



August 26, 2015

FILE: W14103659-01
Via Email: kwoloshyn@alexcoresource.com

Alexco Resource Corp.
3 – 151 Industrial Road
Whitehorse, YT Y1A 2V3

Attention: Kai Woloshyn, Environmental Manager

Subject: 2015 Annual Inspection – Surface Engineered Earth Structures
Bellekeno Mine, Keno City, YT

NND EBA Land Protection Corp. operating as NELPCo Limited Partnership (NELPCo) is pleased to submit the enclosed 2015 Annual Inspection Report for the Surface Engineered Earth Structures at the Bellekeno Mine, prepared by our exclusive service provider Tetra Tech EBA Inc. (Tetra Tech EBA)

NELPCo is a limited partnership corporation owned by NND Development Corporation (NNDDC) and Tetra Tech EBA. The partnership aims to develop business and employment opportunities associated with providing Environmental and Engineering Services in the Traditional Territory of the Na-Cho Nyak Dun First Nation (NND). The NELPCo partnership serves to further working relationships between Tetra Tech EBA, NND, and companies operating in NND Traditional Territory.

Thank you for selecting NELPCo to assist with your project, we look forward to supporting you on future projects in NND Traditional Territory. If you have any questions or comments about the NELPCo partnership please contact the undersigned.

Respectfully,

Pat Titus
NELPCo Director
Direct Line: 867.336.4340
coo@nnddc.ca

August 26, 2015

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3 – 151 Industrial Road
Whitehorse, YT Y1A 2V3

ISSUED FOR USE
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Attention: Kai Woloshyn – Environmental Manager

Subject: 2015 Annual Inspection – Surface Engineered Earth Structures
Bellekeno Mine, Keno City, YT

1.0 INTRODUCTION

Alexco Resource Corp (Alexco) retained Tetra Tech EBA Inc. (Tetra Tech EBA) to complete the 2015 annual inspection of the surface engineered earth structures at the Bellekeno Mine near Keno City, Yukon. Authorization to complete this work was received by way of an Alexco purchase order (PO #16717) on June 26, 2015. The following structures were identified by Alexco as requiring inspection:

- Potentially acid generating (PAG) waste storage facility
- Bellekeno waste rock pile
- Bellekeno 625 water treatment ponds
- Lightning Creek bridge abutments (Onek Road)
- Lightning Creek bridge abutments (Bellekeno Haul Road)
- Mill water storage pond
- Dry stacked tailings facility (DSTF)

The location of each structure is shown on Figure 1.

2.0 SCOPE OF SERVICES

Tetra Tech EBA's scope of services for the 2015 annual inspection is summarized in the following list:

- Complete a visual inspection of the surface engineered earth structures at the Bellekeno Mine.
- Prepare a report containing the results of the inspection, summary of the stability, integrity, and status of all inspected structures, and recommendations for remedial actions, if any.

3.0 INSPECTION SUMMARY AND RECOMMENDATIONS

The 2015 annual inspection was completed by Justin Pigage, P.Eng. on August 10th and 11th. The following sections summarize inspection results for each structure, and provide recommended remedial actions if necessary. The recommended remedial actions have been separated into geotechnical stability concerns and ongoing facility maintenance concerns. Select photographs taken during the inspection are attached to this report.

3.1 PAG Waste Storage Facility

The PAG waste storage facility is located south of the Bellekeno portal, as shown on Figure 1. The facility remains untouched from the 2014 annual inspection and requires some maintenance prior to accepting additional storage material.

The perimeter berms are intact with no visible signs of instability (Photo 1). The north and west anchor trenches along the berm crests remain incomplete (Photo 2) and the liner components have been displaced by wind as a result of improper anchoring (Photo 3). The protective geonet and geotextile components of the liner system have only been installed in the north half of the facility to date and some rock currently being stored in the southern portion of the facility is in direct contact with the geosynthetic liner. Angular waste rock can puncture the geosynthetic liner causing a breach in facility containment. The installation of the liner system should be completed as per the original facility design prior to the placement of additional material in the facility.

3.2 Bellekeno Waste Rock Pile

The Bellekeno waste rock pile forms a portion of the Bellekeno Haul Road and is located north of the Bellekeno portal, as shown on Figure 1. At the time of the inspection the waste rock pile sideslopes appeared intact and stable (Photo 4). No remedial action is required for the Bellekeno waste rock pile at this time.

3.3 Bellekeno 625 Water Treatment Ponds

The Bellekeno 625 water treatment ponds are located north of the Bellekeno portal, as shown on Figure 1. The facility consists of two water treatment ponds that were both operating at the time of the inspection (Photo 5). The perimeter berms appeared stable at the time of the inspection and the liners appeared intact. There is some accumulation of surface runoff deposited sediment on the outside of the perimeter berm in the southwest corner of the facility (Photo 6). Accumulation in this area should be monitored and, if necessary, removed as part of facility maintenance to prevent surface runoff water from entering the ponds.

The primary treatment pond was operating at the discharge invert elevation with a freeboard of 0.5 m below perimeter berm crest at the time of the inspection. The secondary pond was also operating at the discharge elevation. Freeboard in the secondary pond ranges from about 0.5 m at the south end to about 0.3 m at the north end. Diminished freeboard could be the result of settlement of the north end of the facility (Photo 7). No signs of settlement were observed during the inspection but a survey should be completed prior to winter to determine if settlement has occurred and establish a base case for future survey monitoring.

The discharge line appeared intact at the time of the inspection but had a noticeable deflection at one of the joints resulting from supporting material eroding away from beneath the pipe (Photo 8). The discharge line should be monitored and supported with additional fill if necessary to minimize distress to the pipe.

3.4 Lightning Creek Bridge Abutments (Onek Road)

The Lightning Creek bridge on the Onek Road is located east of Keno City, as shown on Figure 1. The bridge is a single span steel structure (Photo 9) founded on earth filled timber cribbing abutments. The abutments appeared stable at the time of the inspection (Photo 10). Some of the rip-rap armouring the south abutment on the downstream side of the bridge has been displaced exposing the underlying geotextile (Photo 11). The rip-rap should be replaced as part of ongoing site maintenance to prevent erosion, and the abutment should be monitored for settlement.

3.5 Lightning Creek Bridge Abutments (Bellekeno Haul Road)

The Lightning Creek bridge on the Bellekeno Haul Road is located southwest of Keno City, as shown on Figure 1. The bridge is a single span steel structure with a wooden deck (Photo 12) founded on earth filled timber cribbing abutments. The abutments appeared stable at the time of the inspection and are sufficiently protected from erosion by rip-rap armouring (Photo 13). No remedial action is required for the Lightning Creek bridge on the Bellekeno Haul Road at this time.

3.6 Mill Water Storage Pond

The mill water storage pond is located at the Keno Hill District Mill Site, west of Keno City, as shown on Figure 1. At the time of the inspection the pond was not operating but contained water with a freeboard of about 1 m below the perimeter berm crest (Photo 14). The pond liner appeared intact with no visible signs of instability (Photo 15). No remedial action is required for the mill water storage pond at this time.

3.7 Dry Stacked Tailings Facility

The dry stacked tailings facility (DSTF) is located at the Keno Hill District Mill Site west of Keno City, as shown on Figure 1. No tailings have been placed in the DSTF since fall 2013 as milling operations have been suspended. The tailings placed to date have been regraded and covered with organic growth medium as part of progressive reclamation activities (Photo 16). The surface of the DSTF is either supporting vegetation growth (Photo 17) or recently covered/seeded with vegetation growth pending (Photo 18). No visible signs of instability were observed at the time of the inspection. To date, operation and performance of the DSTF has been consistent with the design.

3.7.1 Instrumentation

Performance of the DSTF is monitored with compaction testing during tailings placement and regular instrumentation readings. DSTF instrumentation consists of seven ground temperature cables installed to monitor permafrost conditions (six in natural soils adjacent to the DSTF and one through tailings placed within the DSTF footprint) and three slope indicators installed to monitor lateral movement of the foundation soils. The locations of installed DSTF instrumentation are shown on Figure 2.

3.7.1.1 Background Ground Temperature Readings

Updated ground temperature readings were collected from five of the six ground temperature cables installed in natural soils adjacent to the DSTF during the inspection. Readings were not collected from BH17 as the protective steel casing has been damaged, wedging the instrument connector within the protective casing. The protective casing should be repaired or removed to allow for continued instrumentation reading. As indicated on the updated ground temperature profiles included in Appendix B, the slight warming trend observed in previous years has continued. The warming trend appears to be more significant in areas of recent disturbance, such as BH32,

indicating it may be the result of disturbance to the insulating vegetative cover during instrumentation installation. Continued regular instrumentation readings are recommended to monitor ground temperature conditions.

3.7.1.2 DSTF Ground Temperature Readings

The ground temperature cable installed in BH40, through the placed tailings and into the foundation soils below the DSTF has been damaged and requires replacement. The next time a geotechnical drill program is completed near the DSTF, a borehole should be advanced to replace the malfunctioning installation.

3.7.1.3 Slope Indicator Readings

An updated lateral movement profile developed from readings collected from the slope indicator installed in BH36 in natural soils adjacent to the DSTF is included in Appendix C. No significant lateral movement of the foundation soils has been observed in the slope indicator results to date.

Readings were not possible in BH30 as the casing remains blocked by ice near the ground surface. A steam unit should be used to clear the blockage in BH30 and instrumentation readings attempted. If unsuccessful, a replacement borehole should be advanced near BH30 the next time a geotechnical drill program is conducted near the DSTF.

The slope indicator casing in BH28 remains unobstructed to the bottom (27 m below ground surface) but the probe gets derailed between 3.0 and 5.0 m below the ground surface, corrupting any collected lateral movement data. A camera should be lowered to assess the source of the derailment and subsequent rehabilitation of the casing completed, if possible. In unsuccessful, a replacement borehole should be advanced near BH28 the next time a geotechnical drill program is conducted near the DSTF.

4.0 CONCLUSIONS

The surface engineered earth structures inspected pose no significant risk to the environment or human health and safety in their current condition. The remedial actions recommended in the previous sections are summarized in the following Table 1 for reference.

Table 1: Summary of Remedial Recommendations

Structure	Stability Recommendations	Maintenance Recommendations
PAG Waste Storage Facility	None	<ul style="list-style-type: none"> Complete proper anchor trenching along north and west sides of facility Finish installation of protective geonet and geotextile as per original facility design
Bellekeno Waste Rock Pile	None	None
Bellekeno 625 Water Treatment Ponds	<ul style="list-style-type: none"> Survey perimeter of secondary pond to check for settlement and establish base for future monitoring 	<ul style="list-style-type: none"> Monitor and, if necessary, remove sediment accumulation in southwest corner of facility to prevent surface water from entering facility Monitor and, if necessary, support the discharge line from secondary pond to prevent damage to the pipe
Lightning Creek Bridge Abutments (Onek Road)	None	<ul style="list-style-type: none"> Replace displaced rip-rap on south abutment (downstream side) Monitor abutment for signs of settlement
Lightning Creek Bridge Abutments (Bellekeno Haul Road)	None	None
Mill Water Storage Pond	None	None
Dry Stacked Tailings Facility	<ul style="list-style-type: none"> Advance replacement borehole for BH40 within DSTF and install ground temperature cable Clear ice blockage in slope indicator casing in BH30 and attempt readings. If unsuccessful, advance replacement borehole near BH 30. Lower camera inside slope indicator casing in BH28 to determine cause of probe derailment at 3.0-5.0 m and rehabilitate if possible. If unsuccessful, advance replacement borehole near BH28 	<ul style="list-style-type: none"> Continue regular instrumentation readings to monitor DSTF foundation conditions

5.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Alexco Resource Corp. and their agents. Tetra Tech EBA Inc. (Tetra Tech EBA) 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 Alexco Resource Corp., 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 Tetra Tech EBA's Services Agreement. Tetra Tech EBA's General Conditions are provided in Appendix A of this report.

6.0 CLOSURE

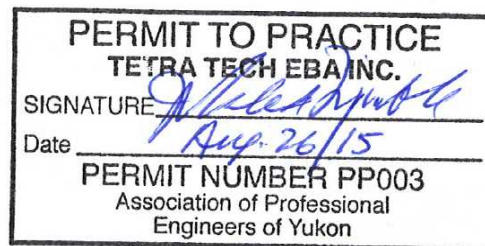
We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech EBA Inc.



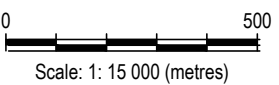
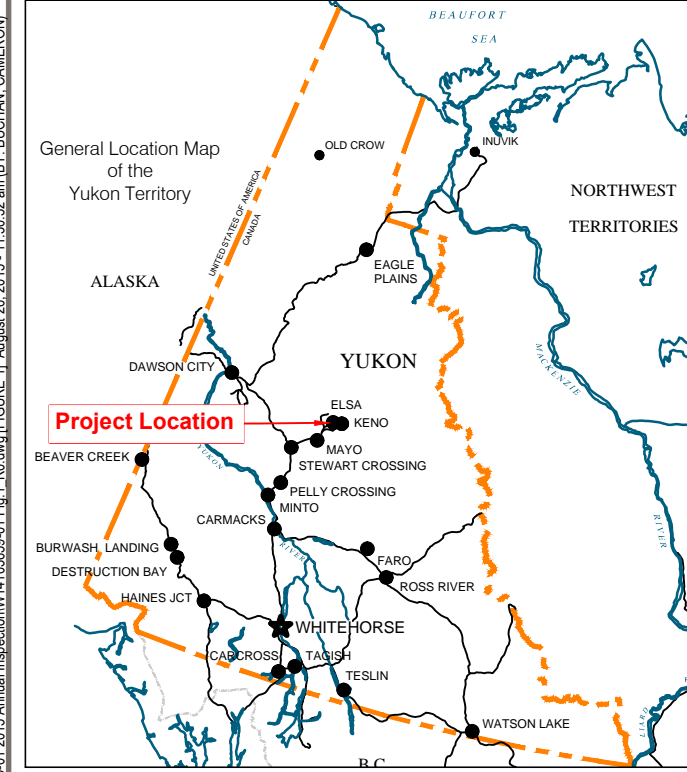
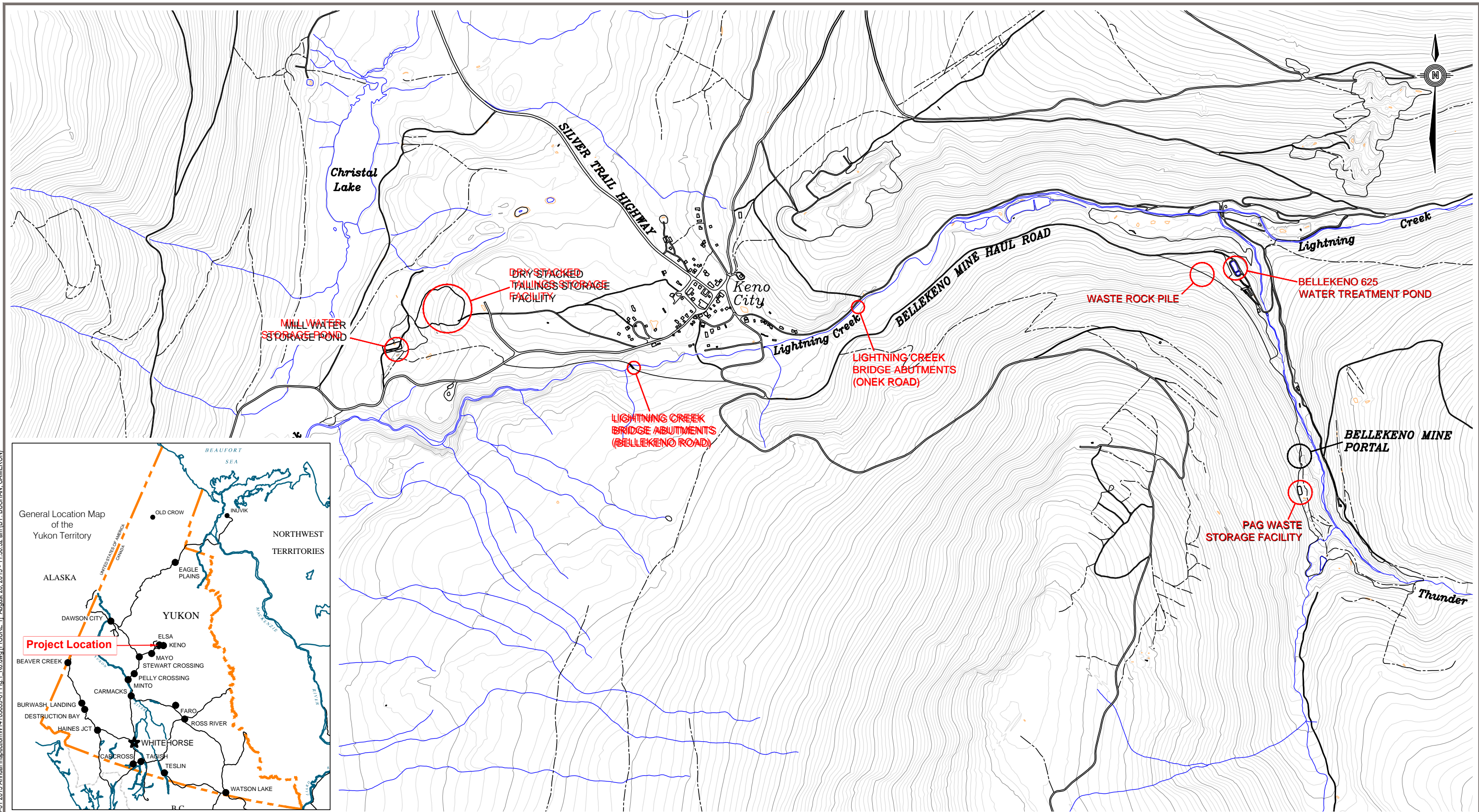
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FIGURES

- Figure 1 Site Plan Showing Structure Locations
Figure 2 DSTF Site Plan Showing Instrumentation Locations



NOTES
 CONTOUR INFORMATION IS BASED ON DRAWING PROVIDED BY ALEXCO RESOURCE INC.

CLIENT

**2015 ANNUAL INSPECTION
 BELLEKENO MINE SITE - KENO CITY, YUKON**

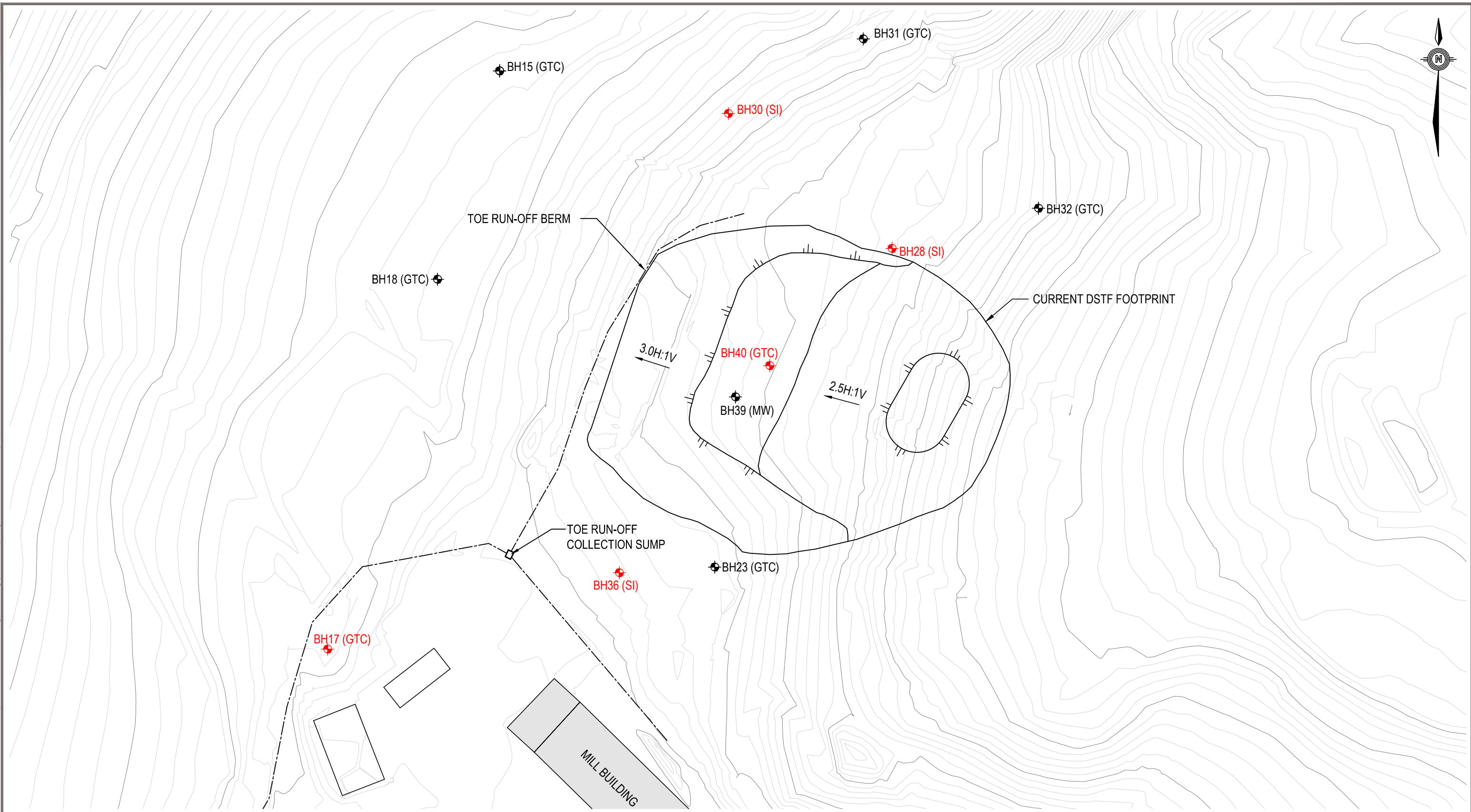
**SITE PLAN SHOWING
 STRUCTURE LOCATIONS**

PROJECT NO. W14103659-01	DWN CB	CKD JTP	REV 0
OFFICE EBA-WHSE	DATE August 25, 2015		

Figure 1

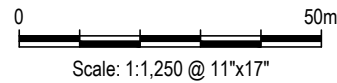
Q:\WhitehorseData\2015 Annual Inspection\Keno\W14103659-01 Fig.1 RD.dwg [FIGURE 1] August 26, 2015 - 11:30:52 am (BY: BUCHAN, CAMERON)

Q:\Whitehorse\Data\2015 Annual Inspection\Keno\W14103659-01 Fig_2_R0.dwg [FIGURE 2] August 26, 2015 - 1:45:00 pm (BY: BUCHAN, CAMERON)



LEGEND

- GTC - GROUND TEMPERATURE CABLE
- SI - SLOPE INDICATOR
- MW - MONITORING WELL



NOTE

INSTRUMENTATION SHOWN IN RED HAS BEEN DAMAGED.

CLIENT



**2015 ANNUAL INSPECTION
BELLEKENO MINE SITE - KENO CITY, YUKON**

**SITE PLAN SHOWING
BOREHOLE AND INSTRUMENTATION LOCATIONS**

PROJECT NO. W14103659-01	DWN CB	CKD JTP	REV 0
OFFICE EBA-WHSE	DATE August 25, 2015		

Figure 2

PHOTOGRAPHS



Photo 1: PAG Waste Storage Facility
Stable facility berms and sideslopes
Facing North - August 10, 2015



Photo 2: PAG Waste Storage Facility
Incomplete anchor trench on north and west side of facility
Facing South - August 10, 2015



Photo 3: PAG Waste Storage Facility
Liner components displaced due to wind
Facing East - August 10, 2015



Photo 4: Bellekeno Waste Rock Pile
Stable waste rock pile sideslope
Facing West - August 10, 2015



Photo 5: Bellekeno 625 Water Treatment Ponds
Facility overview
Facing North - August 10, 2015



Photo 6: Bellekeno 625 Water Treatment Ponds
Sediment deposited outside southwest corner of facility
Facing North - August 10, 2015



Photo 7: Bellekeno 625 Water Treatment Ponds
Reduced freeboard at north end of secondary pond
Facing North - August 10, 2015



Photo 8: Bellekeno 625 Water Treatment Ponds
Bend in discharge pipe at coupler
Facing East - August 10, 2015



Photo 9: Lightning Creek Bridge Abutments (Onek Road)
Bridge overview
Facing South - August 10, 2015



Photo 10: Lightning Creek Bridge Abutments (Onek Road)
South bridge abutment
Facing East - August 10, 2015



Photo 11: Lightning Creek Bridge Abutments (Onek Road)
Displaced rip-rap on downstream side of south abutment
Facing South - August 10, 2015



Photo 12: Lightning Creek Bridge Abutments (Bellekeno Haul Road)
Bridge overview
Facing South - August 10, 2015



Photo 13: Lightning Creek Bridge Abutments (Bellekeno Haul Road)
Stable abutment and sufficient rip-rap armouring
Facing South - August 10, 2015



Photo 14: Mill Water Storage Pond
Water level in pond
Facing East - August 11, 2015



Photo 15: Mill Water Storage Pond
Stable perimeter berm and intact liner
Facing South - August 11, 2015



Photo 16: Dry Stacked Tailings Facility
Regraded and covered tailings facility
Facing East - August 11, 2015



Photo 17: Dry Stacked Tailings Facility
Surface of DSTF supporting vegetation
Facing North - August 11, 2015



Photo 18: Dry Stacked Tailings Facility
Surface of DSTF covered with growth medium
Facing South - August 11, 2015

APPENDIX A

TETRA TECH EBA'S 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 Tetra Tech EBA's Client. Tetra Tech 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 Tetra Tech EBA's Client unless otherwise authorized in writing by Tetra Tech 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 Tetra Tech EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where Tetra Tech EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed Tetra Tech 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 Tetra Tech EBA shall be deemed to be the original for the Project.

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

Electronic files submitted by Tetra Tech EBA have been prepared and submitted using specific software and hardware systems. Tetra Tech 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, Tetra Tech 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. Tetra Tech 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. Tetra Tech 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

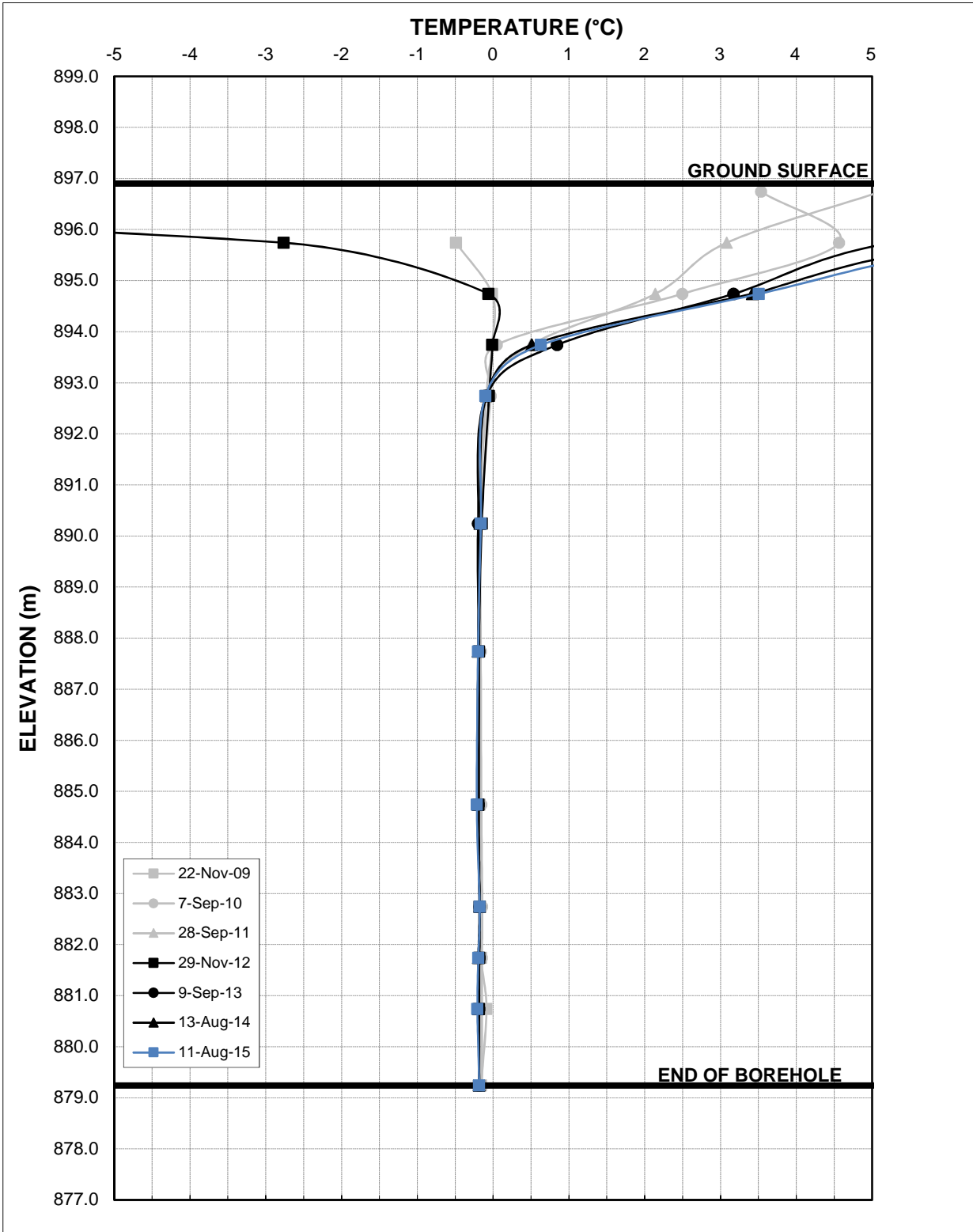
Tetra Tech EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

14.0 INFORMATION PROVIDED TO TETRA TECH EBA BY OTHERS

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

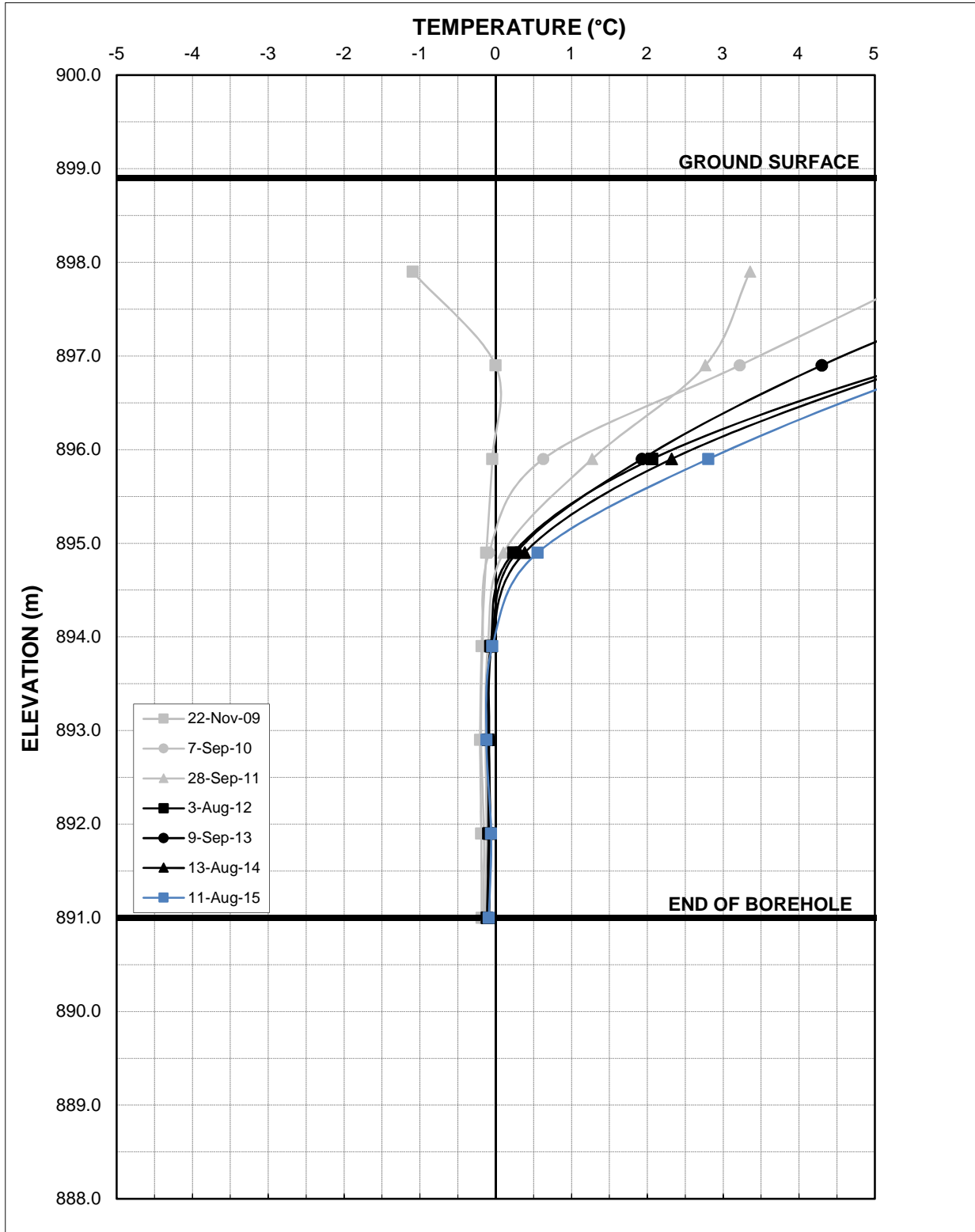
APPENDIX B

DSTF GROUND TEMPERATURE PROFILES



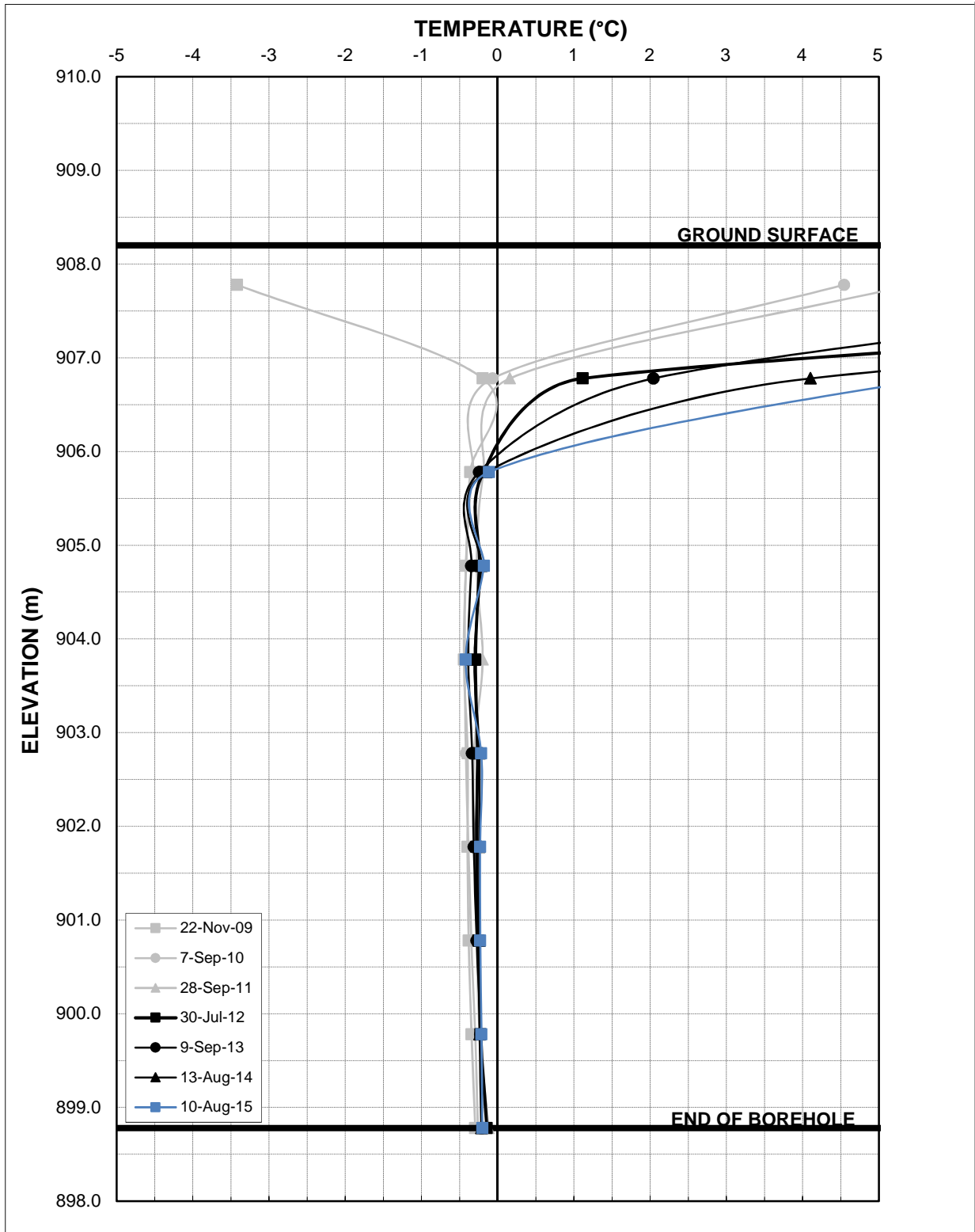
Install Date August 30, 2009
 Last Updated August 11, 2015
 Cable No: 2207

Ground Temperature Profile
 Keno Hill District Mill Site Borehole BH15
 Figure T1



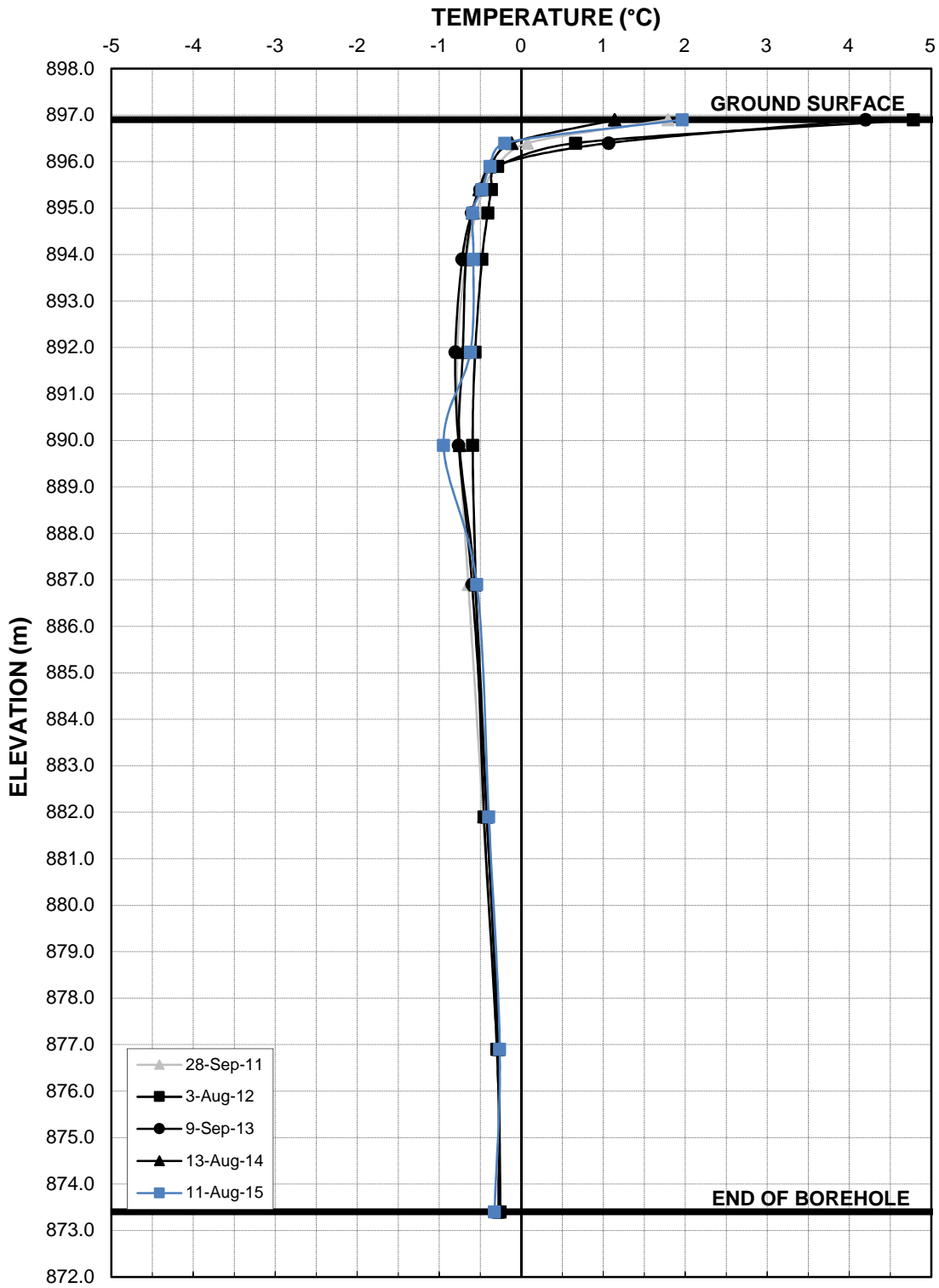
Install Date September 2, 2009
 Last Updated August 11, 2015
 Cable No: 2209

Ground Temperature Profile
Keno Hill District Mill Site Borehole BH18
Figure T3



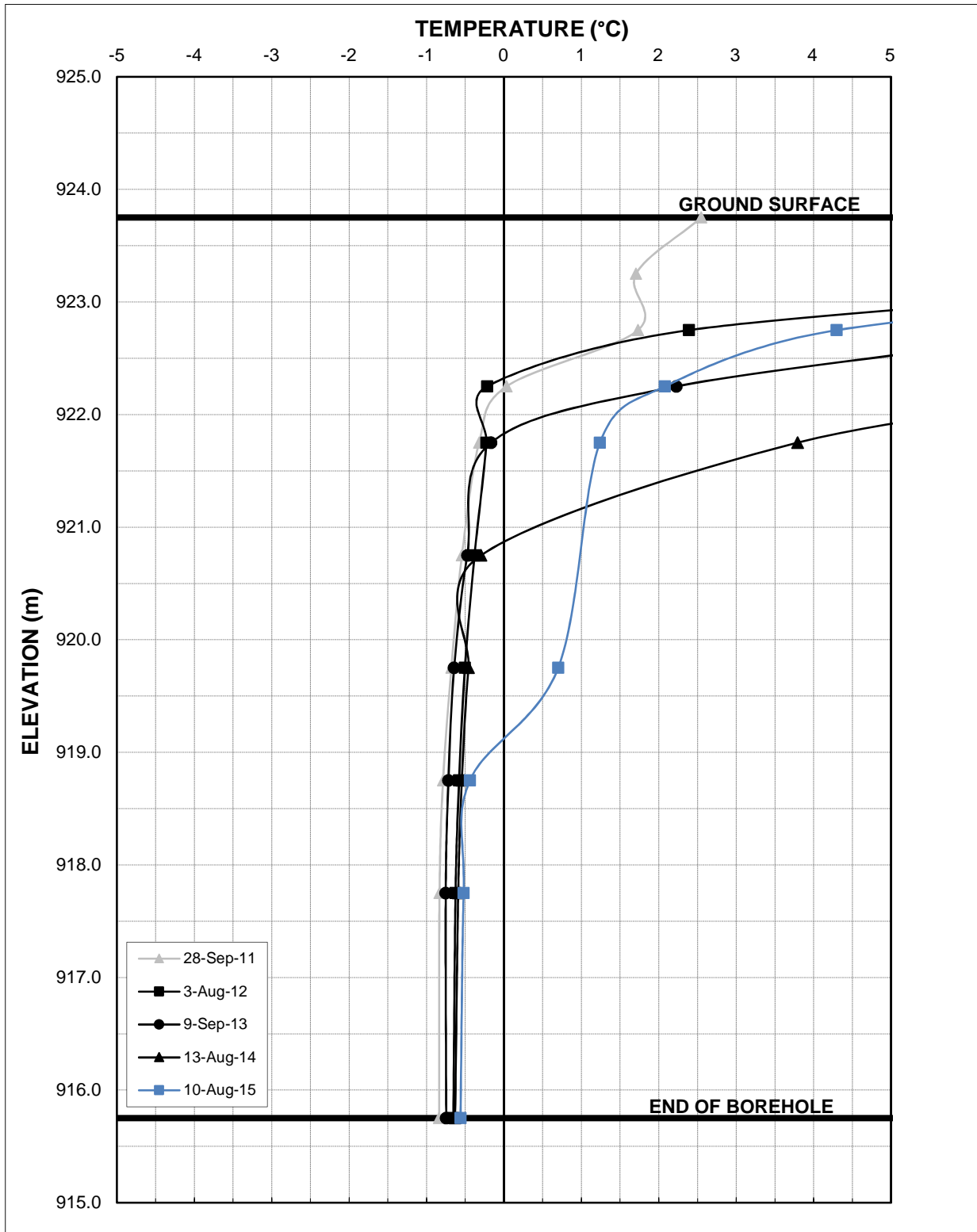
Install Date September 29, 2009
 Last Updated August 10, 2015
 Cable No: 2210

Ground Temperature Profile
Keno Hill District Mill Site Borehole BH23
Figure T4



Install Date February 22, 2011
 Last Updated August 11, 2015
 Cable No: 2263

Ground Temperature Profile
Keno Hill District Mill Site Borehole BH31
Figure T5



Install Date February 22, 2011
 Last Updated August 10, 2015
 Cable No: 2264

Ground Temperature Profile
Keno Hill District Mill Site Borehole BH32
Figure T6

APPENDIX C

DSTF LATERAL MOVEMENT PROFILES

Borehole : BH36
Project : Keno
Location : DSTF
Northing : 7086872
Easting : 483931
Collar :

Spiral Correction : N/A
Collar Elevation : 0.0 meters
Borehole Total Depth : 14.5 meters
A+ Groove Azimuth :
Base Reading : 2011 Dec 14 16:52
Applied Azimuth : 0.0 degrees

