Technology Innovation News Survey

Entries for May 16-31, 2019

Market/Commercialization Information

MINE DRAINAGE TECHNOLOGY INITIATIVE (MDTI) COOPERATIVE AGREEMENT Department of the Interior, Office of Surface Mining (OSMRE), Funding Opportunity S19AS00005, 2019

The Mine Drainage Technology Initiative (formerly the Acid Mine Drainage Initiative) provides a forum for collaboration and information exchange to enable members to develop (1) an understanding of acidic and toxic mine drainage (MD) for better prediction, avoidance, monitoring, and (4) auccessful remediation (2) innovative solutions to MD water-quality provides a forum for collaboration and information exchange to predict MD prior to mining, and (4) auccessful remediation (2) innovative solutions to MD water-quality (2) Thest science' practices to predict MD prior to mining, and (4) auccessful remediations (5) movement (2) movement (

PAPUA NEW GUINEA ASGM MERCURY REDUCTION Department of State, Bureau of Oceans and International Environmental and Scientific Affairs, Funding Opportunity SFOP0005869, 2019

Papua New Guinea (PNG) is preparing for obligations it will take on for its artisanal and small-scale gold mining (ASGM) sector once it joins the Minamata Convention on Mercury. Specifically, information obtained through this project will be instrumental in the development of PNG'S National Action Plan for ASGM. This project will inventory the indigenous ASGM sector in PNG to determine how much mercury and what kinds of processing techniques are being used, as well as associated demographics. ON/U.S. nonprofit/ongovernmental organizations [501(c)]), foreign nonprofit organizations, and public international organizations are eligible for this grant. A single award is anticipated from estimated funding of \$398,000. The closing date for applications is July 8, 2019. <u>https://www.grants.gov/web/grants/view-apportunity.html?appld=315821</u>.

ARCHITECT ENGINEER FIRM FOR ABANDONED MINE LANDS Dept. of Interior, Office of Surface Mining Reclamation and Enforcement, Lakewood, CO. Federal Business Opportunities, Solicitation 14050319R0001, 2019

The Office of Surface Mining Reclamation and Enforcement's Western Region Federal Reclamation Program (WR-FRP) intends to solicit for the services of a geotechnical engineering firm to provide A-E design services for the reclamation of hazardous abandoned coal mine sites under NAICS code 541330. The engineering work will include site investigations; exploratory drilling or excavation; sampling and analysis of mine gases and mine drainage; surveys, site map development, and historic mine map research; development, development and historic mine, development, development and historic mine, Gregon, Arizona, and South Dakota; and on reservation lands affected by historic coal mining. Go to FedConnect for solicitation details at https://www.fedconnect.net/FedConnect/doi=140531380.00118agency=DDI [Note: It might be necessary to copy and paste the URL into your browser for direct access]. Release of the solicitation is anticipated in July 2019. https://www.fedconnect.net/FedConnect/doi=140531380.00118i.gov. Release of the solicitation is anticipated in July 2019. https://www.fedconnect.net/FedConnect/doi=140531380.00118i.gov. Release of the solicitation is anticipated in July 2019. https://www.fedconnect.net/FedConnect/doi=140531380.00118i.gov. Release of the solicitation is anticipated in July 2019. https://www.fedconnect.net/FedConnect/doi=140531380.00118i.gov. Release of the solicitation is anticipated in July 2019. https://www.fedconnect.net/FedConnect/doi=140531380.00118i.gov. https:/

NOT-FOR-PROFIT ACID MINE DRAINAGE WATERSHED COOPERATIVE AGREEMENT (WCAP) PROGRAMS Department of the Interior, Office of Surface Mining Reclamation and Enforcement (OSMRE), Funding Opportunity S19AS00003, 2019

The not-for-profit Acid Mine Drainage (AMD) Reclamation-Watershed Cooperative Agreement Program seeks applications from eligible participants to restore streams affected by AMD to a level that will support a diverse biological ecosystem and provide recreational opportunities for the community. Eligibility is limited to not-for-profit organizations with IRS 501(c)(3) status. Federal, state, or local governments and colleges or universities are not eligible to receive direct funding Cost sharing is not required. About 20 awards are anticipated total program funding of §3.5M (Wavard Celling; \$100,000 -- Award Floor: §35,000). Applications will be considered on a continuing/rolling basis as they are received. Closing date: September 6, 2019, at 11:59 PM ET. <u>https://www.grants.gov/weh/grants/view-opportunity.html?oppid=315023</u>

SMALL BUSINESS INNOVATION RESEARCH (SBIR) PHASE I SOLICITATION

U.S. Environmental Protection Agency, Cincinnati Acquisition Divisio Federal Business Opportunities, Solicitation 68HERC19R0052, 2019

U.S. EPA anticipates making about 20 Phase I SBIR awards of up to \$100,000 each and not to exceed a 6-month term of performance. The likely contract start date is April 1, 2020. The Phase I effort is for "proof of concept" of the proposed technologies, more than 15 listed areas of interest are mining site characterization and remediation technologies, novel technologies for the destruction of PFAS in water and wastewater; and a 3-D gamma camera to map radiological technologies in the destruction of PFAS in water and wastewater; and a 3-D gamma camera to map radiological technologies. The advector technologies in the destruction of PFAS in water and wastewater; and a 3-D gamma camera to map radiological technologies. The advector technologies in the destruction of the destruction of

SOUTHWEST JEFFERSON COUNTY MINING SUPERFUND SITE REMEDIATION Environmental Protection Agency. Office of Acquisition Solutions, Region VII, Lenexa, KS. Federal Business Opportunities, Solicitation 68HE019R90016, 2019

EPA has posted a total small business set-aside presolicitation notice on FedBizOpps for a requirement for the Southwest Jefferson County Mining Superfund Site remediation of OU1 residential soils under NAICS code 562910. When additional details are available, they will be posted on FedConnect at https://www.fedconnect.net/FedConnect/2dor=68HE0719R0016&agency=EPA or under reference number 68HE0719R0016.

Cleanup News

A NOVEL IN-TUNNEL TREATMENT REMEDY AT THE CAPTAIN JACK MILL SUPERFUND SITE Jenkins, J. | Technical Sessions: Smart Mining: Resources for a Connected World, 24-27 Feb 2019, Denver, Colorado. p 76, 2019 A novel in-tunnel treatment remedy is operating at the Captain Jack Mill Superfund Site near Ward, Colorado. The remedy includes bulkhead with a flowthrough pipe, limestone-packed adit section, recirculation system, monitoring wells with in situ water quality monitoring, and an electroresistivity-tomography system. The concept involves flooding the mineralized zones along the adit, providing initial neutralization, recirculation, monitoring water quality changes near the adit, and determining if pre-mining conditions can be achieved. System design allows flexibility for additional amendments, if needed. Operations began in March of 2018. See more on this project in a video presented by Mary Boardman at the 2018 San Juan Mining & Reclamation Conference, Creede, Colorado: <u>Titus-Unawy nouther computation becanning of the Captaning Accessed and the Captaning Accessed and the Captaning Accessed and the Captaning of the Captaning of the Captaning Captaning Conference, Creede, Colorado: <u>Titus-Unawy nouther computation becanning and captaning and setter States</u> Captaning Cap</u>

RECLAMATION OF THE MCLAREN TAILINGS: THE REST OF THE STORY

Bennett, M., T. Henderson, and A. Coleman. 36th Annual Meeting of the American Society of Mining & Reclamation, 3-7 June, Big Sky, MT, 73 slides, 2019

In late 1960, Soda Butte Creek was considered the most polluted stream entering Yellowstope National Park. The contamination source was the McLaren Tailings impoundment, constructed in the historic channel and floodplain of Soda Butte Creek was considered the most polluted stream entering Yellowstope National Park. The contamination source was the McLaren Tailings impoundment, constructed in the historic channel and floodplain of Soda Butte Creek was considered to stabilize/remove 31,140 m 3 cm might be flood to stabilize for the source of th

FRENCH GULCH RESTORATION: ABANDONED MINE TO NATIVE FISH HABITAT Barnes, M. | 36th Annual Meeting of the American Society of Mining & Reclamation, 3-7 June, Big Sky, MT, 48 slides, 2019

CHALLENGES TO MINE BACKFILLING IN POOR ROCK FORMATION WITH HIGH ARTESIAN MINE WATER PRESSURE

Gamal, M., D. Hibbard, and M. Bautz. 36th Annual Meeting of the American Society of Mining & Reclamation, 3-7 June, Big Sky, MT, 23 slides, 2019

The recent backfilling of mine voids in areas that were previously mitigated in the late-1980s and mid-1990s was a challenging project. The mines are located within poor to very poor-quality bedrock at the Glenrock No. 1 and No. 2 Mines in Wyoming, Parts are flooded and were likely the cause of localized flooding within adjacent homes due to the unusually high water table. Grout was injected in areas to ensure that mine voids, rubble, and weak disturbed overburden note were sufficiently filled with grout. The elastor-plastic rebund of the poor-quality to return to the ground surface upon cessation of grout injection. Recommendations were presented to minimize and control such events. Also presented was a detailed groundwater study to determine if the deformation associated with mine *Lifection* and entry of the weak overburden nock allowing permeation of water to assist in creating artificial artific

OVERVIEW OF ACTIVE MINE DRAINAGE TREATMENT FACILITIES CURRENTLY OPERATED BY THE PA-DEP-BUREAU OF ABANDONED MINE RECLAMATION Beam, R.L. 1 2019 West Virialma Mine Drainagene Task Errors Stronoshum, 24.27 March, Mordantown, WV. 49 Sildes, 2019

Coal mining began in Pennsylvania in the mid-18th century. As a result of mining activities, most of which occurred prior to any environmental regulations, significant damage to water resources has occurred. PA currently has in excess of 5,500 miles of streams impaired due to coal mine drainage. This presentation provides an overview of Pennsylvania's current and planned active treatment facilities. The history and treatment configurations of the sites are presented as well as cost-benefit analyses for each of the facilities. The presentation also shares some unique challenges, practical applications, and lessons learned. https://wundtackforer.files.wordness.com/2019/10/2019-1600-beam-bam-active-treatment-systems-2019-wy, task force_final-version pdf.

Demonstrations / Feasibility Studies

LAND APPLICATION DISPOSAL SYSTEM DESIGN FOR BIOCHEMICAL REACTOR TREATED EFFLUENT Anton, N.R., D.T. Shanight, C.S. Storar, M.J. Fischer, E.M. Janoviak, and B. Lala, Sith Annual Meeting of the American Society of Mining & Readmation, 3-7 June, Big Sky, MT, 26 slides, 2019

At the mine waste repository for the Upper Tenmile Creek Mining Area Superfund Site, Montana, collected leachate water has been managed in an active water treatment plant and pilot biochemical reactor (BCR) system, with disposal to a land application disposal (LAD) system since 2003. In 2018, the design was completed for a full-scale leachate passive treatment system utilizing parallel BCR cells, post-treatment settling, aeration, limestone channels, and a gravity-operated LaD system. The new system is construction will begin in 2019, and the existing water treatment infrastructure will be decominissioned after the new system is operational and functional. The presentation includes the critical passive treatment design components and provides details of the pre-design investigation and design approach for the LAD system. Including field sting for the LAD, test bits, soil lithology logging, permeability testing, soil metal sorption studies, metal sorption studies, metal sorption studies, metal sorption studies, and the system is construction will be accoministicate, and the system is construction will be accoministicate, and the system is construction will be accoministed. The AD, test bits, soil lithology logging, permeability testing, soil metal sorption studies, metal sorption studies, metal sorption studies, and the system is construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatment is a construction will be accoministed. This AD water treatm

CASE STUDY: PERFORMANCE OF THE OPERATING DEMONSTRATION-SCALE CONSTRUCTED WETLAND TREATMENT SYSTEM AT MINTO MINE Bouchard, E., C. Prentice, R. Herbert, R. Martz, B. Eisner, V. Friesen, and M. Simair. 41st British Golumbia Mine Reclamation Symposium, 17-20 Septembert, Williams Lake, BC, 2018

41st Dittain Counting mine Reclamentary in a co-separative, minute carry, correct wetland treatment system (CWTS) for water treatment at closure. The CWTS is currently in the demonstration-scale and optimization stage preceding full-scale implementation. The CWTS is successfully treated constituents of potential concern in the mine site's sub-arctic continental clinate. *Carex aquatilis* (aquatic sedge) and aquatic mosses (bryophytes) from natural wetlands on site water and for planting, while water mine-impacted seegage water was used as feed water. The CWTS was designed to target specific physicochemical parameters for formed and refined through off-stee pilot-scale testing), which enable denitrifying selenium- and sulfate-reducing bacteria to treat nutrients, metals, and metalloids in the water. The CWTS treated targeted constituents of potential concern in the following extents and percentages: cadmium 80% (from 0.291 µg/L to 0.199 µg/L), conjet 65% (from 49.1 µg/L to 1.91 µg/L), and inter a wet and sulfate reducing bacteria to treat nutrients, metals, and metalloids in the water. The CWTS treated targeted constituents of potential concern in the following extents and percentages: cadmium 80% (from 0.291 µg/L to 0.199 µg/L), contrated wet 50% (from 49.1 µg/L to 1.91 µg/L), and inter a water and wet and the same of operational conditions https://one.public.to.5.936/litens/L 0.5.94/litens/L 0.5

MINE-AFFECTED WATER MINIMIZATION TECHNOLOGY - 3 YEARS OF DEVELOPMENT Drak, A. | Water in Mining Conference, 9-10 April, Toronto, ON, 34 slides, 2019

The MaxH₂O Desalter technology was pilot-tested to measure its effectiveness of treating acid mine drainage. The system removes sulfate ions by crystallization of calcium sulfate in the Crystalactor® while concentrating the wastewater in a reverse osmosis (RO) system. During the pilot, continuous crystallization of the calcium sulfate in the integrated salt precipitation unit maintained the saturation index in the range of 800%-1,200% during operation. The system operated without the addition of chemicals other than anticalant and produced pellets of more than 90% dry solids content that do not require further situade dewatering treatment. Depending on the effluent requirements, the obtained RO brine stream can be partially or completely blended with the RO product, further increasing the total recovery of the system. <u>https://water.ontent/unload/sites/61/2011/91(4/Jex-Drak.pdf</u>. Also see https://water.ontent/unload/sites/61/2011/91/Jex-Drak.pdf. Also see <a href="https://water

2014 TREATABILITY STUDY DATA EVALUATION: BARKER-HUGHESVILLE MINING DISTRICT SUPERFUND SITE U.S. EPA Region 8, 1050 pp, 2017

In 2014, two treatability studies were conducted for the Barker-Hughesville Mining District Superfund Site as part of the remedial investigation/feasibility study process. Year 2 of the Danny T Adit study continued the 2013 year 1 field pilot

study to evaluate various passive and semi-passive methods for treatment of the Danny T Mine adit water. The bench-scale study for the Tiger Mine was focused on potential in situ-based treatments that could be deployed inside the underground mine workings area. A representative mine discharge water (Tiger mine adit Ti-AD004, http://firenbew?adit/) was collected in bulk and analyzed at the treatability laboratory in batch container tests with various reagents. The report summarizes each of these studies, including their objectives, experimential and sampling procedures, results, conclusions, and recommendations. <u>http://semanih.eng.utwirk/10/18/178788.ndf</u>

SELENIUM, URANIUM, AND NITRATE: TREATMENT OF TROUBLESOME CONTAMINANTS IN MINING WASTEWATERS - EBR CASE STUDIES Opara, A. J. Adams, J. Fudyma, and J. Bowden. Journal of American Society of Mining and Reclamation 7(2):19-34(2018)

This study presents three bench- and onsite pilot-scale case studies using electro-biochemical reactor (EBR) technology for Se, U, and NO₃ bio-reduction and removal from mining wastewaters. The studies used different mining waters and each were contaminated with varying concentrations of Se, U, and NO3. The EBR technology treated the waters to 3. N. <u>thrits. Nethorals/Uncertaines/Uncer</u>

Research

A PERMEABLE REACTIVE BARRIER (PRB) FOR THE REMOVAL AND IMMOBILIZATION OF SELENIUM IN SEEP WATER AND SHALLOW GROUNDWATER AT A PHOSPHATE MINE IN SOUTHERN IDAHO: RESULTS OF BENCH SCALE TESTING Walker, W.J., D. Tokke, M. Winght, J. Hamilton, C. Schreier, and J. Peterson. Journal American Society of Mining and Reclamation 7(3):20-44(2018)

This bench study tested whether a permeable reactive barrier (PRB) could treat Se-contaminated groundwater and seep water from a phosphate mine in Idaho. The study consisted of: (1) a test to determine the chemistry of the site-water and the components of the proposed reactive barrier (PRB) could treat Se-contaminated groundwater and seep water from a phosphate mine in Idaho. The study consisted of: (1) a test to determine the chemistry of the site-water components of the proposed reactive barrier (PRB) could treat Se-contaminated groundwater Se was reduced from 1 mg/L, to < 0.02 mg/L in the first 3 hours of column contact time, well bitsr://www.asmi.is/bitaria/Discussion/I senders/I asmi.is/bitaria/Senders/I a

REMEDIATION OF ACID MINE DRAINAGE-IMPACTED WATER BY VETIVER GRASS (CHRYSOPOGON ZIZANIOIDES): A MULTISCALE LONG-TERM STUDY Klisklia, J.D., D. Sarkar, S. Panja, S.V. Sahi, and R. Datta. Ecological Engineering 12:97-108(2019)

The study developed a cost-efficient and sustainable floating treatment wetland system using vetiver grass (*Chrysopogon zizanioides*). Year-long large- and small-scale hydroponic experiments were used to determine the effectiveness of vetiver for treating acid mine drainage-impacted waters from the Tab-Simco mine size in southern Illinois. For the large-scale mesocosm study, vetiver rafts were suspended in 100-gal containers. Water quality was monitored by measuring changes in toxins. For the large-scale mesocosm study, vetiver rafts were suspended in 100-gal containers. Water quality was monitored by measuring changes in toxins and ercording visual changes in root and shoot coloration and morphology. There removal of Fe (51%) and Fb (51%) and Fb (51%), Toxicity characteristic leaching procedure showed that vetiver biomass was not hazardous waste as a result of metal accumulation. From the small-scale experiment, there was near complete removal of Sud (11%) and Cu (610%). Toxicity characteristic leaching procedure showed that vetiver biomass was not hazardous waste as a result of metal accumulation.

PERFORMANCE OF A SULFIDOGENIC BIOREACTOR INOCULATED WITH INDIGENOUS ACIDIC COMMUNITIES FOR TREATING AN EXTREMELY ACIDIC MINE WATER Gonzales, D., Y. Liu, D.V. Gomez, G., Southam, S. Hedrich, P. Galleguillos, C. Colipai, et al. Minerais Engineering 131:370:375(2019)

This study tested the performance of a low pH sulfidogenic bioreactor inoculated with an indigenous microbial community to treat mine-impacted water. The inoculum was obtained from anaerobic sediments collected from an acidic river located in northern Chile. The sulfidogenic bioreactor system (2.3 L) was operated as a continuous flow mode unit for 99 days at 30°C and fed with synthetic water based on the chemical composition of the acidic river. The bioreactor pH was set to 4.5 initially and was increased in stages to pH 5.0 during the experiment. Results show that zinc concentrations in liquors draining the bioreactor were below the detection level in most of the samples analyzed. Increase analyzed is the stage of the chemical composition and the stage of the submitted stages analyzed. Increased in stages to the stage of the

APPLICATION OF RESPONSE SURFACE METHODOLOGY AND DESIRABILITY FUNCTION IN THE OPTIMIZATION OF ADSORPTIVE REMEDIATION OF ARSENIC FROM ACID MINE DRAINAGE USING MAGNETIC NANOCOMPOSITE: EQUILIBRIUM STUDIES AND APPLICATION TO REAL SAMPLES Gugushe, A.S., A. Ngombolo, and P.N. Nomngongo. Molecules 24:1792(2019)

This study tested the effectiveness of magnetic multi-walled carbon nanotube/zeolite nanocomposites to adsorb and remove arsenic ions in simulated and real acid mine drainage samples. Adsorption studies demonstrated that the nanoadsorbent can remove arsenic in simulated samples within 35 min. After separation from the solution, the nanoadsorbent was washed in a 0.05 mo/L HCL solution for regeneration, and was reusable for at least 10 cycles of adorption-discorption with most solution and the separation from the solution of the arsenic removal from adds mind animage.

A REVIEW ON TREATMENT OF ACID MINE DRAINAGE WITH WASTE MATERIALS: A NOVEL APPROACH Saha, S. and A. Sinhar S. And S. Sinhar S. Sandar S.

The present study reviewed different aspects of treating acid mine drainage (AMD) with active treatment and waste materials and factors associated with the treatment process. The results from the investigation showed that fly ash, metallurgical siag, and cement kin dust raise the pH of acidic solution more, in comparison to zero-valent iron and organic waste, due to their richness in lime content. Metal removal from AMD varied, due to the composition of AMD and the characteristics of waste materials. <u>https://unvel.new.org.invel</u>

General News

PROGRESSES IN RESTORATION OF POST-MINING LANDSCAPE IN AFRICA Festin, E.S., M. Tigabu, M.N. Chileshe, S. Syampungani, and P.C. Oden. Journal of Forestry Research 30(2):361-396(2019)

This review documents the state-of-knowledge and identifies gaps in the restoration of the post-mining landscape in Africa through literature review. Findings included substantial progress in identifying species suitable for phytoremediation, a lack of studies to evaluate the feasibility of organic amendments to promote autochthonous colonization of mine wastelands or growth of planted species, and successful cases of large-scale post-mining restoration practices for limestone quarties in Kenya, sand mining tailings in South Africa, and gold mine wastelands in Ghana. This article is **Open Access** at <u>https://link.com/ange.com/article/11.1011/jst11654161161111</u>

PASSIVE TREATMENT OF ACID-MINE DRAINAGE Zipper, C., J. Skousen, and C. Jage. Virginia Cooperative Extension, Publication 460-133, 14 pp, 2018

This publication presents guidance to design passive treatment systems for acid mine drainage. The mechanisms governing these systems' treatment effectiveness and performance are clearly described. https://docenvers.lib.vf.doc/historean/familed/10019/8/25/CSFS-316.04/26

ECOSYSTEM GOODS AND SERVICES CASE STUDIES AND MODELS SUPPORT COMMUNITY DECISION MAKING USING THE ENVIROATLAS AND ECO-HEALTH RELATIONSHIP BROWSER Bolgrien, D.W., T.R. Angradi, J. Bousquin, T.J. Canfield, T.H. DeWitt, R.S. Fulford, et al. Bolgrien, D.W., T.R. Angradi, J. Bo EPA 600-R-18-167, 109 pp, 2018

Case studies, data tools, and models are presented to illuminate multiple lines of inquiry focused on improving the public's use of ecosystem goods and services (EGS) concepts for addressing environmental, social, and economic problems. The report summarizes current strategies for using EGS case studies and models to support community decision-making while highlighting the broad use of the EnviroAtlas and Eco-Health Relationship Browser.

HOW THE COMMUNITY VALUE OF ECOSYSTEM GOODS AND SERVICES EMPOWERS COMMUNITIES TO IMPACT THE OUTCOMES OF REMEDIATION RESTORATION AND REVITALIZATION PROJECTS Williams, K.C., D.W. Bolgrien, J.C. Hoffman, T.R. Angradi, J. Carlson, R. Clarke, et al. EPA 600-R-17-292, 61 pp. 2018

This report summarizes a systematic and comprehensive investigation of Remediation to Restoration to Revitalization (R2R2R) in the Great Lakes region. R2R2R is a place-based practice that requires ongoing communication amongst federal and state agencies, local governments, and citizens. Data from the Great Lakes Area of Concern Collaboration were analyzed to identify forces that shaped decisions, participation, and the inclusion of stakeholder and public values. I'wo frameworks were then created that can be used to facilitate interpretation and transparency. One framework can be applied to decision contexens: The second framework can be used to interpret distinct values and facilitate communication or comparison across boundaries of experience or responsibility. The frameworks are designed to improve transparency and facilitate conversations about decisions and ecosystem services. <u>https://engi.eng.on/Fer/ZVPIIR_col/Dockey=P100VWIR_trt</u>

PRACTICAL STRATEGIES FOR ASSESSING FINAL ECOSYSTEM GOODS AND SERVICES IN COMMUNITY DECISION MAKING: FY 17 OUTPUT SHC 2.61 U.S. FPA, Office of Research and Development, Gulf Breeze, FL. EPA 600-R-18-183, 41 pp. 2018

Research outputs from the Community-Based Final Ecosystem Goods and Services Project in the Sustainable and Healthy Communities National Research Program are presented. The report summarizes how community-based studies have previously utilized ecosystem services to inform aspects of their decision-making, identify best practices that might transfer to other communities, and identify gaps in those practices.

ECOSYSTEM GOODS AND SERVICES PRODUCTION AND BENEFIT FUNCTIONS CASE STUDIES REPORT: FY 16 OUTPUT SHC 2.61 U.S. EPA, Office of Research and Development, Gulf Breeze, FL. EPA 600-R-18-189, 32 pp. 2018

Research and development conducted under the Sustainable and Healthy Communities Research Program is intended to inform and empower decision-makers to weigh and integrate human health, socio-economic, environmental, and ecological factors to foster sustainability of final ecosystem goods and services production and benefits into community-scale decision making at study sites around the United States. attractions and benefits into community-scale decision making at study sites around the United States. attractions and benefits into community-scale decision making at study sites around the United States. and on: States and States are an ov/Fers/Fers/Fullis rutiporce.

PERFORMANCE OF PASSIVE SYSTEMS FOR MINE DRAINAGE TREATMENT AT LOW TEMPERATURE AND HIGH SALINITY: A REVIEW All, H.E.B., C.M. Neculita, J.W. Molson, A. Magsoud, G.J. Zagury. Minerais Engineering 134:325-344(2019)

This paper reviews the principal parameters and processes that influence the quality of mine drainage (MD) and the performance of passive treatment of MD in cold climates. Major factors that affect treatment performance of passive system are highlighted, such as jow temperature, contamination level on animation level on passive bichemical reactor (PRR) efficiency. The effect of high sainity is discusses the effect of MD contamination level on passive bichemical reactor (PRR) efficiency. The effect of high sainity is discusses the effect of MD contamination level on passive bichemical reactor (PRR) efficiency. The effect of high sainity is discusses the effect of MD contamination level on passive bichemical reactor (PRR) efficiency are also considered. Further studies are needed to evaluate the simultaneous combined effect of these parameters on the performance of PRR. <u>https://www.imwa.info/docs/uma2/118/EndR/12/118_EndR/12/55_ntf</u>

A CRITICAL REVIEW ON REMEDIATION, REUSE, AND RESOURCE RECOVERY FROM ACID MINE DRAINAGE Naidu, G., S. Ryu, R. Thiruvenkatachari, Y. Choi, S. Jeong, and S. Vigneswaran. Environmental Pollution 247:1110-1124(2019)

This review underscores characteristics and implication of acid mine drainage (AMD), remediation approaches in mining sites, alternative treatment technologies for water reuse, and resource recovery. The role of membrane processes and alternative treatment technologies to produce water for reuse from AMD is highlighted. This review provides insights in establishing reuse and resource recovery as the holistic approach towards sustainable AMD treatment. Finally, integrate technologies that deserve in-depth future exploration are highlighted.

ACID MINE DRAINAGE FORMATION, CONTROL, AND TREATMENT: APPROACHES AND STRATEGIES Skousen, J.G., P.F. Ziemkiewicz, and L.M. McDonald. The Extractive Industries and Society 6(1):241-249(2019)

A SYSTEMATIC MAPPING STUDY ON THE DEVELOPMENT OF PERMEABLE REACTIVE BARRIER FOR ACID MINE DRAINAGE TREATMENT Tigue, A.A., R.A. Malenab, and M.A. Promentilla. MATEC Web of Conferences 268:06019(2019)

This paper identifies what has been studied and what the biggest challenges and limitations are on the use of permeable reactive barrier for acid mine drainage treatment. The reactive media used in permeable reactive barriers are organized into five categories: iron-based, organic-based, inorganic minerals-based, and ustrial waste-based, and combined media. The majority of research used combined media as the reactive substrate. The future direction is toward the use of combined media as a reactive material for action/indir/2019/17/materconf.rection: 8.0610, and f

A REVIEW OF RECENT STRATEGIES FOR ACID MINE DRAINAGE PREVENTION AND MINE TAILINGS RECYCLING Park, I., C.B. Tabelin, S. Jeon, X. Li, K. Seno., M.Ito, and N. Hiroyoshi. Chemosphere 219:588-606(2019)

This paper reviews two alternative strategies-prevention techniques and mine waste recycling-for the management of acid mine drainage (AMD) and mine tailings. In this review, recent advances in AMD prevention techniques like oxygen barriers, utilization of bactericides, co-disposal and blending, and passivation of sulfide minerals are discussed. In addition, the paper introduces the recycling of mine tailings as construction and geopolymer materials to reduce the amounts of wastes for disposal.

The Technology Innovation News Survey welcomes your comments and suggestions, as well as information about errors for correction. Please contact Michael Adam of the U.S. EPA Office of Superfund Remediation and Technology Innovation at adam michaelisea and or (703) 603-9915 with any comments, suggestions, or corrections. Mention of non-EPA documents, presentations, or papers does not constitute a U.S. EPA endorsement of their contents, only an acknowledgment that they exist and may be relevant to the Technology Innovation News Survey audience.