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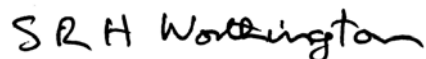
Norm Elmhirst
President
Nelson Aggregate Co.
P.O. Box 1070
Burlington, Ontario, L7R 4L8

Re: Response to peer review by Daryl Cowell of Report on Karst Investigations at the proposed Nelson Quarry Co. Extension

Dear Mr. Elmhirst,

I have reviewed the peer review prepared by Daryl W. Cowell on May 8, 2006 of my "Report on Karst Investigations at the proposed Nelson Quarry Co. Extension", dated April 13, 2006. I have prepared responses to Mr. Cowell's comments, and these are attached.

Sincerely,



Stephen R.H. Worthington, Ph.D., P. Geo.

Comment	Response
<p>1. Summary of Karst Report by Christopher Neville</p> <p>Point 2 - "Worthington defines channels as solutionally-enlarged features that are 1 mm in size or smaller."</p>	<p>Point 2. There is no minimum size given in the report for channels. In section 8.1 the report states "It is likely that there are numerous small channels with apertures in the 0.1 mm to 1 mm range, a smaller number of larger channels in the mm-cm range, and occasional channels larger than 1cm."</p>
<p>2. Report section 3, Para 1, page 3. Some of the lands adjacent to the extension lands were not extensively searched for karst features.</p>	<p>The Nelson Aggregate Co. has made several requests in 2005 and 2006 to have its consultants gain access to examine the surface features of several properties that are adjacent to the proposed quarry site. Access was granted by two property owners (Wong and Vickers), but access was denied by three other property owners (Camisle Ltd, Harmer, and Paletta International). Since a physical examination of the latter three properties was not possible, aerial photographs were used to characterize them. Black and white stereoscopic coverage was obtained from 1934 (scale 1:15,000), 1954 (1:15,840), 1972 (1:15,840) and 1978 (1:10,000). In addition, color copies of aerial photos at a scale of 1:4000 showing approximate regulation limits adjacent to water courses were obtained from Conservation Halton, and colour aerial coverage of the area was also viewed online at Google Earth at a scale of about 1:3000. From examination of these photos it appears that the west arm of the west branch of Mt Nemo tributary flows continuously on the surface; if there are short sections where the creek flows underground they will be shorter than the karst conduit shown in Figures 4, 5 and 6 of the Karst Report. Such putative conduits would almost certainly be located in the uppermost bedrock. Away from the creeks no major karst features were noted from examining the aerial photographs.</p>
<p>3. Report Section 3, Para 4, page 4. The absence of sink to spring flows surrounding the extension area has not yet been proven.</p>	<p>The existence of one sink to spring conduit system has been documented (Figures 4, 5, and 6) and investigated with a tracer test, and</p>

	<p>it is possible that there are other minor sink to spring systems in the vicinity of the proposed quarry extension. However, such systems would almost certainly be in the uppermost bedrock and only be of local significance. This contrasts with areas closer to the Niagara Escarpment, where there is a greater density of karst features and where springs emerge at the base of the Amabel Formation, thus being developed in a much greater thickness of dolostone than the near-surface conduits in the area adjacent to the extension lands.</p>
<p>4. Report section 3, Para 1 and 2, page 4. The current groundwater monitoring network is not of sufficient density to determine the presence or absence of a groundwater trough in the order of magnitude of typical escarpment sink to spring systems.</p>	<p>Agreed. Typical escarpment springs are fairly small and so would have fairly subtle water-table troughs associated with them. The existing monitoring well network is proposed to be augmented with additional wells at 50m spacings which are considered to be a sufficient density for detection of a groundwater level drawdown trough associated with karst conduits. Additional supplemental wells will also be installed along the western and southern perimeter of the quarry. The location of these wells are indicated in the Draft Groundwater Adaptive Management Plan (AMP) which has been submitted for discussion. In addition, it is intended that future versions of this AMP will include a karst monitoring program which will further address these concerns.</p>
<p>5. Report section 4, Para 2, page 4. There are several large springs in the Medad Valley which are of sufficient size to be connected to surface sinkholes.</p>	<p>The springs in Medad Valley are more than 1 km from Mount Nemo Tributary West Branch and so it is probable that most or all their flow is from percolation water. However, it is possible that this creek loses some water in its bed which then flows to one or more of the springs in the Medad Valley. Monitoring of chemistry and discharge at the largest springs is planned as part of the AMP. This will help identify such putative creek-bed losses.</p>
<p>6. Report Section 4, Para 4, page 4/5 The specific significance of the 3 L/s cutoff is not clear, especially since the method of determining flow rates is not indicated.</p>	<p>There is no special significance to the 3 L/s cutoff. Large conduits are usually associated with large spring discharges. If there were just a few conduits draining from the extension area to springs along Medad Valley, then this</p>

	would be reflected in a few springs with discharge much greater than 3 L/s rather than the large number of springs that were found. Flow rates for the larger springs were determined by measuring the width and depth of spring runs and recording the time it took for a semi-submerged object to flow a set distance such as 2 m. Where possible the smaller springs were gauged by timing the filling of a cup or small bucket. This was possible in most cases. The discharges of the remaining small springs were estimated.
7. Report Section 8.2, Para 1, page 7. Note typo mistake in line 6	In fact the 1 m is correct since it refers to a diameter.
8. Report Appendix A, Para 3, page 18. The reason for the need to increase the amount of tracer is not clear. Is it simply to overwhelm the concentrations in the residuals from the earlier testing or based on some fault with the original calculations?	The first two traces had peak concentrations of 6 ppb and 17 ppb, respectively, which gave well-defined breakthrough curves, confirming that the original calculations were satisfactory (see Report, Figure A2). The larger amounts used in later traces were indeed simply to overwhelm the recessions from the earlier traces.
9. Report Appendix A, Para 2, page 21, line 4. The value of the friction factor is missing.	The value used was 1.
10. Conclusions and recommendations 1. If adjacent lands can't be accessed then some attempt should be made to examine large scale aerial photos and possibly undertake a fly over. 2. Some basic water chemistry should be undertaken at the largest springs in Medad Valley. 3. Flow in the largest springs in the Lake Medad ANSI should be monitored during and shortly after quarrying in the southern extension.	1. Large scale aerial photos have been examined. See comment 2 above. 2/3. Monitoring of the largest springs in Medad Valley for basic chemistry and flow will be carried out as part of the Adaptive Management Plan (AMP).