

HYDROGEOLOGICAL ASSESSMENT OF NELSON QUARRY CO. EXTENSION LANDS

Nelson Aggregate Co. retained Golder Associates (Golder) to conduct a hydrogeological assessment of the Nelson Quarry Co. Extension Lands. This program has included the following components:

- cored drillholes to provide for a detailed characterisation of the limestone bedrock of the Amabel Formation which will be quarried in the proposed extension
- packer testing of the open cored drillholes to develop an estimate of the hydraulic conductivity of the rock
- installation of monitoring wells in limestone bedrock and overlying glacial till materials, to permit monitoring of groundwater levels on and adjacent to the extension lands and collection of groundwater quality samples
- Installation of shallow monitoring wells at and adjacent to the wetlands to observe the relationship of wetland water levels and groundwater levels
- Ongoing collection of depth to groundwater level measurements from the monitoring wells
- Pumping of a test well to characterise the bulk hydraulic properties of the limestone and to assess the response of groundwater levels, especially in the vicinity of the wetland to a lowering of the water table
- Ongoing measurement of water flows at stream courses at the base of the escarpment
- collection of water samples from monitoring wells, streams and springs to characterise local water quality

This data has been analysed and now incorporated into a three-dimensional computer model of groundwater flow in the area. This model was constructed to assist in the understanding of groundwater levels and flow and spring discharge in the vicinity of the quarry under existing conditions and assess future groundwater impacts associated with the quarry extension.

A water management strategy is being developed that will address the long term water handling requirements during the operational period and during closure. It is currently planned that the rehabilitation of the quarry extension will involve natural flooding through precipitation and groundwater inflow.

The findings from the hydrogeological work program and assessment of the water resource system are being compiled by Golder Associates into a comprehensive technical report to be submitted by Nelson as part of the license application for the quarry extension.