Wednesday, September 12, 2012

8:00 – 9:00 *Registration & Breakfast*

9:00 – 9:15 Opening Remarks by Chair

9:15 – 10:00 *Presentation:*
STRATEGIES FOR SOURCING & MINIMIZING THE AMOUNT OF WATER NEEDED ON-SITE TO ACHIEVE LONG-TERM SUSTAINABILITY
*Assessing the planned operation to ensure a water supply and sustainability: factors to consider
*Mining design strategies at the outset that help minimize water needs throughout the operation
*How to evaluate whether the water needs any treatment before use – and if so, how much treatment is needed
*Best methods for reducing evaporation to save water and costs

Marek Mierzejewski, *Leader, Water/Mining Sector,* CH2M HILL

10:00 – 10:45 *Presentation:*
HOW TO ASSESS, SELECT AND DEVELOP YOUR OPTIMAL WATER MANAGEMENT SYSTEM
*Depending on the type of mining operations and what region the operation is in, there are various options available. In this session, get an assessment of all the factors you should take into consideration when choosing, developing and implementing your water management system. Topics include:
*Incorporating maximum sustainability into the project from the outset
*How can you access and use local water recycling technologies and systems?
*Which technology works best with which water management system?

John F. Lupo, Ph.D., P.E., *Senior Director, Geotechnical and Hydrology***,** Newmont Mining Company (Invited)

10:45 – 11:15 *Morning Networking Break*

11:15 – 12:00 *Presentation:*

TREATING WASTEWATER FROM MINING OPERATIONS FOR DISCHARGE, RECYLING OR REUSE

Reverse Osmosis (RO) membrane performance is dependent on a number of factors, including water quality, feed pressure, feed temperature, recovery, membrane construction, and the presence of contaminants that can foul or scale the membranes. To be successful, membrane fouling and scaling must be controlled so that recovery will be limited primarily by osmotic pressure and not by the presence of contaminants. Furthermore, the system must be sufficiently robust to handle variations in feed water quality and be capable of maximizing system recovery by recycling a portion of the RO pretreatment wastewaters to the front end of the pretreatment system. And finally, the process must reliably treat the water to meet project-specific effluent requirements.

Two case studies will be presented that utilize a state-of-the-art zero liquid waste discharge to treat mine water.

Christopher Howell, *Global Director – Mining & Primary Metals,* VEOLIA WATER

12:00 – 1:30 *Group Luncheon*

1:30 – 2:30 *Joint Presentation:*

MINEWATER TREATMENT FOR DIRECT DISCHARGE USING MEDIA-BASED ENGINEERED TREATMENT SOLUTIONS

Direct discharge of mine wastewater to surface water drainage has come under intense review for metals contaminants. Media-based treatment using specific formulated media based on high-purity zeolite substrates can provide trace-level removal of heavy metal contaminants and securely manage disposal of the water treatment residuals. The presentation focuses on the use of inorganic ion-exchange and adsorption media systems designed to target heavy metal constituents and the methods of treatment from service use to removal and disposal of the spent media materials. Some of the current and future media materials being developed for specific contaminants will also be discussed.

James Arnold, P.E., *Chief Technology Officer***,** WATER REMEDIATION TECHNOLOGY, LLC
Daniel Eyde, *CTO and President***,** ST. CLOUD MINING COMPANY

2:30 – 3:00 *Afternoon Networking Break*

3:00 – 3:45 *Presentation:*

ONGOING MONITORING OF WATER QUALITY

*Maintaining water-related infrastructure to avoid sediment build-up and contamination
*How to implement monitoring that tells you exactly what is happening with your water use
*Water reporting methodologies: what's key?
*How are mining companies selecting their reporting methodologies?

Susan Leal, *Senior Vice-President, Chief Strategy Officer, Water, North America,* AECOM

3:45 – 4:45 *Joint Presentation:*
WATER MANAGEMENT LESSONS LEARNED FROM THE OIL & GAS SHALE DRILLING BOOM
With the recent explosion of horizontal hydraulic fracturing, the oil & gas industry has been facing enormous challenges. Several technologies developed for the treatment and management of produced water and wastewater generated from drilling are readily transferable to several sectors of the mining industry. Hear how these technologies and "lessons learned" can be applied to water management in the mining sector.

Daniel T. Eyde, ST CLOUD MINING COMPANY
Ronald L. Coufal, HALLIBURTON ENERGY SERVICES
Dr. Charles R. Landis, PhD., HALLIBURTON ENERGY SERVICES

4:45 *Day One of Tutorial Adjourns*

Thursday, September 13, 2012

7:00 – 8:00 *Registration & Breakfast*

8:00 –8:45 Presentation:
ACID MINE DRAINAGE: CURRENT BEST PRACTICES & INNOVATION TO OPTIMIZE TREATMENT AND LOWER TCO
Acid Mine Drainage is recognized as a serious environmental problem within the mining industry. Best practices are continually honed with regard to both prediction and mitigation. The high variability of site-related factors continues to be a challenge with regard to implementing cost-effective long-term treatment. This presentation will provide a technical overview of the most recent innovation in both active and passive treatment technologies, their appropriate application and normalized total cost of ownership.

Dr. David R. Stewart, PhD, PE, *President & CEO,* Stewart CMF, STEWART ENVIRONMENTAL CONSULTANTS

8:45 – 9:30 Presentation:

MINE SOURCE WATER OPTIONS: SEAWATER OR NO SEAWATER

Many mines today require additional water. The choices are typically seawater (desalinated or direct), or wells. The relative merits and pitfalls of the various choices, and their effect on mining and mine operational costs, will be reviewed.

Hu Fleming, *Global Director,* HATCH WATER

9:30 – 10:00 *Morning Networking Break*

10:00 – 10:45 Presentation:

DESAL/WATER REUSE V. FRESH WATER USE

As fresh water sources become more scarce, and water re-use technologies become more advanced, options for using water in mining are shifting. In this session, get insights into the trends of how water use in mining is shifting between the various options available.

Val S. Frenkel, *Director, Membrane Technologies at Malcolm Pirnie,* ARCADIS

10:45 – 11:30 Presentation:

STRATEGIES FOR INTEGRATING PUBLIC AND PRIVATE WATER NEEDS

Natural resources don't start or stop at ownership boundaries. To provide federal, state, local, and private partners information needed for water supply planning and long-term production of water, Rare Element Resources (RER) has initiated mapping and monitoring of ground water and surface water in the Bear Lodge Mountains of northeast Wyoming. RER is collecting baseline data in preparation and support of an application for a permit to mine. RER is considering a broad variety of water management strategies including; ecosystem restoration, water supply reliability, flood management, groundwater management, recreation and public access, storm water capture and management, water conservation, water quality protection and improvement, and water recycling.

Kris Thompson, *Environmental Health and Safety Coordinator*, RARE ELEMENT RESOURCES

11:30 – 12:15 Presentation:

TACKLING THE CHALLENGES OF MINE WATER BALANCE MODELING AND NUTRIENT DISCHARGE CRITERIA – A CASE STUDY

Mine water management is a high priority for most mining operations. The primary purpose of a mining project water management plan is to

examine and address all issues relevant to importing, generating, using, and managing water on a mining project in order to minimize the quantity of water that is contaminated and released by and from the project. This presentation examines a solution to this challenge of onsite mine water management for both flow and nutrients and how predictions and uncertainties may be made in handling offsite discharges.

R. Jeffrey Davis, PE, *Senior Consultant*, CARDNO ENTRIX

12:15 *Day Two of Tutorial Adjourns*