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##### **Development of Water Management Policies in the Arid and Semi-arid Areas of South America**

Christopher Beggs and Marcela Venegas, Schlumberger Water Services, Chile; Luís Ribeiro, Ana Buxo and João Nascimento, CVRM Instituto Superior Técnico, Portugal

##### **Evaluation of Sources of Water to Lagoons, Salar de Atacama Basin: An Isotope and Geochemical Approach**

Ramon Aravena, University of Waterloo, Canada; Joaquin Salas, Ona Cornellá, Jordi Guimerà and Wolf von Igel, Amphos 21 Consulting, Spain; Edwin Guzmán and Corrado Tore, Sociedad Química y Minera, Chile

##### **Watershed Management in Arid Zones with Mining: The CAMINAR Project in the Elqui River Basin, Chile**

Guido Soto, Manuel Soto and Michelle Señoret, Centro del Agua para Zonas Áridas y Semi-áridas de América Latina y del Caribe (CAZALAC), Chile; Jaime Amezaga and Tobias Rötting, HERO Group, University of Newcastle, England; Luís Ribeiro, Ana Buxo, Paula Mendes and João Nascimento, Instituto Superior Técnico, Universidad de Lisboa, Portugal; Christopher Beggs and Marcela Venegas, Schlumberger Water Services, Chile; Nicole Kretschmer and Karine Orth, Centro de Estudios Avanzados en Zonas Áridas (CEAZA)-Universidad de La Serena, Chile; Jorge Oyarzún and Hugo Maturana, Departamento Ingeniería de Minas, Universidad de La Serena, Chile; Ricardo Oyarzún, Departamento Ingeniería de Minas, Universidad de La Serena, Chile

##### **Development and Application of Water Quality Indices in the Elqui River Basin, North-central Chile**

Luís Ribeiro, Ana Buxo and João Nascimento, CVRM – Instituto Superior Técnico, Portugal; Nicole Kretschmer, CEAZA, Chile; Jorge Oyarzún, and Hugo Maturana, Centro del Agua para Zonas Áridas y Semiáridas de América Latina y del Caribe; Ricardo Oyarzún, CEAZA and Departamento Ingeniería de Minas, Universidad de La Serena, Chile; Tobias Rötting, HERO Group, University of Newcastle, UK; Guido Soto and Manuel Soto, Centro del Agua para Zonas Áridas y Semiáridas de América Latina y del Caribe, Chile

##### **GIS-Based Water Balance Analysis of the Huarmey Basin, Peru**

Saul Montoya, Robin Dufour, Katty Barzola and Daniel Bay, MWH, Peru

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##### **Water Supply for the Quellaveco Project**

John McCartney and David Sellars, Schlumberger Water Services, Chile; Aldo Brigneti, Anglo American Quellaveco, Peru

##### **A Socially Sustainable Approach for the Intensive Use of Aquifers in Northern Chile**

Orlando J. Acosta, Cía Minera Doña Inés de Collahuasi, Chile

##### **Saline Groundwater: An Alternative for the Sustainable Exploitation of Andean Highland Groundwater Reserves**

Orlando J. Acosta, Cía Minera Doña Inés de Collahuasi, Chile; Pablo Rengifo and Edgardo Dzogolyk, GeoHidrología Consultores, Chile

**Use of Deep Groundwater Reserves: Practical Experience in Deep Water Production**

Pablo Rengifo and Edgardo Dzogolyk, GeoHidrología Consultores, Chile; Orlando J. Acosta, Cía Minera Doña Inés de Collahuasi, Chile

**Sal or Desal: Sea Water Supply Options for the Mining Industry**

Raymond Philippe, Richard E. Dixon and Silvana dal Pozzo, Hatch, Chile

**Analysis and Technico-Economic Optimisation of a Long Distance Water Recovery System**

Jorge Serey and Arnaldo Santander, JRI Ingeniería, Chile

**Selection of Pipeline Corrosion Control Strategy and Impact on Economics of Water Conveyance**

Sergio González and Marcelo Encalada, Hatch, Chile; Stephen Daughney and Tony Vece, Hatch, Canada

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Peter S. Yeates and Jason P. Antenucci, Centre for Water Research, The University of Western Australia; Michael E. Barry, Daniel A. Botelho and Tony B. McAlister, BMT WBM Pty Ltd, Australia; James Brook, Arup Pty Ltd, Australia

**Alternative Intake Designs to Reduce Cost of Sea Water Desalination Systems for Mine Water Supply**

Thomas M. Missimer and Robert G. Maliva, Schlumberger Water Services, USA

**Long Term Experiences with Internally Staged Designs (ISD) in Large SWRO Desalination Plants**

Renato G. Ramos, Dow Brasil Industrial Ltda, Brazil; Verónica García, Dow Water & Process Solutions, Germany

**Flexible and Sustainable Water Supply: Sea Water Desalination Vessel Options and Analysis**

Lisa Henthorne, Water Standard, USA; José Pesce, Grupo Latino, Chile

**The Use of Saturation Indexes to Predict Scaling of CaCO<sub>3</sub> in Sea Water Reverse Osmosis Systems (SWRO)**

Rubén Muñoz, UNESCO-IHE Institute for Water Education, The Netherlands and SKM, Chile; Jan Schippers, Gary Amy, Maria Kennedy and Tarek Waly, UNESCO-IHE, Institute for Water Education, Department of Urban Water and Sanitation, The Netherlands; Geert Jan Witkamp, Delft University of Technology, The Netherlands

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Clara Sena and Jorge Molinero, Amphos XXI Consulting, Spain

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Reinhard Zapata and Christoph Wels, Robertson GeoConsultants, Canada; Justin Bourne, Lorax Environmental, Canada

**Hydro-geochemical Modelling to Simulate Natural Attenuation and Remediation in Acid Mine Drainage**

Clara Sena, Jorge Molinero, Fidel Grandía, David Arcos, Cristina Domènech and Mireia Grivé, Amphos XXI Consulting, Spain

**The Nature and Oxidation Kinetics of Iron Precipitates in Seepage from Sandstone to an Incised Stream**

Hoang P. Pham, Mansour Edraki and Barry Noller, Centre for Mined Land Rehabilitation, Sustainable Minerals Institute, The University of Queensland, Australia

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Mark J. Thomasson and Staffan W. Schorr, Montgomery & Associates, USA; Lyle A. Davis and Michael J. Rosko, Montgomery & Associates, Chile; Orlando J. Acosta, Cía Minera Doña Inés de Collahuasi, Chile

**Groundwater Flow Modelling Applications in Mining: Scopes and Limitations**

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**Effective Use of Aquifer Storage and Recovery Technology for Mine Process Water Supply in Chile**

Robert G. Maliva and Thomas M. Missimer, Schlumberger Water Services, USA

**Impact of the Ionic Strength on the Estimation of the pH of the Concentrate in Seawater Reverse Osmosis (SWRO)**

Rubén Muñoz, UNESCO-IHE Institute for Water Education, The Netherlands, and SKM, Chile; Jan Schippers, Gary Amy, Maria Kennedy and Tarek Waly, UNESCO-IHE, Institute for Water Education, Department of Urban Water and Sanitation, The Netherlands; Geert Jan Witkamp, Delft University of Technology, The Netherlands

**Risks of Severe Drought in the Chilean Mining Industry**

Juan Rayo, Ramon Fuentes and Jorge Ipinza, JRI Ingeniería, Chile

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Jeremy Dowling and Kent Lang, Schlumberger Water Services, USA; Terry Munson, Gold Corp Minera Peñasquito, Mexico

**Peñasquito Mining Project in Zacatecas, Mexico: A Hydrogeological Challenge**

Miguel Rangel-Medina, IDEAS S.C., Mexico; Armando Escarcega, Gold Corp Inc, Mexico

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**Developing Water Balance Models as an Operation Tool for Sustainable Mine Water Management**

Sarah Gosling, SKM, Australia

**Water Balance Studies in Iron Ore Mine Sites in the Quadrilátero Ferrífero, Brazil**

Marcelo M. Diniz, Francisco E. Silva, Flávia A. Nascimento, Ana P. Vianna, Márcio F. Resende and Aloysio P. Saliba, Golder Associates, Brazil; Maria L. Santos, Vale, Brazil; Andre M. Rocci, Hydrogeologist, Brazil

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Paul Howe, SKM, Australia; Chris Moran and Sue Vink, Sustainable Minerals Institute, The University of Queensland, Australia

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Mark Steemson, Carola Sepulveda and Mark Smith, Vector Engineering, Australia

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A. J. Gunson, Bern Klein and Marcello Veiga, Norman B. Keevil Institute of Mining Engineering, University of British Columbia, Canada

### **Progressing towards Sustainability: From Water Efficiency to Water Effectiveness at Collahuasi Mine**

Claire M. Coté and Chris J. Moran, Sustainable Minerals Institute, The University of Queensland, Australia; Orlando Acosta, Cia Minera Doña Inés de Collahuasi, Chile

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Felipe García and Andrea González, JRI Ingeniería, Chile; Juan P. Saavedra, CORPOA, Chile

### **Water Evaporation Reduction Studies at Lomas Bayas in Northern Chile, Joint University and Industry Project**

María E. Taboada, Teófilo Graber, Héctor Galleguillos and Luis Cáceres, Universidad de Antofagasta, CICITEM, Chile; María C. Hernández, Pamela Garrido and Oscar Benavente, Universidad Católica del Norte, CICITEM, Chile

### **Modern Water Management for the Minerals Industry**

Subasish Dutt and Chris Hughes-Narborough, Aker Solutions, UK; Fredi Lokiec, IDE Technologies, Israel

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Philip Bangertter, Hatch, Australia; Richard E. Dixon and Mariana Villegas, Hatch, Chile

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### **Saving Water in Stripping of Uranium**

Baruch Grinbaum, Bateman Advanced Technologies, Israel

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Laura A. Wendling, Grant B. Douglas, Shandel Coleman and Yuan Zheng, CSIRO Land and Water, Australia

### **Mine Water Treatment Using Recycled Concrete and Magnetite**

James D. Navratil and Andrew C. Akin, Hazen Research, USA

### **Hydrotalcite Formation for Contaminant Removal from Ranger Mine Wastewaters**

Grant B. Douglas and Laura A. Wendling, CSIRO Land and Water, Australia; Ron Pleysier, Parker Centre for Integrated Hydrometallurgy Solutions, Australia

**Commerical Metal Recovery and Sulphate Reduction with Biotechnology-based Processes**

Jacco Huisman and Martijn Olde Weghuis, Paques B.V., The Netherlands

**ARTICLES APPROVED FOR PUBLICATION  
AND POSTER PRESENTATION**

**Identification of Minerals in Soils from the Antofagasta Region for Application in Mining Wastewater Treatmentas**

Paola Agüero, Constanza Fariña and Naldy Miranda, Departamento de Ingeniería Química, Universidad Católica del Norte, Chile; Nelson Alarcón and Bárbara Fuentes, Centro para el Desarrollo de Tecnologías de Explotación Sustentable de Recursos Hídricos en Zonas Áridas (CEITSAZA), Chile

**Selecting Solid-bowl Scroll Centrifuge Technology for Solid-liquid Separation Tasks in Mining**

Stefan Koppe, Flottweg AG, Germany

**Use of Numerical Groundwater Modelling for Mine Dewatering Assessment**

Claudia Martinez and Vladimir Ugorets, SRK Consulting, USA

**Probabilistic Risk Assessment (PRA) Applied to Environmental Mine Waste Management**

Paolo Trincherro and Anne Delos Amphos XXI Consulting, Spain; Daniel M. Tartakovsky, Department of Mechanical and Aerospace Engineering, University of California, USA; Daniel Fernandez-Garcia, Diogo Bolster, Technical University of Catalonia, Spain; Marco Dentz, Departamento de Geociencias, Instituto de Diagnóstico Ambiental y Estudios del Agua (IDEA-CSIC), Spain; Xavier Sanchez-Vila, Technical University of Catalonia, Spain; Jorge Moliner, Amphos 21 Consulting, Spain

**ARTICLES APPROVED FOR POSTER PRESENTATION, NO  
PUBLICATION**

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John McCartney and David Sellars, Schlumberger Water Services, Chile; Aldo Brigneti, Anglo American Quellaveco, Peru

**GRE Answers to Water in Mining Problems**

Joel L. Folkers, Ameron International, USA

**HW Process Technologies Engineered Membrane Separation (EMS) Systems for Hydrometallurgical Applications**

Larry Lien, HW Process Technologies, USA

**Energy Consumption Indicators Associated with Water Resources Management in Iron Ore Mine Sites**

Marcelo Diniz, Francisco Silva, Flávia Nascimento, Ana Paula Vianna, Aloysio Saliba and Márcio de Resende, Golder Associates, Brazil; Maria dos Santos, Vale, Brazil; Andre Rocci, Consultant, Brazil

**Water Resources Management Plan for New Iron Ore Mines in the State of Minas Gerais, Brazil**

André Rocci, Ferrous Resources do Brasil, Brazil; Mario Cicareli, Potamos Engenharia e Hidrogeologia, Brazil

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Miguel Angel Sanz, Degremont, Spain

**Water Sanitation at Molybdenum Removal Plant (PAMo), El Teniente, Codelco, Chile**

Elias Trauman, Degremont, Argentina

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Anita Parbhakar-Fox, CODES, University of Tasmania, Australia; Mansour Edraki, CMLR, University of Queensland, Australia; Dee Bradshaw and Steve Walters, JKRC, SMI, University of Queensland, Australia

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Chris Grobler, Darryl Howard, Trisha Mithal, Mike Meiring and Richard Doyle, Earth Metallurgical Solutions, South Africa

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José Centeno, Leonardo Mitre, Ana Pastana and Gilcimar Pires, Anglo American, Brazil

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Mark Thomasson, Staffan Schorr, Montgomery & Associates, USA; Lyle Davis and Michael Rosko, Montgomery & Associates, Chile; Orlando Acosta, Cía Minera Doña Inés de Collahuasi, Chile

**New Technology for Industrial Water Clarification**

Augusto Reijer, Equiip, Chile

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Fernando Salomone, Cerro Vanguardia, Argentina

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Thomas Peters, Consultant, Germany

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Young Chul Choi, Pranay Mane, Chunwoo Lee and Mainor Vega, Doosan Hydro Technology, USA; Won-Young Ahn and Junho Lim, Doosan Heavy Industries & Construction, South Korea

**Calama and Quillagua Oasis: One History in Common, Two Contrasts, a Different Ending?**

José de la Torre, Héctor Rojas, Matías Sanchez, Ignacio Delfino, Universidad Arturo Prat, Chile; Nelson Tapia, Xstrata Lomas Bayas, Chile

**Technology Optimisation and New Sources to Enhance Water Availability for the Chilean Mining Industry**

Fernando Calle, Andrea González, Luis Castro and Felipe García, JRI Ingeniería, Chile

**Water Balance Model of a Tailings Impoundment Using Field Data**

Felipe García and Pablo Vásquez, JRI Ingeniería, Chile

**Evaporation Loss Reduction in Cia Minera Xstrata Lomas Bayas Processes**

Yuri Zepeda, Xstrata Copper Lomas Bayas, Chile; Marcelo Jo, Xstrata Copper División Norte, Chile; Luis Cáceres and María Elisa Taboada, Universidad de Antofagasta, Chile

**Water Quality Assessment - Technological Basis for Water Management**

Flávio Vasconcelos, AECOM, Brazil