

## Table of Contents

Australian Centre for Geomechanics.....	iii
Foreword.....	v
Technical Reviewers.....	vii

### Geotechnical Issues – Strength, Stability and Seepage

#### Keynote Address

Shear Strength of Rockfill, Interfaces and Rock Joints, and their Points of Contact in Rock Dump Design .....	3
<b>N.R. Barton, Nick Barton and Associates, Norway</b>	
Geotechnical and Geomechanical Characterisation of the Goathill North Rock Pile at the Questa Molybdenum Mine, New Mexico, USA .....	19
<b>L.A.F. Gutierrez, Golder Associates Inc., USA, V.C. Viterbo, Phelps Dodge, USA, V.T. McLemore, New Mexico Tech, Bureau of Geology and Mineral Resources, USA, C.T. Aimone-Martin, New Mexico Tech, Mineral Engineering Department, USA</b>	
Savage River Mine – Rock Dump Evolution .....	33
<b>D.M. Brett, GHD Pty Ltd, Australia, B.J. Hutchison, Australian Bulk Minerals Pty Ltd, Australia, S. Kent, Caloundra Environmental, Australia</b>	
Geotechnical Aspects of the Hydro-Jex Operation .....	47
<b>B.F. Ulrich, Knight Piésold and Co., USA</b>	
The Use of Geosynthetics in Mining Works .....	57
<b>J. Pries, BBG GmbH &amp; Co. KG, Germany, D. Bishop, NAUE GmbH &amp; Co. KG, Germany, S. Hayes, Global Synthetics Pty Ltd, Australia</b>	
High Waste Rock Dumps – Challenges and Developments.....	65
<b>L. Valenzuela, E. Bard, J. Campaña &amp; M.E. Anabalón, Arcadis Geotecnica, Chile</b>	
Rainfall Infiltration Into and Seepage From Rock Dumps – A Review .....	79
<b>D.J. Williams &amp; T.K. Rohde, The University of Queensland, Australia</b>	

### Management and Operations

Conceptual Analyses of Waste Dump Options Used to Prepare a Detailed Progressive Waste Dump Life-of-Mine Plan .....	93
<b>N.C. Journet, DumpSolver Pty Ltd, Australia</b>	
Design and Performance of Paste Rock Systems for Improved Mine Waste Management .....	107
<b>G.W. Wilson, NBK Institute of Mining Engineering, University of British Columbia, Canada, B. Wickland, Golder Associates Ltd, Canada, J. Miskolczi, SRK Consulting, Canada</b>	
So You Want to Have the Best Possible Waste Rock Dump.....	117
<b>M. Russell, DumpSolver Pty Ltd, Australia</b>	
Development of a Rock Dump Scheduling Model Using Linear Programming.....	129
<b>D.J. Williams, E. Topal &amp; N. Zhang, The University of Queensland, Australia, P. Scott, HLA ENSR, Australia</b>	
Overburden Management for Formation of Internal Dumps in Coal Mines.....	139
<b>C. Drebenstedt &amp; M. Struzina, Technical University Bergakademie Freiberg, Germany</b>	
Effective Allocation of Resources in Landform Repair and Reconstruction for Closure – Newmont’s Tanami Closure Programme 2005-2008 .....	147
<b>R. Haymont &amp; E. Clements, Newmont Asia Pacific, Australia, H.W.B. Lacy, Outback Ecology, Australia</b>	

## Hydrology of Rock Dumps

### Keynote Address

Integrated Heap Leach Design – Incorporating Unsaturated Material Considerations .....	153
<b>D. van Zyl, University of British Columbia, Norman B. Keevil Institute of Mining Engineering, Canada</b>	
Using In Situ Measurements and Modelling to Effectively Manage Large Copper Sulfide Bearing Ore Stockpiles .....	167
<b>A.M Garvie &amp; C.M Linklater, SRK Consulting, Australia, R. Lestari &amp; K. McCaffery, PT Newmont Nusa Tenggara, Indonesia</b>	
Challenges Faced by Dexing Copper Mine – A Case Study of Dump Leaching in China .....	179
<b>S.H. Yin, A.X. Wu, H.J. Wang &amp; B. Zhou, University of Science and Technology Beijing, School of Civil and Environment Engineering, China</b>	
Evaluating Unsaturated Flow of Heap Leach Materials in Large Diameter Column Tests .....	193
<b>V. Galla, Newmont Mining Corporation, USA, D. van Zyl, University of British Columbia, Norman B. Keevil Institute of Mining Engineering, Canada, S. Morrow, Applied Soil Water Technologies, USA</b>	
Rock Dump Design to Limit Potential Acid Drainage .....	207
<b>D.J. Williams, The University of Queensland, Australia, P. Scott, HLA ENSR, Australia, D. Johnston &amp; G. Lee, Zinifex Century Mine, Australia</b>	
The Analysis of the Pore Evolution of Ore Granular Media During Bacteria Heap Leaching Based on X-Ray Computerised Tomography .....	219
<b>A.X. Wu, Central South University, School of Resources and Safety Engineering, and University of Science and Technology Beijing, School of Civil and Environment Engineering, China, B.H. Yang, Central South University, School of Resources and Safety Engineering, and Hunan International Economics University, Department of Electricity and Information Engineering, China, S.H. Yin, University of Science and Technology Beijing, School of Civil and Environment Engineering, China, Y.M. Wang, Central South University, School of Resources and Safety Engineering, China</b>	

### Closure and Environmental Impacts

Multi-Barrier Systems for Rock Dump Rehabilitation with Special Focus on Hazardous Waste, Acid Rock Drainage and Radiation Protection .....	233
<b>D. Griebel, R. Tynior &amp; R. Schwarz, G.U.B. Ingenieur AG, Germany</b>	
Closure Through a Process of Collaboration – Suggestions as to How Mining Companies and Contractors Can Work Together to Make Closure Processes Successful .....	251
<b>R. Haymont &amp; E. Clements, Newmont Asia Pacific, Australia, H.W.B. Lacy, Outback Ecology, Australia</b>	
A Logical Framework for the Design, Construction, and Rehabilitation of Mine Site Waste Rock Dumps .....	257
<b>R.J. Loch, Landloch Pty Ltd, Australia, S.M. Lowe, Minara Resources Ltd, Murrin Murrin Nickel Operation, Australia</b>	
The Metamorphism of Dumps into Hills .....	267
<b>H. Jones, Golder Associates Pty Ltd, Australia</b>	
Comparison of the Erosional Performance of Alternative Slope Geometries .....	277
<b>G.I. McPhail &amp; C.Rye, Metago Environmental Engineers (Australia) Pty Ltd, Australia</b>	
Authors Index .....	289