

September 30, 2011

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Attention: Mr. John Knapp, General Manager

**Subject:** Big Creek Bridge – 2011 Annual Review, Minto Mine, YT

#### 1.0 INTRODUCTION

As requested, this letter presents a report by EBA, A Tetra Tech Company (EBA) resulting from a site visit completed to examine the current condition of the components of the Big Creek bridge located at km 19 of the access road to Minto Mine, YT. The intent of the inspection was to provide a geotechnical engineering report on the condition of the bridge components, in partial fulfillment of the requirements of the existing Type B Water Licence MS04-227 (MS04-227).

EBA's last inspection of the bridge was in September 2010. This inspection is summarized in EBA's letter report "Big Creek Bridge – 2010 Annual Review, Minto Mine, YT" dated February 11, 2011. EBA has used this background information to assist in assessing the recent performance of the bridge components.

#### 1.1 Scope of Services

The Big Creek bridge components requiring inspection are outlined in the MS04-227 and are summarized as follows:

- Big Creek bridge, associated approaches and road embankment stability;
- Ditch blocks, culverts, road overflows and reconstructed banks from previous 1998 and 2008 breaches; and
- Rip-rap protection in the areas of the bridge abutments, road overflows, ditch blocks and on the banks of Big Creek.

#### 2.0 OBSERVATIONS AND RECOMMENDATIONS

Mr. Chad Cowan, P.Eng. of EBA's Whitehorse office completed a site visit on August 26, 2011. Specific details are presented in the following sections, and are also noted on Figure 1 attached to this letter. Photographs were taken of the bridge abutments during the visit. Selected photos are attached while the remainder are available for review in the EBA files, if desired.

#### 2.1 Observations

Observations noted during the site visit for the components of the bridge are as follows.

- The Big Creek approaches and road embankment within the vicinity of the bridge components are in satisfactory condition. No tension cracks, slumping, bulging, or evidence of road settlement was noted during the visit. The road sideslopes appear to be consistent with construction.
- There is no Ditch Block #1 (closure berm) and Ditch Block #2 through #5 are in satisfactory condition.
- The two culverts in the road embankment, one west of Ditch Block #2 and the other between Ditch Block #2 and #3, remain in satisfactory condition.
- The rip-rap associated with the ditch blocks, culverts, ditches, and road embankments are in satisfactory condition.

#### 2.2 Recommendations

No actions are required for the ditch blocks, culverts, ditches, road embankments and bridge abutments.

#### 3.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Minto Explorations Ltd. and their agents. EBA, A Tetra Tech Company, does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Minto Explorations Ltd., or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in EBA's General Conditions that are provided in Appendix A of this report.

### 4.0 CLOSURE

We trust this report meets your present requirements. Should you have any questions or comments, please contact the undersigned at your convenience.

Sincerely, EBA, A Tetra Tech Company



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/cc

PERMIT TO PRACTICE
EBA ENGINEERING CONSULTANTS LTD.

SIGNATURE

Date

PERMIT NUMBER PRO03

Association of Professional
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# **FIGURES**

Figure I Site Plan Showing Observations



# ALL LOCATIONS ARE APPROXIMATE AIR PHOTO - FLIGHT LINE A28239-94, SEPTEMBER 19, 1995 BY NORTH WEST GEOMATICS LTD. DRAWING PRODUCED IN COLOR, ANY REPRODUCTION MAY NOT BE REPRESENTATIVE OF ORIGINAL.

Scale: 1: 2 500 (metres)

SITE PLAN SHOWING OBSERVATIONS



Figure 1

# **PHOTOGRAPHS**

Photo I	Rip rap placement - south side of east abutment.
Photo 2	Rip rap placement - north side of east abutment.
Photo 3	Rip rap placement - north side of west abutment
Photo 4	Rip rap placement - south side of east abutment.





Photo 1
Rip rap placement - south side of east abutment. (August 26, 2011)



Photo 2
Rip rap placement - north side of east abutment. (August 26, 2011)





Photo 3
Rip rap placement - north side of west abutment. (August 26, 2011)



Photo 4
Rip rap placement - south side of east abutment. (August 26, 2011)



# **APPENDIX A**

## APPENDIX A GENERAL CONDITIONS



## GENERAL CONDITIONS

#### **GEOTECHNICAL REPORT**

This report incorporates and is subject to these "General Conditions".

#### 1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA's Client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

#### 2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. EBA's instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

#### 3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

## 4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

#### 5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

#### 6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

#### 7.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

# 8.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

#### 9.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

#### 10.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

#### 11.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

#### 12.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

#### 13.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

#### 14.0 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of the report, EBA may rely on information provided by persons other than the Client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.