



June 4-7, 2023



Boise, Idaho

40TH ANNUAL MEETING

American Society of Reclamation Sciences

Boise Centre | 850 W Front Street



ASRS

ASRS 2023 Preliminary Conference Program

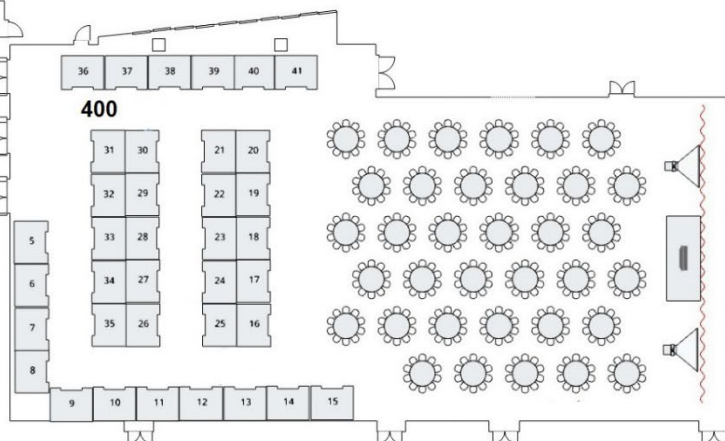
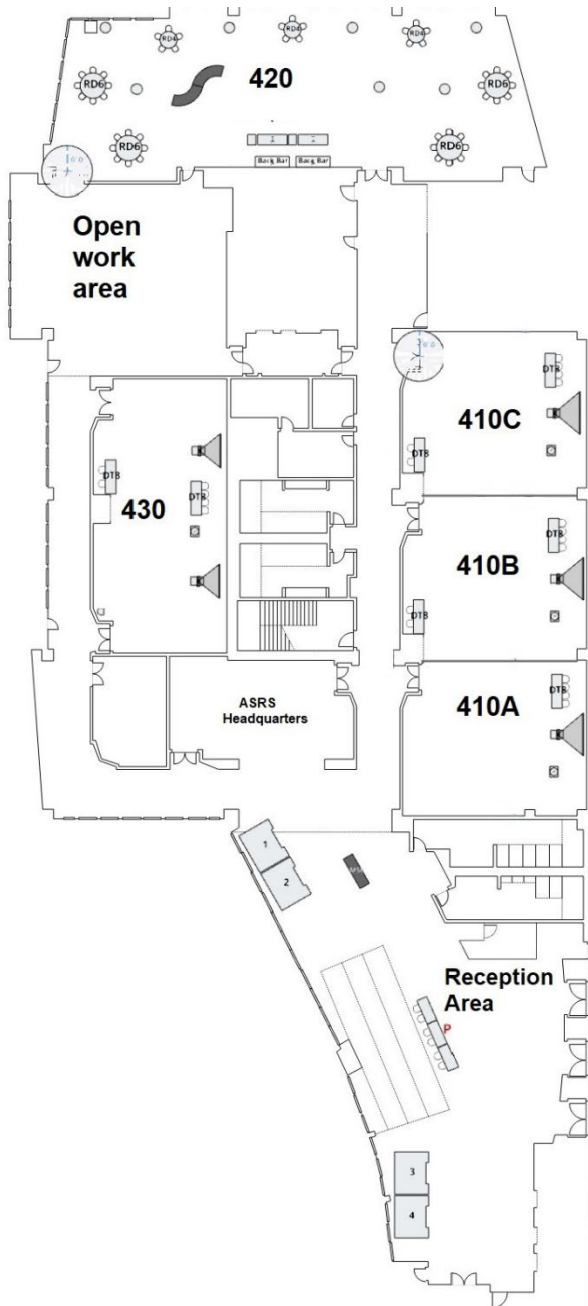
40 Years of Reclamation

The 40th Annual Meeting of the American Society of Reclamation Sciences (ASRS) will be held at the Boise Centre in downtown Boise, Idaho from June 4 - 7, 2023. This conference will focus on the research, technical, and regulatory issues associated with the land and water reclamation across the U.S. and abroad, with focused sessions on the projects and successes across Idaho. It will provide a forum for the dissemination of information through presentation of research findings, case studies, field tours, and open discussion of public policy relating to the applied science of reclamation, rehabilitation, remediation, and restoration. Focus will be on areas disturbed by mining, oil and gas, conventional and alternative energy production, contaminated sites, agriculture, railroad/road construction, large-scale commercial development, and other disturbances to land and water resources.

2023 Schedule Snapshot

SUNDAY 6/4/23		MONDAY 6/5/23	TUESDAY 6/6/23	WEDNESDAY 6/7/23
Registration and Exhibitor Setup 12:00 am – 5:00 pm SW Foyer	Breakfast on own	Haulin' ASRS 6:30 – 7:30 am	Haulin' ASRS 6:30 – 7:30 am	Haulin' ASRS 6:30 – 7:30 am
		Breakfast 8:00 – 9:00 am Room 400C	Wild Women of Reclamation 7:00 – 8:15 am Room 430	Breakfast 7:30 – 8:30 am Room 400C
	Breakfast 7:30 – 8:30 am Room 400C			
	DeLamar Mine Field Tour Hosted By: Integra Resources 8:00 am – 4:30 pm	Opening Plenary 9:00 am – 12:00 pm Room 400C	Technical Sessions 8:30 am – 12:00 pm Rooms 410 A/B/C	Technical Sessions 8:30 am – 12:00 pm Rooms 410 A/B/C
		Awards Lunch and ASRS Business Meeting 12:00 – 2:00 pm Room 400C	Lunch on own	Lunch/Student Awards Ryan Sistad - Speaker 12:00 – 2:00 pm Room 400C
NEC Meeting 4:30 – 6:00 pm Room 430		Technical Sessions 2:00 – 5:30 pm Rooms 410A/B/C	Technical Sessions / Seeding Certification Class 2:00 – 5:30 pm Rooms 410A/B/C & 430	Technical Sessions 2:00 – 5:00 pm Rooms 410A/B/C
Welcome Exhibitor/Sponsor Reception 6:00 – 8:00 pm Room 420		Dinner/Social Event 6:00 – 8:00 pm Beside Bardenay	Student Poster Social 5:30 – 7:00 pm Room 420	NEC Meeting 4:30 – 5:00 pm Room 430
			Dinner on own	Student/ECP Social 5:00 – 7:00 pm Room 420

Boise Centre East Convention Centre – 4th Floor



Abnova Ecological Solutions
ACZ Laboratories Inc.
ASRS
Barr Engineering Co.
Brierley Associates
CDM Smith
Costmine
Energy Laboratories, Inc.
Foam Concepts LLC

15 Granite Seed
36 Grouse Mountain Environmental Consultants
39 Haley & Aldrich
18 Integra Resources
17 KC Harvey Environmental, LLC
23 OSMRE - Headquarters
25 Pace Analytical Services
41 Perpetua Resources
16 Pioneer Technical Services, Inc.

8 Rocky Mountain Bio Products
12 Stevenson Intermountain
31, 32 SVL Analytical
35 Tetra Tech
9 Truax Company, Inc.
37, 38 Voss Signs
33 Western States Reclamation
34 Wyoming AML Division
20

30
21
10
14
8
27
26
5

Meeting Financial Sponsors / Exhibitors (So Far – More Room!)

PLATINUM



Office of Surface Mining Reclamation
and Enforcement

GOLD

**HALEY
ALDRICH**

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SILVER

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Meeting Financial Sponsors / Exhibitors (So Far – More Room!)

BRONZE



Abnova Ecological Solutions



Better in Our Back Yard



Brierley Associates



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Pace Analytical



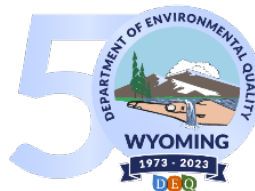
SVL Analytical



Tetra Tech



Western States Reclamation



Wyoming AML Division

Thanks to Our Exhibitors (More Space Available)



**BRIERLEY
ASSOCIATES**
Creating Space Underground



**CDM
Smith**

costmine



**granite
SEED**
and erosion control



**HALEY
ALDRICH**

**INTEGRA
RESOURCES**



2023 Conference Planning Committee

Dustin Wasley, ASRS Annual Meeting Chair, Haley & Aldrich

- John Haney, Haley & Aldrich
- Kevin Houck, Haley & Aldrich
- Jason Poulsen, Haley & Aldrich
- Nick Tucci, Haley & Aldrich
- Jo Combo, Haley & Aldrich
- Todd Glindeman, Brown and Caldwell
- Doug Stiles, Hecla Mining
- Ben Davenport, Idaho Mining Association
- Tricia LaRue, Integra Resources
- Rob Mullener, Integra Resources
- Rio Franzman, KC Harvey
- Kennet Bertelsen, Morrison-Maierle
- Devin Clary, Montana Rail Link
- Chris Norman, Pace Analytical
- Dale Kerner, Perpetua Resources
- Hayley Rambur, Perpetua Resources
- Rachel Roskelley, JR Simplot
- Rob Orr, Teck Resources

On behalf of the ASRS Boise 2023 National Meeting Local Planning Committee and the ASRS National Executive Committee (NEC) we want to thank our sponsors and exhibitors for their support, as well as our meeting attendees in Boise for their continued support of our Society.

Professional Field Tour Information

Sunday, June 4 – DeLamar Mine Field Tour (Hosted By Integra Resources)

8:00 a.m. - 4:30 p.m.

- 7:45 a.m.** Assemble in The Grove parking lot for 8:00 am prompt departure.
- 8:00 a.m.** Board bus and depart for the DeLamar Mine roughly 115 miles south southwest of Boise.
- 10:15 a.m.** Arrive at Stop 1 - Water Treatment Plant, Historic Tailings Facility and DeLamar Pit.
(Please note – all stops are weather dependent, and the schedule may be revised)
- 11:15 a.m.** Depart Stop 1 for Stop 2.
- 11:30 a.m.** Arrive at Stop 2 - Overlook of Sullivan Gulch Waste Rock Dump #1 and Sullivan Gulch Water Treatment Facility.
- 12:15 p.m.** Lunch (Box lunch and water provided).
- 12:45 p.m.** Depart Stop 2 for Stop 3.
- 1:00 p.m.** Arrive Stop 3 - Historic Florida Mountain Pit and Exploration Drilling Historic Disturbance Overlook.
- 2:00 p.m.** Depart for Boise.
- 4:30 p.m.** Arrive in Boise.



Agenda for Sunday, June 4, 2023

All Day	ASRS Office/Headquarters – Room 440
8:00 a.m. - 4:30 p.m.	Integra DeLamar Mine Tour
12:00 p.m. - 5:00 p.m.	Registration and Exhibitor Setup – Exhibit Hall Room 400
4:30 p.m. - 6:00 p.m.	NEC Meeting – Room 430
6:00 p.m. - 8:00 p.m.	“Ice Breaker” Welcome Reception – Room 420

Agenda for Monday, June 5, 2023

6:30 a.m. - 7:30 a.m.	Haulin’ ASRS – Meet at Grove Hotel Lobby The ASRS Running group meets every morning.
7:30 a.m. - 5:00 p.m.	Registration – SW Foyer
8:00 a.m. - 9:00 a.m.	Breakfast – Room 400
9:00 a.m. - 5:30 p.m.	Exhibitor Displays – Exhibit Hall Room 400
9:00 a.m. - 12:00 p.m.	Plenary Session / Keynote Speakers – Room 400 Dustin Wasley – Conference Chair – Welcome Michele Coleman – ASRS President – President’s Welcome Brad Little – Idaho Governor (Tentative) Dan Silver – CDA Trust, An Idaho Reclamation Success Story Ron Quinn – Simplot – 40 Years of Reclamation at Smoky Canyon Mine 40 th Annual Meeting Celebration
12:00 p.m. - 2:00 p.m.	Awards Luncheon / ASRS Annual Business Meeting – Exhibit Hall Room 400
2:00 p.m. - 5:30 p.m.	Technical Sessions – Rooms 410 A/B/C
6:00 p.m. - 8:00 p.m.	Social Dinner at Beside Bardenay



Join us for a catered appetizers and drinks at Beside Bardenay at 600 West Grove Street. Set in the heart of Boise’s famous Basque Block, Beside Bardenay is in walking distance from the Boise Centre and downtown’s vibrant nightlife.

Agenda for Tuesday, June 6, 2023

6:30 a.m. - 7:30 a.m.
7:00 a.m. - 8:15 a.m.

Haulin' ASRS – Meet in Grove Hotel Lobby
Wild Women of Reclamation – Room 430

Every woman is welcome. Previous topics: Choosing your own path, mentoring, starting a business, and juggling a career with family and community obligations. Coffee, tea, and pastries will be provided.

7:30 a.m. - 5:00 p.m.
7:30 a.m. - 8:30 a.m.
9:00 a.m. - 5:30 p.m.
8:30 a.m. - 12:00 p.m.
12:00 p.m. - 2:00 p.m.
2:00 p.m. - 5:30 p.m.
2:00 p.m. - 5:30 p.m.

Registration – SW Foyer
Breakfast – Room 400
Exhibitor Displays – Exhibit Hall Room 400
Technical Sessions – Rooms 410 A/B/C
Lunch on your own
Technical Sessions – Rooms 410 A/B/C
Wyoming AML Seeding Certification Class – Room 430

The Wyoming AML Division will host a Seeding Specialist Certification Class. In this half-day practical training, reclamation professional will learn to develop diverse seed mixes, the nuances of ordering seeding material, equipment performance standards, proper calibration and operation techniques with seeding equipment. The class will also focus on planning, designing, construction management techniques, and tools aimed at improving vegetation establishment of diverse native plant communities.

5:30 p.m. - 7:00 p.m.

Student Poster Presentations Session – Room 420
Sponsored by Kleinfelder

Students will present their research posters and network with other academic and business professionals! There will be food, beverages, and a full bar.



Agenda for Wednesday, June 7, 2023

6:30 a.m. - 7:30 a.m.
7:30 a.m. - 5:00 p.m.
9:00 a.m. - 5:30 p.m.
8:30 a.m. - 12:00 p.m.
12:00 p.m. - 2:00 p.m.

2:00 p.m. - 5:00 p.m.
4:30 p.m. - 5:00 p.m.
5:00 p.m. - 7:00 p.m.

Haulin' ASRS - Meet in Grove Hotel Lobby
Registration – SW Foyer
Exhibitor Displays – Exhibit Hall Room 400
Technical Sessions – Rooms 410 A/B/C
Lunch/Student Awards and Guest Speaker:
Ryan Sistad – Better in our Back Yard – Exhibit Hall Room 400
Technical Sessions – Rooms 410 A/B/C
NEC Meeting – Room 430
ECP/Student Social Event
Sponsored by Haley & Aldrich and Navajo Transitional Energy Company

This event will bring together ECP/ Students and experienced professionals for valuable mentorship. The event will include food, beverages, and fun ways for ECP/Students and mentors to interact.



Technical Sessions – Monday, June 5, 2023

Time	BIOCHAR AND AML RECLAMATION SESSION 1A Room 410A Moderator – Debbie Page-Dumroese	WATERSHED AML AND AMD/ARD SESSION 1B Room 410B Moderator – Rio Franzman	WATER TREATMENT SESSION 1C Room 410C Moderator – Kennet Bertelsen
2:00 p.m. - 2:30 p.m.	Opportunities for Biochar to Remediate Forest Soils at Abandoned Mine Lands By Derek Pierson	Beyond reclamation and remediation, next steps in a recovered watershed By Amy Mackey	Tioga River Restoration: A Tale of Active Mine Drainage Treatment and Consumptive Use Mitigation By Thomas Clark
2:30 p.m. - 3:00 p.m.	Limiting Factors to Restore Abandoned Mine Lands with Biochar By Carlos Rodriguez-Franco	Watershed-Based Strategy for Treating ARD/AMD By J. Skousen	Treatment of Coal Mine Drainage with Hybrid Vertical Flow Ponds in the Midwest By Paul Behum
3:00 p.m. - 3:30 p.m.	Using Organic Amendments to Restore Abandoned Mine Lands in Northeastern Oregon By Debbie Page-Dumroese	The Role of Retention Basins in Alleviating Post-Mining Streams TDS Levels By Amir Hass	Genomics Application for Optimization of Constructed Wetland Treatment Systems for Oil Sands Process Water By Kaitlyn Trepanier
3:30 P.M. - 4:00 p.m. – BREAK – EXHIBIT HALL			
Time	BIOCHAR AND AML RECLAMATION (CONT) SESSION 2A Room 410A Moderator – Debbie Page-Dumroese	WETLAND RESTORATION / WATER MANAGEMENT SESSION 2B Room 410B Moderator – Allen Wellborn	SAGEBRUSH/SAGE GROUSE DISCUSSIONS SESSION 2C Room 410C Moderator – Paul Griswold
4:00 p.m. - 4:30 p.m.	Hydraulic Mines and Process-Based Restoration: Pilot Project at Grizzly Creek Diggins, Sierra County, CA By Nick Graham	Early Water Quality changes from stream and Wetland Restoration in Former Agriculture Land By Sebastian Teas	Reclamation & Restoration of Sage-Grouse Habitat By Josh Oakleaf
4:30 p.m. - 5:00 p.m.	Influence of Native Fungi Inoculation and Co-Application of Biochar/Biosolids of tailings By M. Al-Lami	Native Wetland Restoration Projects in the Tongue River Valley of the Powder River Basin By Allen Wellborn	The Effects of Root Enhancement Seed Technologies and Timing of Seeding on Wyoming Big Sagebrush Establishment By Michaela Owens
5:00 p.m. - 5:30 p.m.	Water Technical Division Meeting	Observe, Orient, Decide, Act: Using the OODA Loop in Long- Term Water Management During Mine Closure and Reclamation By T. Hughes	Wildlife Technical Division Meeting
6:00 p.m. - 8:00 p.m. - Social Dinner at Beside Bardenay			

Technical Sessions – Tuesday, June 6, 2023 (morning)

Time	THE IMPORTANCE OF GEOCHEMISTRY SESSION 3A Room 410A Moderator – Nick Tucci	CLIMATE, MICROBS, AND CARBON DIOXIDE SESSION 3B Room 410B Moderator – Gwen Geidel	PLANTS, PHYTOREMEDIATION, AND REVEGETATION SESSION 3C Room 410C Moderator – Sara Klopff
8:30 a.m. - 9:00 a.m.	Anthropogenic Versus Geogenic Source Determination of Heavy Metals in Residential Soils By Jenna Adams	Carbon Dioxide Mine Gas Investigation and Remediation By Omar Beckford	Australian Native Plants Phytoremediation By Farida Abubakari
9:00 a.m. - 9:30 a.m.	Geochemical Fingerprinting of Legacy Mining Activities at the Historic Jordan Creek Mining District By Nick Tucci, Rob Mullener	Microbes In Mine Reclamation: Bioecology, Biofertilizers, Bioeconomy By Andrew Harley	Revegetation on the Flat Creek Iron Mountain Mine Superfund Site By Damon Sump
9:30 a.m. - 10:00 a.m.	Engineering and Construction Technical Division Meeting	Innovations And Advancements to Enhanced Weathering By A. Adesipo	Progress Toward Restoring Native Vegetation in Northwest Montana and Central Wyoming By Mark Gentry, Taylor Cross
10:00 - 10:30 a.m. – BREAK – EXHIBIT HALL			
Time	RECLAMATION ACROSS IDAHO – SILVER VALLEY SESSION 4A Room 410A Moderator – Tony Wesche	MAMMAL AND INSECT IMPACTS FROM RECLAMATION SESSION 4B Room 410B Moderator – Mike Curran	GIS/MAPPING/DATA SESSION 4C Room 410C Moderator – Michele Coleman
10:30 a.m. - 11:00 a.m.	Bunker Hill Complex, Ninemile Basin Remediation Progress Update By Tony Wesche	Risks of Bioinvasion: Small Mammal and Insect Implications on Isolated Waste Cover Systems By M. Barney	Missouri's Land Reclamation Information System (LRIS) Success By Bill Zeaman
11:00 a.m. - 11:30 a.m.	Remedial Action Effectiveness at the Bunker Hill Superfund Site By Christina Johnson	Ecological Restoration for Insect Conservation within Natural Gas Fields By Mike Curran	Abandoned Mine Site Characterization using Electronic Field Tools By Nick Anton
11:30 a.m. - 12:00 p.m.	Ninemile Waste Consolidation Area By Cody Lechleitner	Concurrent Vegetation and Wildlife Mapping Assists Reclaimed Desired Plant Community Planning By P. Hunter	Listening to the Noise: What's in your Data Besides Data? By Paul Krogstad
12:00 - 2:00 p.m. - LUNCH ON OWN			

Technical Sessions – Tuesday, June 6, 2023 (afternoon)

Time	RECLAMATION ACROSS IDAHO – HISTORIC DISTRICTS SESSION 5A Room 410A Moderator – Dale Kerner	ARD/AMD DISCUSSIONS SESSION 5B Room 410B Moderator – Kennet Bertelsen	WYOMING AML SEEDING CERTIFICATION CLASS SESSION 5C Room 430
2:00 p.m. - 2:30 p.m.	Perpetua’s Stibnite Project – Milestones on the Road to Restoration By Dale Kerner	Efficacy of activated MgO on the treatment of AMD: A comparative study By Matome Lucky Mothetha	Wyoming AML Seeding Certification Class Instructors: Seth Cude, Joe Schroeder, and Josh Oakleaf
2:30 p.m. - 3:00 p.m.	Historic DeLamar Mining District - Emphasizing Reclamation and Closure Planning, Stakeholder Engagement and Community Outreach By Rob Mullener and Emily Hendrickson	A hybrid and stepwise approach using a series of planted constructed wetland for the treatment of AMD By Beauclair Nguengang	
3:00 p.m. - 3:30 p.m.	Technology Technical Division Meeting	Management of acid producing materials for the Route 220 Project in Virginia By Lee Daniels	
3:30 - 4:00 p.m. – Break – EXHIBIT HALL			
Time	RECLAMATION ACROSS IDAHO – PHOSPHATE PATCH SESSION 6A Room 410A Moderator – Allison Knutson	TAR CREEK SUPERFUND SITE DISCUSSION SESSION 6B Room 410B Moderator – Julie LaBar	WYOMING AML SEEDING CERTIFICATION CLASS (Continued) SESSION 6C Room 430
4:00 p.m. - 4:30 p.m.	Innovative Cover Methods/Approaches in the Phosphate Patch By Chris Guedes	Superfund Case Study, Tar Creek, Quapaw, OK By Summer King	Wyoming AML Seeding Certification Class Instructors: Seth Cude, Joe Schroeder, and Josh Oakleaf
4:30 p.m. - 5:00 p.m.	How Risk Assessment Avoided Unnecessary Reclamation By Jon Bronson and Anne Thatcher	Nature-Based Solutions Linking Reclamation to Remediation and Restoration on Derelict Mining Sites By Robert Nairn	
5:00 p.m. - 5:30 p.m.	Phosphate Patch Presentation By Joe Via	Effect of Water Chemistry and Time on the Sustainable Reuse of Recovered Iron Oxides as Phosphate Sorbents By M’Kenzie Dorman*	
5:30 - 7:00 p.m. – Student Poster Session – Room 420			

Poster Session and Networking Event– Tuesday, June 6, 2023

5:30 - 7:00 p.m. – Room 420

1	Assessing Indicators of Ecosystem Recovery on Reclaimed Minesites in Eastern Hardwood Forests By: I. Kennedy*, J. Franklin, D. Buckley, and K. Sena
2	Combined Stream and Wetland Restoration on Agricultural Ground: Bloody Run, Ohio By: E. Pokuah*, N. Kruse Daniels, K. Ositimehin, and Z. Rundell
3	Engineering with Nature to Develop Socially Sustainable Nature-Based Solutions: Natural Infrastructure to Address Complex Environmental Challenges By: H.N. Seago*, R.W. Nairn, D.M. Dorman*, J.I. McCann*, C.M. Morgan*, L.H. Olson*, O.C. Overton*, A.M. Meek*, J.M. Queen*, S.A. Dahle*, S.N. Taylor*, A.E. Richardson*, N.L. Shepherd, and R.C. Knox
4	Evaluating Technologies for Mining-Influenced Water (MIW) Treatment: Information and Data Needs By: B.A. Butler and M.K. Mahoney
5	Evaluation of the Use of Manure-Based Biochar for Zinc Retention at the Tar Creek Superfund Site By: J.I. McCann*, R.W. Nairn, and S. King
6	Hydrology and Biogeochemistry of Legacy Sediment Riparian Ecosystems By: C. Morgan* and R.W. Nairn
7	Impact of Riverbank Lupine (<i>Lupinus rivularis</i>) on Grand Fir (<i>Abies grandis</i>) Ectomycorrhizal Symbioses By: A.B. Labay*, R.A. Bunn, K.L. Poppe, and J.M. Bauman
8	New Tools for Making Science-Based Decisions for Oil and Gas Reclamation By: R. Mann, R. Lupardus, and M. Duniway
9	Physical Classification of Iron Oxyhydroxide Treatment Residuals for Reuse in Stormwater Treatment By: S.N. Taylor* and R.W. Nairn
10	Restoring Riparian Forests Using Assisted Migration as a Climate Change Adaption Strategy By: C.A. Harris*, A.P. Lawrence, and J.M. Bauman
	* Denotes Student

Technical Sessions – Wednesday, June 7, 2023 (morning)

Time	REVEGETATION AND REFORESTATION SESSION 7A Room 410A Moderator – Dennis Oakley	STREAM/FLOODPLAIN RESTORATION SESSION 7B Room 410B Moderator – Jason Poulsen	URBAN RECLAMATION SESSION 7C Room 410C Moderator – Kenton Sena
8:30 a.m. - 9:00 a.m.	Screening Native Species for Tolerance to Pb/Zn/Cu Tailings and Using Image-Based Analysis as a New Assessment Approach By M. Al-Lami	Floodplain Reconnection Stream Restoration Increases Water and Nutrient Retention By Natalie Kruse Daniels	Reclaiming the WVU Farm Woodlot for Economic Development By Jeff Skousen
9:00 a.m. - 9:30 a.m.	Competitive Interactions Of American Chestnut During Mine Reclamation By J. Bauman	Gills Creek, Columbia, Sc, Reclamation Enhancement Project Following 1000-Year Flood Event Impacts By Gwen Geidel	Urban Reforestation as Reclamation: Exploring Opportunities for Reclamation In An Urban Context By Kenton Sena
9:30 a.m. - 10:00 a.m.	Vegetation Technical Division Meeting	Building a Stream and Wetland Compensatory Mitigation Plan Integrated with an Active Mine By Dan Kline	Making The Case for Urban Stream Restoration and Urban Stream Channel Management By Natalie Kruse Daniels
10:00 - 10:30 a.m. – Break – Exhibit Hall			
Time	LANDFORM RECLAMATION AND COVER SYSTEMS SESSION 8A Room 410A Moderator – Kevin Houck	SEEDING AND REVEGETATION SESSION 8B Room 410B Moderator – Seth Cude	RENEWABLES AND RECLAMATION SESSION 8C Room 410C Moderator – Mehgan Blair
10:30 a.m.- 11:00 a.m.	Landform Design in Mine Reclamation: Is this the Future? By Peter Werner	Mulching and Soil Depressions for Revegetation of Oil and Gas Wells in Arid Ecosystems By R. Mann	Soil/Site Disturbance and Challenges for Utility Scale Solar facilities in Virginia By Lee Daniels
11:00 a.m.- 11:30 a.m.	Agronomic Assessment and Growth Media Management Practices for Reclamation Cover Systems By Jesse Dillon	Seed Mix Design and Implementation – A Practitioner's Guide for Successful Reclamation By Seth Cude	Native grassland revegetation on a utility scale solar development in South Texas By Micayla Pearson
11:30 a.m.- 12:00 p.m.	Open	Loblolly Pine Survival and Growth on a Mineral Sands Mine By Sara Klopff	Application of Geomatics for Assessment of Reclamation of a Large Mechanized Open Pit Mine: A Case Study By Pradeep Kumar
12:00 - 2:00 p.m. – Lunch/Student Presentation Awards and Guest Speaker (Ryan Sistad – Better in our Back Yard) – Room 400			

Technical Sessions – Wednesday, June 7, 2023 (afternoon)

Time	TEACHING AND LEARNING IN RECLAMATION SESSION 9A Room 410A Moderator – Kenton Sena	REVEGETATION MONITORING AND REPORTING SESSION 9B Room 410B Moderator – Mike Curran	MERCURY IN THE ENVIRONMENT SESSION 9C Room 410C Moderator – Steve Dent
2:00 p.m. - 2:30 p.m.	Engineering the Nature of Change: A Presidential Dream Course on Nature-Based Solutions By Robert Nairn	A Practitioners Perspective: Integrated AML Reclamation Monitoring Program By J. Schroeder	Mercury Contamination in Peru: Community Engagement to Assessment and Remediation By Bryn Thoms
2:30 p.m. - 3:00 p.m.	Campus as a Reclamation Classroom: A Case Study in Urban Reclamation from Lexington By Kenton Sena	Monitoring Strategies for Reclamation Programs Involving Multiple Sites By Mike Curran	Assessing health risks at a Soviet-era mercury mine: validation of XRF for humanitarian intervention in Kyrgyz Republic By S.L. Spearman
3:00 p.m. - 3:30 p.m.	Appalachian STEM Enrichment Academy Online and In Person K-12 Curriculum By Jen Bowman	Reclamation Monitoring and Management: Metrics, Key Performance Indicators, and Dashboards for Projects Across their Life Spans By Mike Curran	Remediation of Calcines and Site Closure of a Remote Mercury Mine By Gregory Reller
Time	PASSIVE TREATMENT SESSION 10A Room 410A Moderator – Tim Danehy	NEC Wrap Up Meeting Room 430	
3:30 p.m. - 4:00 p.m.	Passive Treatment Systems on Life Support – Pulling the Plug & Rebuilding By Buck Neely		
4:00 p.m. - 4:30 p.m.	Passive Treatment System Monitoring Utilizing Solar Powered Telemetry, A Case Study By Dan Guy		
4:30 p.m. - 5:00 p.m.	Sulfate Reduction in Bench and Pilot-Scale Passive Treatment Systems By Guadalupe Fattore	NEC Wrap Up Meeting Room 430	
EARLY CAREER PROFESSIONAL / STUDENT SOCIAL EVENT 5:00 – 7:00 p.m. Room 420 Hosted by Haley & Aldrich and Navajo Transitional Energy Company			

