ConeTec Investigations Ltd.
2820 Ellwood Drive SW
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Tailings and Mine Waste Vancouver
Short Course: Site Investigation for Tailings, Mine Waste & Heap Leach
Date: Nov 5, 2023

Expected Learning Objectives

Participants will be exposed to the various equipment, techniques, and considerations necessary to facilitate planning, implementing, and analyzing a T&MW site characterization. An introduction to a broad suite of testing tools ranging from geophysical, drilling, sampling, and in-situ testing. Brief case history examples will be provided throughout the course.

Agenda

Start	Presenter	Duration	Description
7:00		**60**	**Breakfast**
8:00	DM	15	Safety moment, housekeeping, introductions
8:15	JD	45	Integrated site characterization for tailings and mine waste facilities
9:00	DM	15	Site investigation rigs, with a focus on equipment specific to tailings
9:15	DM	45	The toolbox of site investigation techniques available: • Surface geophysics (MASW, HVSR, 3DSS, SBP) • Insitu (CPT+mods, DMT, PMT, BCPT, VST, HPT) • Insitu geophysics (DHS, PL-logging, NMR) • Drilling & Sample (Auger, Sonic, Mud, Air Rotary, sampling)
10:00		**15**	**Break**
10:15	JS	60	Seismic Cone Penetration Test (SCPTu) • History, standards, deployment • Measured, corrected, and interpreted parameters • Pore pressure dissipations • Shear and compression wave velocity
11:15	JD	60	Drained, undrained, and partially drained strength measurements using variable rate CPT and VST testing
12:15		**60**	**Lunch**
13:15	JD	45	Static liquefaction screening using the SCPTu
14:00	JD	30	Spatial variability
14:30		**15**	**Break**
14:45	JQ	60	Consultant perspectives • Example uses of CPT data in TSF design assessments • State parameter interpretation • Saturation estimation • Post-liquefaction strength estimation
15:45	RG	30	Owner's perspective • Why do we need high quality field data? • How best to complement field data with lab data? • How do we manage data across portfolio?

Commented [MD1]: Try to complete in ~40 mins.

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16:15	All	45	Q&A panel discussion
17:00			**Adjourn**

Ranjiv Gupta, Ph.D., P.E.
Dr. Ranjiv Gupta has 20 years of academic and professional experience in the geotechnical, geoenvironmental and geosynthetics engineering fields. He is the tailings manager for Freeport McMoRan, a copper mining company in Phoenix, Arizona. In this role, he is the responsible tailings facility engineer for a mine site and acts as a geotechnical subject matter expert evaluating the benchmarks for tailings characterization across the portfolio. Prior to joining Freeport McMoRan, Dr. Gupta worked as a geotechnical consultant with Geosyntec. He received his doctorate from the University of Texas, Austin and worked as adjunct faculty in the civil engineering department at Arizona State University.

Joseph Quinn, Ph.D, P.Eng, P.Geo, Senior Geotechnical Engineer, Vice President, Klohn Crippen Berger
Joe is the vice president of Klohn Crippen Berger's Alberta business unit and a geotechnical engineer with experience working on mining projects in Europe, Africa, South America, Canada, Australasia, and Asia. He has wide-ranging experience of applying CPT data to the design and assessment of tailings dams in oilsands and hard rock mines. Joe also assisted the post-failure investigation panels with geotechnical and numerical modelling support in their assessments at the Fundão tailings dam in Brazil in 2015, the Cadia North Tailings Storage Facility (NTSF) in Australia in 2018, and the Feijão Mine Dam I in Brumadinho, Brazil in 2019.

Jason T. DeJong, Ph.D. – Professor, University California Davis
Dr. Jason DeJong is a Professor at the University of California, Davis. Jason directs and coordinates research through the Soil Interactions Laboratory, UC Davis Center for Geotechnical Modeling, and NSF ERC Center for Bio-mediated and Bio-inspired Geotechnics. Prof. DeJong's major technical achievements have been in the areas soil and site characterization, biogeotechnics, earthquake engineering, and geotechnical sustainability. Jason has developed or refined several in situ and laboratory tools as well as data quality and correction methods, to improve the characterization of difficult soils – soft sediments, intermediate soils, tailings, and gravelly soils. At the project scale he created an integrated site characterization framework for practice to develop a hypothesis-driven program which streamlines and optimizes industry work, with the goal of cost-efficient and optimized designs that are not excessively conservative and over-designed. Results from his research program have been disseminated through more than 250 publications. His contributions have been recognized through the ASTM International Hogentogler Award (2x), ICE TK Hsieh Prize, ASCE Huber Research Prize, ASCE Casagrande Professional Development Award, Prakash Research Award, ICE Telford Premium Prize, and as an ASCE Fellow.

Jamie Sharp, P.Eng. – Chief Executive Officer, ConeTec
Jamie is a Geotechnical Engineer, graduating from the school of Applied Science at Queen's University in Kingston, Ontario in 1998. He has worked on hundreds of geotechnical and environmental projects throughout the United States and Canada, South and Central America, and Asia. These projects have exposed him to all types of in-situ testing and drilling methods both in a fieldwork and project management setting. Jamie is adaptive to unconventional site investigation techniques in remote and challenging environments, specifically mining applications. Jamie has and continues to lead the implementation and management of large and innovative site investigation projects in marine and mine

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tailings environments. Jamie is the initiator of several novel site characterization innovations including in-situ testing, drilling, and geophysical techniques. Jamie currently manages the ConeTec family of site investigation contractors.

Dallas McGowan, P.Eng. – Vice President Oil Sands, ConeTec
Dallas is a Civil Engineer, graduating from the school of Applied Science at the University of British Columbia in Vancouver British Columbia. Starting with ConeTec as a Co-Op field engineer in 2010, he has field experience on projects throughout Western Canada on civil infrastructure, environmental and mining projects in Western Canada, the United States, and Mexico. Passionate about building relationships with local communities, Dallas initiated the formation of the Mikisew-ConeTec Limited Partnership, a business arrangement between the Mikisew Cree First Nation and ConeTec offering site investigation, instrumentation, and ground improvement services to the Oil Sands industry. Dallas has authored several papers and has extensive knowledge of oil sands tailings and mining site investigations using in-situ testing, drilling, instrumentation, and geophysical techniques. Dallas is currently the Vice President of ConeTec's Oil Sands division.