GSE - March 6, 2003 Talk

TOPIC: Mine Waste Challenges in Kyrgyz Republic
PRESENTATION BY: Dr. Dave Sego, B.Sc., Ph.D., University of Alberta

In June 2002, while visiting Biskek the capital of the Kyrgyz Republic, a tour of different mining and mineral processing facilities was undertaken. A number of Soviet era facilities left a legacy of geoenvironmental issues that require extensive attention to protect the environment. The stabilization and reclamation work is hampered by the lack of resources within the country to carry out the work. In contrast the tour also included a visit to Cameco's Kumtor Gold mine that opened in 1996. This operation built to modern international standards also posses a number of geoenvironmental issues.

The presentation will focus on the mine waste issues associated with the Ak-Tyuz and Kumtor operations. The Ak-Tyuz tailings and waste rock are associated with both a mine operation and a processing facility that recently closed. The tailings and waste rock are radioactive This operation is located at about 1200 m elevation in contrast with the Kumtor operation located above 4300 m elevation. The lower elevation facility has a hot and dry continental climate associated with the foothills of the Tien Shan Mountains while the Kumtor facility is located within the dry polar high altitude climate zone in the Tien Shan Mountains. The climate conditions have an important influence on the existing state of the mine wastes and what is required for future reclamation.
In addition to the discussion on mine wastes a number of photos of the meadow on the high altitude plateau that is underlain by permafrost along with some spectacular images of the Tien Shan Mountains will be shown.
Dr. Sego's original research interest was in permafrost engineering and the design of foundations in cold regions. More recently, he has applied his permafrost expertise towards developing new techniques for reducing mine waste (e.g.. freeze-thaw consolidation) and for obtaining undisturbed samples of sand for characterization using in-situ freezing. As his interest in the geo-environmental engineering continues to grow, he is actively involved with several industry-university collaborative projects.

Research:
Use of ground freezing to obtain undisturbed samples in loose cohesionless soils
Development of an economical system to safely dispose of high liquid content mine wastes using natural freeze thaw processes to separate fluids from mine wastes
Reclamation of the surface of abandoned coal mine tailings ponds
Understanding how mine waste dumps fail due to the deterioration of the resistance of the material which results in collapse and flow of the mine waste over large distances
Studies to evaluate cold weather processes to clean up industrial waste water by using spraying techniques (joint work with the Environmental Group in Civil Engineering)

Venue :Royal Glenora Club, 11160 River Valley Road, Edmonton, Alberta
Time :Lunch at 12:00 noon
Date :Thursday, March 6, 2003
Cost : $15 GSE Members, $20 Non-members, $10 Students