34th Annual Meeting of the ASMR, April 9-13, 2017, Morgantown, West Virginia

2017 Joint Conference of the West Virginia Mine Drainage Task Force, American Society for Mining and Reclamation (ASMR), Appalachian Regional Reforestation Initiative (ARRI)

AMD

Practical Outfall Mine Water Treatment Applications - Challenges and Solutions ..... 1
B. Riley, D. B. J. Ceslovnik

A Geochemical Kinetics Module for AMDTreat to Estimate the Effects of Aeration on Rates of Decarbonation and Iron Oxidation ..... 2
C. A. Cravotta III, B. Means, B. Arthur

The Maelstrom Oxidizer - Astonishing Aeration System ..... 3
J. Hayden, J. Oliver

High Sulfate Mining Wastewater Treatment by Two-Stage Chemical Precipitation Process ..... 4
K. Banerjee, H. Kronebusch, S. Muddasani

A Case Study Evaluating Effluent Quality Following Chemical and Electrochemical Precipitation for Metals Removal from Acid Mine Drainage Water ..... 5
B. J. Lesikar, D. J. Kovalcik, C. J. Villela

Zinc and Nickel Sorption and Desorption Using a Mixed Algae Community Collected from a Mine Drainage Passive Treatment System ..... 6
E. E. Fielding, R. W. Nairn

Evolution of Trace Metal Removal Products in Field-scale Vertical Flow Bioreactors ..... 7
J. A. LaBar, R. W. Nairn

Metal Reclamation Units (MRUs Wetlands in a Box) for AMD and Nutrient Cycling ..... 8
C. Lennox

Advancements in Iron Terrace Design for Metal Mine Sites ..... 9
J. Gusek, L. Josselyn, E. Wolaver

Challenges of Designing and Building a Passive Treatment System with Limited Topography, Hydraulic Head, and Available Land Area ..... 10
Seasonal Storm-induced Metal Transport Dynamics Between Oxidative Passive Treatment Cells .....11
L. R. Oxenford, R. W. Nairn

Quantifying Hydraulic Conductivity in Mine Drainage Passive Treatment System Vertical Flow Bioreactors .....12
B. J. Page, R. W. Nairn

L. R. Oxenford, R. W. Nairn

A Field Demonstration of an Alternative Coal Waste Disposal Technology - Geochemical Findings .....14
P. T. Behum, L. Lefticariu, Y. P. Chugh

Sulfate Removal in Biochemical Reactors and Scrubbers Treating Neutral Low-Metal Concentration Mine Influenced Water (MIW) .....15
G. Fattore, J. Gusek, T. Clark, L. Josselyn

Passive Treatment of Sulfate from Mine-Influenced Water .....17
R. C. Thomas, J. S. Bays

Three Year Performance Evaluation of a Sulfate Reducing BioReactor for Mine Water Treatment in PA: Sulfate Removal, Sulfide Control, and TDS Reduction .....18
W. J. Walker

Water Related

A Feasibility Study for the Automated Monitoring and Control of Mine Water Discharges .....19
C. Vass, A. Noble

Understanding Storm Response of AMD Impacted Streams .....20
Z. I. Martin, N. Kruse


Mine Reclamation Applications of a New Water Budget Model: Wetbud .....22
W. L. Daniels, G. R. Whittecar, T. Thompson, Z. Agioutantis, S. Stone

Assessing How Hydrologic Isolation of Coal Mine Spoils Affects Streamflow Mechanisms and Water Chemistry Using Open Source Wireless Technology .....23
S. G. Fulton, J. Dowd, A. Thompson, C. R. Jackson
Seasonal Recovery of an Appalachian Stream Affected by Acid Mine Drainage and Municipal Waste Water. ...24

Field Predictors for TDS Generation Potential from Appalachian Mine Spoils. ...25
D. K. Johnson, W. L. Daniels, C. E. Zipper

Relationship Between Aqueous and Sediment Chemistry and Biological Recovery Across a Gradient of Acid Mine Drainage Impairment. ...26
N. A. Kruse, S. Damdinbal, D. L. Lopez

The Appalachian Stream Syndrome: Complex Local Conditions and Regional Metacommunity Degradation Caused by the Accumulation of Multiple Stressors. ...27
E. R. Merriam, J. T. Petty

The Impacts of Acid Mine Drainage Remediation Projects on Water Quality, Aquatic Macroinvertebrate, and Fish Populations in the Deckers Creek Watershed, Monongalia and Preston Counties, West Virginia. ...28
N. P. Revetta

Water Quality and Biotic Condition in Mining-influenced Appalachian Headwater Streams: An Overview of a Long-term Study. ...29

Effects of Longwall Mining on Aquatic Resources at the Bailey Mine in Southwestern Pennsylvania. ...30
M. L. Shema, J. M. Silvis, M. R. Haibach

Selenium Dynamics in Mining-Influenced Headwater Streams of Central Appalachia. ...31
K. M. Whitmore, S. H. Schoenholtz, C. E. Zipper, D. J. Soucek

Water Quality and Freshwater Mussel Status in Mining-Influenced Virginia-Tennessee Rivers. ...32
C. E. Zipper, B. Beaty, J. W. Jones, C. Lott, R. Stewart

Groundwater Modeling Used to Design of a Tailings Impoundment Removal near Yellowstone National Park. ...33
T. H. Henderson, M. W. Borduin

Seasonal Recharge and Groundwater Storage in a Below Drainage Mine-pool. ...34
E. Perry, T. Gray, H. Trexler, S. Poborsky

North Branch Potomac River Mine Pool Assessment Study. ...35
N. D. Pointon, J. Felbinger
Groundwater Tracing in Mine Pools Above the Cabin Creek Oilfield in Kanawha County, West Virginia....36
A. Schaer

Forestry, Wildlife

Upland Forest Development in a Reconstructed Watershed After Oil Sands Mining in Northern Alberta, Canada....37
B. Pinno, F. Leishman, R. Errington, M. Merlin, S. Landhäusser

Reclamation Experiments on the Allegheny Front: The Push for Bio-Energy, Habitat, and Timber....38
B. Caterino, J. Schuler, S. Grushecky, J. Skousen

Surface and Subsurface Tillage Effects on Soil Properties and Tree Growth at an East Texas Lignite Surface Mine....39
H. Z. Angel, H. M. Williams, J. P. Stovall

Survival and Growth of Woody Plants on Four Reclaimed Mine Sites....40
A. Monteleone, J. Skousen, L. McDonald, J. Shuler, R. Williams

The Effects of Castor canadensis (North American Beaver) Repopulation on a Mine Drainage Impacted Stream....41
N. L. Shepherd, R. W. Nairn

Effect of Grading on Productivity of High-Value Tree Species in Appalachian Surface Mines....42

Flight 93 National Memorial Reforestation Project....43
M. C. Tyree, J. Larkin, S. Eggerud, P. Angel, M. French

Some Thoughts on Planting Native Tree Species in Mineland Reforestation....44
M. B. Adams

Regeneration Dynamics of Seedling Origin Aspen: Working Towards Resiliency in Forest Restoration....45
C. M. King, S. M. Landhäusser

Tree Seedling Survival After Planting Under Varying Treatments on Reclaimed Mine Land....46
P. J. Boleman, R. M. Swab

Growth Rates of Hardwood Trees Nine Years after Reclamation in Response to Substrates and Amendments....47
K. Dallaire, L. Wilson-Kokes, P. Emerson, C. Delong, C. Thomas, J. Skousen
Establishment of Hybrid Poplar on a Reclaimed Mine Site in Southern West Virginia...48
A. Hass, R. S. Zalesny Jr., D. Patel

Loblolly Pine Survival and Growth on a Reclaimed Mineral Sands Mine in Southeastern Virginia
S. Klopf

Ecological Restoration on the Mower Tract within the Monongahela National Forest, WV...49
C. Barton, S. Jones, S. Eggerud, T. Kuntz, A. Branduzzi, P. Angel

Conservation of Northern Long-eared Bat Habitat at an Aggregate Mine in Westmoreland County, Pennsylvania.....50
C. D. Rockey

Natural Processes for the Restoration of Large Mines.....51
D. Polster

Cost-effective Strategies for the Restoration of Large Disturbances.....52
D. Polster

Reclamation

Woods-run Chips as a Filter Sock Matrix.....53
S. T. Grushecky, L. McDonald

A Pathway to Walk-Away? – 30 Year Old Technology to Suppress Acid Rock Drainage Revisited.....54
J. Gusek

New Soil Reconstruction Method for Reclaiming Subsided Land with Yellow River Sediments.....55
Z. Hu

Utilization of Extractable Soil Test Sulfate as an Indicator for Acid Producing Pyritic Sulfur.....56
D. J. Lang, K. K. Crouse

Effects of Alternative Liming Strategies on Leachate Quality and Soil Morphology of Acid-Forming Dredge Materials .....57
Z. Orndorff, W. L. Daniels, S. Klopf, A. Wick

Pollution Loading Tracking to Characterize Success of an Anoxic Limestone Drain Installation on Lambert's Run, Southwestern Pennsylvania.....58
Geochemical Controls on Limestone Utilization in Abandoned Mine Land Reclamation .....59
P. A. Giri, B. Tracy, G. A. Olyphant

Effective Modifications to the Design and Application of Constructed Wetlands and Limestone Beds .....60
B. Means, M. Crittenden

Objectives and Design Solutions of a 1000-year Evapotranspiration-Capillary Surface Barrier System .....61
Z. F. Zhang, D. M. Wellman

Revegetation success at several Montana sites using soil amendments .....62
S. R. Jennings

Restoration Techniques to Increase Survival and Vigor of Wyoming Big Sagebrush Seedlings .....63
A. P. Jacobs, P. D. Stahl

Soil Changes During Stockpiling and After Reclamation at Three Wyoming Natural Gas Production Areas .....64
J. B. Norton, C. F. Strom

Sludge Impact on the Stabilization of the Fire Road Mine in New Brunswick .....65
M. Coleman, K. D. Phinney

Reclamation of Refuse Piles using Fluidized Bed Combustion Ash in the Blacklick Creek Watershed, Pennsylvania .....66
R. Martin, G. L. Aaron, G. Greenfield

Transforming Abandoned Mine Lands into a Botanic Garden .....67
G. R. Watzlaf, R. S. Hedin, B. C. Hedin, K. Kaiser, R. L. Beam

Metals got you Down? A Look at Effective Mining-Influenced Water Treatments .....68
P. J. Dugan, D. M. Hartsough, H. Schuster

Preventing Acid Rock Drainage Can Source Control Really Be Successful? .....69
P. Eger

What Happens to a Mine after Mining? Making Mine Land Reclamation More of a Community Asset .....70
M. C. Korb

Production of an Iron Oxide Product from Mine Water: 15 Year Report .....71
R. S. Hedin
Yields and Ethanol Production Potential of Switchgrass and Miscanthus on Reclaimed Mine Lands, S. Scagline, J. Skousen, T. Griggs

Native Vegetation in Reclamation: Improving Habitat and Ecosystem Function Through Using Prairie Species in Mine Land Reclamation, R. M. Swab, N. Lorenz, S. Byrd, R. Dick


The Complicated Role of CO2 in Mine Drainage Treatment, R. S. Hedin, B. C. Hedin


Bond Release Verification Requirements for Successful Reclamation at Wyoming Surface Coal Mines, A. K. Waitkus

Assessing the Benefits of at Source vs. in Stream AMD Treatment: Implications for Managing Water Liabilities Under the WVDEP's Bond Forfeiture Program, M. P. Sheehan, P. F. Ziemkiewicz

Water Treatment: Planning for Forever, New Options, D. T. Eyde, D. A. Baker

Local Government Entities in Improving AMD Impaired Waters, D. Wagner, D. Thomas, E. Fuller, D. Hedge

Geocoding Locations of Historic Reclamation Research Sites using Google Earth, R. Li


Detecting the Presence of Coal Mining Impacts by Predicting Acid Mine Drainage Impacted Streams Using Aerial Imagery, J. R. Bowman, S. C. Porter, S. A. Miller
Unmanned Aerial Vehicle (UAV) Survey for Year-End Mining Reclamation Estimation ..... 84
M. S. Maguire

Applying Landforming to Reclamation: A Case Study in Central Appalachia ..... 85
L. C. Hopkinson, J. D. Quaranta, J. Hause, J. Lorimer, R. Park, I. Santos

Subsidence Wetland Formation and Transition in the High Ground Water Table Coal Mining Areas ..... 86

3D Modeling of the Sand Coulee Basin Abandoned Mine Lands ..... 87
K. M. Brown

Exploration of a Multi-Sensor Approach for the Detection and Mapping of Coal Seam Fires in the United States ..... 88
A. J. Sivitskis, J. Richards

Communicating Maintenance of Acid Mine Drainage Treatment Projects in Ohio ..... 89
S. D. L. Cornwell

Coupling Technical Assistance with Student Service Learning in Mine Water Reclamation ..... 90
K. J. Green, M. H. Whited, W. H. J. Strosnider

Development of International Standards for Mine Reclamation ..... 91
W. L. Daniels, S. Carpenter

Carbon Dioxide: A Global Problem in Search of a Rational Global Solution ..... 92
K. C. Vories

Development of a Low-cost Remote Water Quality Monitoring System in Acid Mine Drainage Impaired Watersheds ..... 93
N. A. Kruse, G. G. Ogallo, H. Kruse

Posters

Stand Level Nutrient and Carbon Content Across One Rotation of Loblolly Pine Plantations on a Reclaimed Surface Mine ..... 94
H. Z. Angel, J. S. Priest, J. P. Stovall, B. P. Oswald, Y. Weng, H. M. Williams

Competition Among Understory Plants Varies Depending on Reclamation Soil and Fertilization ..... 95
J. Buss, K. Stratechuk, B. Pinno
Seasonal Recovery of an Appalachian Stream Affected by Acid Mine Drainage and Municipal Waste Water ....96

Utilizing an Unmanned Aerial System and a High Resolution Multi-Spectral Sensor to Evaluate Ecosystem Health and Predict Surface Water Quality .....97
B. K. Holzbauer-Schweitzer, R. W. Nairn

Reclassification of the Upper Little Juniata River Based on Continuous In-Stream Monitoring .....98
S. Long, W. Strosnider, J. Eckenrode

Labware Evaluation for Selenium Sorption Experiments .....99
R. K. McGrail, L. M. McDonald

Acid Mine Drainage Water Testing and Metals Analysis at Morris Creek, WV .....100
J. Serafin, L. Cox

Geomorphic Reclamation and Landscape Heterogeneity: A landscape approach to quantify geomorphic stability and vegetation community diversity .....101

Evaluation of Risk Posed by Trace Metals in Soils of a Mining-Impacted Agricultural Watershed .....102
A. L. Sikora, R. W. Nairn

Mass Transport Controls on Aluminum Removal in Limestone-Based Treatment Systems .....103
C. Spellman, D. Madl, A. Rose, E. Zovinka, J. Bandstra, W. Strosnider

Drone Imagery Acquisition to Perform Volumetric Analysis for Landscape Mapping .....104
M. P. Strager, P. Kinder, J. A. Kimmet, A. Hentz

Phosphorus, Iron and Trace Metal Interactions at the Sediment Layer-Water Column Interface: The Role of Recovered Mine Drainage Residuals .....105
Z. Tang, R. W. Nairn

A Seasonal Comparison of the Passive Abandoned Coal Mine Remediation System at Wingfield Pines .....106
M. Valkanas, N. Trun

A Drainable Limestone Bed Constructed in a Botanic Garden .....107
G. R. Watzlaf, R. S. Hedin, B. C. Hedin
Cluster planting: A New Prescription for Enhancing Structural Diversity in Reclaimed Boreal Forest .....108
B. Pinno, A. Schoonmaker, R. Albricht

Pollution Loading Tracking to Characterize Success of an Anoxic Limestone Drain Installation on Lambert's Run, Southwestern Pennsylvania .....109