IMPROVED WATER RECOVERY THROUGH IMPLEMENTATION OF ALTERNATIVE TAILING DISPOSAL (ATD) METHODS

Short Course Description for Tailing and Mine Waste Conference Program
Vail, Colorado
October 17, 2010

Given the need to use water more efficiently, mining industry practitioners are increasingly asking 'Can changes in tailing disposal methods and management deliver water savings?' This short course will explore the intricacies of implementing ATD methods and will help participants to understand each ATD method's (filtered, thickened, paste) value in water efficiency and conservation. A panel of experts will explain limitations of ATD technologies as well as industry best practices. Experts in the areas of tailing disposal design and engineering services (MWH), rheology and slurry transport (Paterson & Cooke), tailing thickening and water recovery (Outotec) and pipelines and tailing transport (PSI) will be present. The course agenda includes the following topics: a) conventional vs. ATD; b)slurry transport; c)thickeners for optimal water recovery; c) pumps and pipelines; d) filtered tailing disposal. Participants are encouraged to bring their tailing disposal issues and challenges for discussion during the final panel presentation.

Presented/Moderated by: Andrew Watson MWH Peru Country Manager, Lima and Clint Strachan, Principal Engineer at MWH Ft. Collins, Colorado

COURSE AGENDA

9 – 10 am	Welcome, Safety Share Synopsis of typical practice: conventional, wet disposal of tailing slurries. Limitations of this technique and conventional equipment. Why miners like it. Presented by: Andrew Watson (MWH).
10 – 11 am	What is a slurry: brief synopsis on bi-modal fluids, rheology and non-Newtonian fluid dynamics. Presented by: Robert Cooke, Director, Paterson & Cooke
11 – 12 pm	Equipment that pushes the envelope: high rate thickeners, hydro-cyclones, xxx and how to recover ore water at the plant. Presented by: Representative from Outotec (Canada) Ltd.
12 - 1 pm	Lunch
1 – 2 pm	How to deal with the resulting product: pumps and slurry transport. How far can we take this before we run into physical limitations? Presented by: Representative from Pipeline Systems Incorporated (PSI)
2 – 3 pm	Going all the way – filtering Types of filters and their application, use, limitations (i.e. power demand, labor, logistics, etc.) Presented by: Jos Vandekeybus (MWH)
3 – 3.30pm	Comparison to wet disposal Where it works where it doesn't work. Presented by: Pat Corser
3.30 – 4.30 pm	Putting it all together -- a discussion about your mine / circumstance. Every mine is different, so what might work for you? Panel discussion facilitated by: Andrew, Watson, MWH. Panel to include: Robert Cooke, Mike Cook, Jos Vandekeybus (MWH), and mineralogist or process chemist.

GARD Guide: Putting Concepts into Action

Short Course Description for Tailing and Mine Waste Conference Program
Vail, Colorado
October 17, 2010

I. Description

The GARD Guide has been developed by the International Network for Acid Prevention (INAP) over the past three years and was released in Wiki format (www.gardguide.com) in June 2009. The Guide is a comprehensive, state-of-practice summary of the best practices and technology to assist mine and metallurgical plant operators and regulators to address issues related to sulfide oxidation and metals leaching. Using a "model mine", this course puts into action GARD guidelines for the intended users: mining and metallurgical processing professionals, regulators, consultants, students, NGOs, and other interested parties. Short summaries of Guide chapters will be followed by relevant information on the model mine, and then participants will develop key features of the mine that are consistent with the guide. The instructors are experts in mine planning and closure and are members of organizations closely associated with GARD Guide development. Registrants are expected to have a general technical background in science and engineering related to mining and mineral processing, and will need a laptop computer for the course.

II. Instructors

Course Coordinator: Thomas R. Wildeman, Emeritus Professor of Chemistry and Geochemistry, Colorado School of Mines, Golden, CO, (303) 273-3642, FAX (303) 273-3629, e-mail: twildema@mines.edu

Dirk van Zyl, University of British Columbia, Vancouver, BC, 604-827-3462, e-mail: dvanzyl@mining.ubc.ca,

Terry Chatwin, INAP, 801-485-2279, e-mail: terrence.chatwin@inap.com.au

Rens Verburg, Golder Associates, Seattle, 425-883-0777, e-mail: Rens_verburg@golder.com

COURSE AGENDA

8:30 – 8:45	Introduction to the GARD Guide and the Short Course – Terry Chatwin
8:45 – 10:00	Prediction overview – Rens Verburg Geo-environmental model of the mine site – Dirk van Zyl Participant Development of the proposed mine plan for permit application
10:00 – 10:15	Coffee Break
10:15 – 12:00	Monitoring overview – Tom Wildeman Prevention and mitigation overview – Dirk van Zyl Environmental assessment, including acid-base accounting and metal leaching results, on the proposed model mine – Rens Verburg Participant development of the operations plan of the model mine
12:00 – 1:00	Lunch
1:00 – 2:15	Treatment overview – Tom Wildeman Operations results on the model mine – Terry Chatwin Participant development of the closure plan for the model mine
2:15 – 3:15	Management and sustainability overview – Dirk van Zyl Participant development of sustainability plan
3:15 – 3:30	Coffee Break
3:30 – 4:30	Future development and research on mine planning, operations, closure, and sustainability – Tom Wildeman & Dirk van Zyl

Landform Design for Mine Closure

Short Course Description for Tailing and Mine Waste Conference Program
Vail, Colorado
October 17, 2010

Expectations for landscape performance for reclaimed mining landscapes are high. Traditional reclamation methods for kick-starting safe, functioning ecosystems on drastically disturbed lands that can be as large as prairie cities are no longer sufficient to provide reasonable assurance of meeting stated goals and objectives. Landscape design offers a more holistic approach to mine closure that encompasses many disciplines (including geotechnical, surface water, groundwater, soils, vegetation, and wildlife) in a more structured approach. It starts with clearly defining landscape performance objectives in the closure planning phase, and carrying these through design, construction, reclamation, monitoring and maintenance, and certification of individual landforms as part of an integrated landscape set within a larger region.

This one-day workshop introduces landform design to a broad audience, providing specific design techniques applicable to typical mining landforms in coal, oil sands, and hardrock mines. It begins with a review of the state of practice in mine reclamation and landform design from over 100 mines. It goes on to describe some of the expectations for landscape performance for waste rock dumps and tailings landforms, and provides design tools for practitioners. There are a few key focus areas that will receive greater attention: surface water hydrology, soft tailings reclamation, and design and monitoring of covers for tailings and waste rock. This training will allow participants to better influence, manage, regulate or participate in the landform design process. An informal learning environment will allow sharing of concerns and solutions, and a chance to network with other professionals.

The landform design workshop is presented by Gord McKenna and Mike O'Kane, geotechnical engineers each with over 20 years experience in tailings and mine waste stabilization and reclamation who bring hands-on experience from mines around the world.

Gord McKenna, PhD, PEng, PGeol
BGC Engineering, Vancouver
gmckenna@bgcengineering.ca
Phone +1-604-838-6773

Mike O'Kane, MSc, PEng
O'Kane Consultants, Calgary
mokane@okc-sk.com
Phone +1-403-660-4489

COURSE AGENDA

Time	Topic of Discussion	Presenter
9:00 am – 9:15 am	• Welcome and Introductions • Overview of the Workshop	Mike O'Kane
9:15 am – 10:15 am	***Session One**: "State of Practice for Landform Design"*	Gord McKenna
10:15 am – 10:30 am	COFFEE BREAK	
10:30 am – 11:00 am	***Session Two**: "Introduction to Landform Design"*	Gord McKenna
11:00 am – 12:00 am	***Session Three**: "General Introduction to Cover Systems and Background Theory for Design"*	Mike O'Kane
12:00 pm – 1:00 pm	LUNCH BREAK	
1:00 pm – 2:00 pm	***Session Four** : "Landform Design by Specialty (geotechnical, surface water, groundwater, soils, vegetation, wildlife)"*	Gord McKenna
2:00 am – 2:30 am	***Session Five**: "Cover Systems – Modeling and Monitoring"*	Mike O'Kane
2:30 pm – 2:45 pm	COFFEE BREAK	
2:45 am – 3:15 pm	***Session Six**: "Long-Term Cover System Performance"*	Mike O'Kane
3:15 pm – 4:45 pm	***Session Seven**: "Worked Landform Design Example"*	Gord McKenna
4:45 pm – 5:00 pm	• Workshop Evaluation and Wrap-up	Mike O'Kane and Gord McKenna

Perception and Reality in Tailings and Mine Waste Permitting

Short Course Description for Tailing and Mine Waste Conference Program
Vail, Colorado
October 17, 2010

Given the challenges of working with the public on any project, this short course offers industry representatives some how-to's for using the public involvement process to facilitate permitting while building community awareness. Larry Cerrillo is a hydrogeologist/mediator with experience in the details of the permitting process and guiding project scheduling. Carol O'Dowd is nationally recognized for her public involvement processes. She uses listening techniques that engage community voices and involves stakeholders in ways that heartfelt concerns are heard and understood. Course participants will gain techniques for creating dialogue and hosting public meetings where community members will leave with understanding and enthusiasm. Explore how awareness of perceptions and reality facilitates partnering among corporations and neighborhoods while keeping project interruptions to a minimum.

Presented/Moderated by: Larry Cerrillo, Ingenuity Enterprises Int'l, Inc., cerrillo1@mindspring.com. and Carol O'Dowd, MPA, M.Div. Prajna Partnerships Inc. carol@prajnapartnerships.com.

COURSE AGENDA

3:00 pm	**Welcoming**
3:10 pm	**Defining the Conflict**. What is conflict? Review the distinguishing features of anger versus conflict. Review causes of conflict including cultural differences. Presentation on stages of interactions and partnerships with the public.
3:20 pm	**Identifying the Stakeholders** – who are they and how can they be engaged constructively? Presentation on how to identify and work with stakeholders.
3:30 pm	**Managing Interactions as Part of Project Scheduling** Review of typical stages in group formation and how to manage interactions with the public. Review how techniques can be used at each stage of public involvement process to facilitate engagement without additional expense.
4:10 pm	**Forming Partnerships to Support Mining Projects** Discussion of stages and techniques for forming a partnership with the public. Review strategies for sharing information without distortion and building the relationships needed to transform conflict into enthusiasm.
4:50 pm	**Applying the Techniques** Question and answer on how to use practices with your mining operations.
5:00 pm	**Adjourning** Take home materials and new contacts.