

Mine Water Solutions in Extreme Environments 2015

Short Course 2: The Role of Water Management in Historic Tailings Dam Failures

Presenters

- Andrew Watson, Workshop Facilitator, MWH, USA
- Patrick Corser, Geotechnical Engineer, MWH Canada Country Manager, MWH, Canada
- Dirk van Zyl, Professor and Chair of Mining and the Environment, Norman B. Keevil Institute of Mining Engineering, University of British Columbia, Canada
- Clint Strachan, Sr. Geotechnical Engineer, MWH, USA
- Resa Furey, Market Analyst, MWH, USA

Objectives

This workshop will review documented tailings dam failures up through 2014 and assess the underlying role of water management as it relates to the performance of tailings dams. The conclusions from this review will be used to identify key water management related factors to prevent future failures in the design, operation, and closure of existing and planned tailings dams.

Active participation and open discussion among the presenters and attendees of the short course will be encouraged.

Who should attend?

This short course is planned for practitioners who are associated with mill tailings management and regulation, including representatives from the mining industry, consulting, and regulatory agencies and other affected stakeholders.

Course Outline

- Welcoming introductions, safety share
- Goals and objectives of short course (for both attendees and presenters)
- Brief summary of terminology
- Tailings dam incident review
 - Sources of information
 - Types of dams
 - Causes of incidents
 - Operating status of dam
 - Influence of water management
 - Conclusions
- Tailings management guidelines and regulations
 - General guidelines for accepted practice
 - Specific regulations
 - Peer reviews
 - Implementation of guidelines and regulations based on result of incident review
- Discussion of key factors
 - Design period (operating criteria and post-closure criteria)
 - Storm events (frequency and duration)
 - Water storage volume versus peak flow rate
 - Climate variability and long-term trends
 - Seismic events and design analyses
 - Corporate risk management
 - Contingency planning and redundant systems
 - What needs to change?
- Course wrap-up / panel discussion
 - Summary of key factors
 - Recommendations for moving forward
 - Review of course objectives
- Course evaluation

Instructor Bios

Andrew Watson, P.E.

Workshop Facilitator, MWH
Denver, CO, USA

Mr. Watson has 20 years of experience in the design and construction of infrastructure, dams, tailings storage, heap leach, waste containment facilities, and other civil works. He has worked on a variety of assignments in the U.S., South America and South Africa, performing engineering design, inspection, and project management functions. His experience includes leading mining projects from conception through construction, including the planning, engineering and implementation of mine closures. He seeks practical solutions to engineering challenges using risk-based decision-making and has been retained by mining companies to advise on life-of-mine planning, closure planning and estimation of post-closure liabilities. Mr. Watson has published and presented several papers on mine water and tailings disposal management.

Patrick Corser, P.E.,

Sr. Geotechnical Engineer, MWH Canada Country Manager
Vancouver, BC, Canada

Mr. Corser has 30 years of engineering and construction experience working on mining, civil, geotechnical, and environmental projects. He has managed mine development projects and closure and reclamation plans for mine sites in North and South America and throughout Europe. His specific areas of technical expertise include mine closure and reclamation, both design and construction, as well as containment systems for mine waste disposal (tailings and waste rock facilities).

Mr. Corser is involved in conceptual, basic, and detailed engineering as well as the design and review of MWH's work for the mining industry. This includes providing senior project review for MWH's services to the mining industry including environmental baseline and permitting studies, mine water supply and water resource management, civil infrastructure, environmental monitoring, waste product handling, mine closure/reclamation and remediation.

Dirk van Zyl, Ph.D., P.E.

Professor and Chair of Mining and the Environment, Norman B. Keevil Institute of Mining Engineering,
University of British Columbia
Vancouver, BC, Canada

Dirk van Zyl has more than 35-years experience in research, teaching and consulting in tailings and mine waste rock disposal and heap leach design. During the last decade much of his attention has been focused on mining and sustainable development and mine life cycle management.

Dirk has consulted internationally on many mining projects. These projects covered the whole mining life cycle, from exploration to closure and post-closure, in a large range of climatic and geographic environments. Most of this work has been focused on geotechnical and environmental mining engineering aspects to provide solutions for environmental and human health protection.

He is the recipient of the three awards from the Society for Mining, Metallurgy and Exploration (SME). These are the Robert Peele Award (1985) and Distinguished Service Award (1992) from the Mining and Exploration Division, and a President's Citation (1998). Dirk became a Distinguished Member of SME in 2003. He received the Bureau of Land Management Sustainable Development award in 2005 and the Adrian Smith International Environmental Mining Award in 2006.

Clint Strachan, P.E.

Sr. Geotechnical Engineer
MWH
Fort Collins, CO, USA

Mr. Strachan is a geotechnical engineer with over 35 years of experience in the design, permitting, construction and closure of mine facilities. Engineered facilities include tailings impoundments, heap leach facilities, water storage dams, sedimentation dams, and storage ponds at mines around the world.

Much of his experience has been with and tailings impoundments, including design and permitting; technical assistance with construction, operation, and monitoring; planning for closure during operations; reclamation plan preparation and permitting; closure plan execution and quality assurance; and monitoring of facility performance.



Resa Furey, M.Sc.

Senior Market Analyst , MWH

Broomfield, CO, USA

Resa Furey specializes in global mining sector market research and analysis, including research and trend analysis of metal producers and metal markets. Her analyses form the foundation for strategy development and business planning for MWH's mining operations. She has a strong marketing background that includes communications, media and community outreach experience in North and South America and Europe. She is involved in strategic initiatives from idea conception to completion, including MWH's program to further establish its Alternative Tailing Disposal (ATD) expertise and to benchmark mine closure engineering. She has created multiple short-course modules to showcase MWH's technical and thought leadership and has written, co-written and published articles on water and chemical mass balance, tailing deposition, alternative tailing disposal and mine water treatment. She speaks English, German and Spanish.