

PROJECT DESCRIPTION

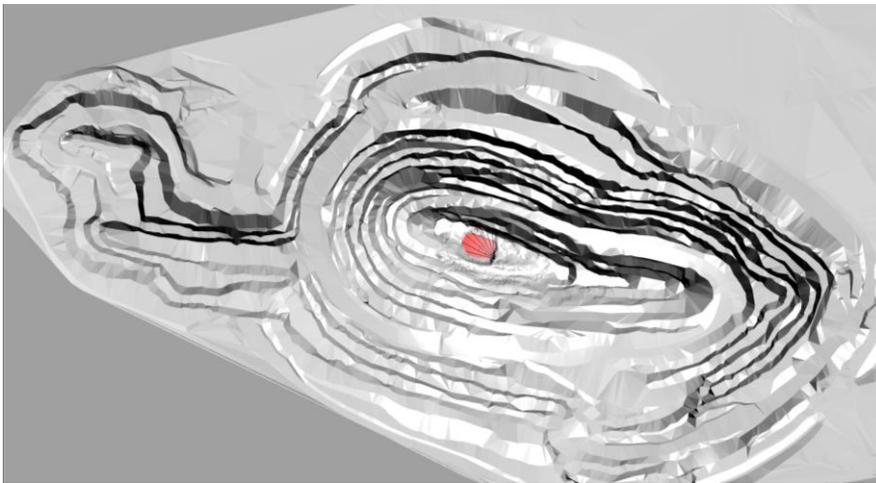
Agnico-Eagle Finland Oy

Kittilä Mine, Finland

The mine is interested in using the decommissioned open pit for storage of tailings from the underground mine, as this would be beneficial both from an environmental and an economical perspective. The implementation will be a technical challenge since portions of the crown pillar separating the open pit from the underground mining has been extracted.

ITASCA'S ROLE

Itasca carried out a study on the possibility to reach the bottom of the decommissioned open pit and the construction of a concrete sealing of the mined part of the crown pillar, as well as a bulkhead in a drift below the pit. Together with the design of the concrete sealing and bulkhead, a program for safe work procedures and monitoring was developed. The recommendations from Itasca were based on documented knowledge of the rock mass, estimated stresses, and detailed geometrical model created with the CAD-software *Rhino*.



CAD-model of the open pit with the designed concrete sealing of the mined out crown pillar in red.

PROJECT RESULTS

Two main solutions of accessing the pit bottom were provided — a ramp alternative and a tunnel alternative. The design of the concrete sealing in the pit bottom is affected by several issues and two solutions for the design of the plug were studied but only one seemed doable. The bulkhead in the drift below the pit has an advanced design but is not designed to be water-tight or to carry a water load from the top of the open pit. Instead, a drainage system is planned to be included in the bulkhead. The bulkhead is designed using a cone-shaped concrete mass creating a load-bearing beam. Both the suggested rock mass and bulked monitoring system were designed for both short- and long term monitoring.