



# SEMINAR

**Date:** Thursday, April 15, 2010

**Time:** 5:30 to 6:50 pm

**Location:** NREF 1-003 (Natural Resources Engineering Facility)  
University of Alberta

**Title:** **New Directions in Mine Waste Management**

**Presented by: G. Ward Wilson, Ph.D.**  
(Professor – Dept. Of Civil & Environmental Engineering)

**Abstract:** Mining has been a valuable component of the Canadian economy for more than a century and will continue to be so for the foreseeable future. The most significant producers include oil sands, coal, base and precious metals, uranium, potash and diamonds. Land requirements for the management of mine waste are enormous and difficult for lay people to comprehend. For example, repositories for mine tailings and waste rock are often measured in the hundreds of millions and billions of tonnes. Land requirements for surface tailings impoundments in the oil sands industry are normally measured in square kilometres.

The Canadian Council for Innovation in Mining recently declared there is an urgent need to reduce the land and water footprints for mine waste impoundments. In addition, the oil sands industry wishes to reduce long term liabilities associated with fluid containment by moving from wet tailings systems towards dry landscapes. Achievement of these objectives will require the construction of elevated mine waste repositories with positive topographies that offer water shedding characteristics. This will require replacing conventional slurry tailings systems with de-watered tailings constructed at steeper angles.

Various topics directed at the design and closure of de-watered tailings impoundments will be discussed during the presentation. These include:

- 1) Characterization of Saturated/Unsaturated Soil Property Functions for Tailings,
- 2) Direct Measurement of Evaporative and Drainage Fluxes from De-watered Tailings,
- 3) Performance and Optimization of Thin Lift Deposition for Oil Sand Tailings,
- 4) Predicting Vadose Run-off from Mine Tailings, Waste Rock and Cover Systems, and
- 5) Design of Cover Systems for Oil Sand Tailings.

**The presentation will be followed by a question and answer session with the objective of generating interest and potential new research programs.**