Kana Hagihara, Koki Iguchi, Takaya Hamai, Yuki Semoto, Taro Kamiya, Masao Okumura, Naoki Sato Japan Organization for Metals and Energy Security, Japan</p> <p>Diurnal cycles of dissolved inorganic carbon and dissolved metals at Lambert Run, Harrison County, WV</p> <p>Jill L Riddell¹, Dorothy J Vesper² 1: Chatham University, United States of America; 2: West Virginia University, United States of America</p>	<p>closure of pit lakes as aquatic ecosystems</p> <p>Mark Lund, Rachele Bernasconi Mine, Water and Environment Research Centre, Edith Cowan University, Australia</p> <p>Water Management and Treatment in the Closure Phase: Case Studies and the Associated Challenges</p> <p>Andre Abel van Coller, Vicki Ann Shaw, Graham Errol Trusler Digby Wells Environmental</p> <p>Understanding a passive treatment mechanism of manganese and zinc at a legacy mine in northern Japan using geochemical modelling</p> <p>Sereyroith Tum¹, Taiki Katayama¹, Naoyuki Miyata², Miho Watanabe², Yohey Hashimoto³, Tetsuo Yasutaka¹ 1: Institute for Geo-Resources and Environment, National Institute of Advanced Industrial Science and Technology; 2: Department of Biological Environment, Akita Prefectural University; 3: Department of Bioapplications and Systems Engineering (BASE), Tokyo University of Agriculture and Technology</p>	<p>Sami Pretzel, Dingfang Liu, Brian Osborn Kleinfelder, Inc., United States of America</p> <p>Tioga river watershed restoration, design considerations and updates</p> <p>Sami Pretzel, Tom Clark Kleinfelder, Inc., United States of America</p> <p>Low-concentration sulfate removal from wastewater with barite precipitation technology</p> <p>Meijun Cai, Sara Post, Shashi Rao, Chan Lan Chun, Lucinda Johnson, George Hudak University of Minnesota Duluth, United States of America</p>
<p>9:45am - 10:15am</p>	<p>Coffee break Location: Platinum and MEC Lobbies where exhibitors are set up</p>		
<p>10:15am - 11:30am</p>	<p>Mine Water Geochemistry Location: Salons A-C Chair: Jill Leighanne Riddell 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55</p> <p>Leaching dynamics of Pb, Zn, and F: Long-term leaching of waste rock from mine site of Ivittuut, South Greenland</p> <p>Ninni Jeremiassen^{1,6}, Yu Jia¹, Violeta Hansen², Henrik Friis³, Morten Birch Larsen⁴, Maia Olsen⁵, Thomas Ulrich⁶ 1: Greenland Institute for Natural Resources, Greenland; 2: University of Gothenburg, Sweden; 3: University of Oslo, Norway; 4: Rambøll, Denmark; 5: Government</p>	<p>Mine Closure & Legacy Issues Location: Salon D Chair: Mark Lund 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55</p> <p>Ensuring the water quality of post-mining lakes in Central Germany by implementing two different aftercare strategies to meet alkalinity demand</p> <p>Benno Janisch LMBV mbH, Germany</p>	<p>Water Management / Mine Hydrology Location: Salon E Chair: Sami Pretzel 1. First speaker: 10:15-10:40 2. Second speaker: 10:40-11:05 3. Third speaker: 11:05-11:30 4. Fourth speaker: 11:30-11:55</p> <p>Abandoned coal mine mitigation in artesian conditions</p> <p>Joshua Townsend Zimmermann, Dave Grant Hibbard Brierley Associates, United States of America</p> <p>Watershed scale reclamation and treatment planning with</p>

	<p>of Greenland, Greenland; 6: University of Aarhus, Denmark</p> <p>Regional spatial distribution of elements in the Vaal primary catchment using stream sediments geochemistry: Implication on anthropogenic and geogenic source</p> <p><u>Khashane Robert Tshishonga Netshitungulwana</u>¹, Bisrat Yibas², Dirk Grobbelaar¹, Rudzani Lusunzi¹, Christoph Gauert³</p> <p>1: Council for Geoscience, South Africa; 2: University of the Free State, South Africa; 3: Geological Survey of Saxony-Anhalt, Germany</p> <p>Estimating carbon dioxide flux from coal mining discharge portals in the bituminous coal field region of Pennsylvania</p> <p><u>Lauren J Rockwell</u>¹, Dorothy J Vesper¹, Kyle C Fredrick², Lisa H Lohr¹</p> <p>1: West Virginia University, United States of America; 2: Pennsylvania Western University, California, PA, United States of America</p>	<p>UAVs for analyzing legacy issues and development opportunities on former mine lands</p> <p><u>Mike Strager</u>, Paul Kinder, Lucas Kinder, Brady Gutta</p> <p>West Virginia University, United States of America</p> <p>Sediments in affected river systems – lessons learned from WISMUT remediation</p> <p><u>Annia Inge Greif</u>, Silvia Jahn</p> <p>Wismut GmbH, Germany</p>	<p>changing reclamation funding sources</p> <p><u>Natalie A Kruse Daniels</u>, Jennifer R Bowman, R Guy Riefler</p> <p>Ohio University, United States of America</p> <p>Hydrogeochemical Monitoring of Mine Waters for a controlled and sustainable Mine Water Rebound – from a univariate to a multivariate Tracer Monitoring Concept</p> <p><u>Henning Jasnowski-Peters</u>, Sebastian Westermann, Christian Melchers</p> <p>Research Center of Post Mining, Technische Hochschule Georg Agricola University, Bochum, Germany</p>
<p>11:30am - 11:55am</p>	<p>Closing Ceremony Location: Salon D</p>		
<p>11:55am - 1:30pm</p>	<p>Lunch Break Location: MEC B</p>		
<p>2:00pm - 11:59pm</p>	<p>Post-conference field trip Location: Lobby near the Registration Table April 26 to 29, 2024 Tour guide: Brent Means</p>		