



To: Mr. Jeff Moore
c:
From: Mr. Charles Hunt, P.Eng.
Ms. Sarah McAuley, E.I.T.
Date: July 29, 2016
Memo No.:
File: 704-ENG.ROCK03020-01

Subject: Mt. Nansen Pit Wall Stability Assessment

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) was requested by the Assessment and Abandoned Mines Branch of the Department of Energy, Mines, and Resources of Yukon Government (AAM) to undertake an inspection of the Brown-McDade Pit on the Mt. Nansen property, about 40 km west of Carmacks, YK.

A site reconnaissance was undertaken by Tetra Tech EBA's Mr. Charles Hunt, P.Eng. and Ms. Sarah McAuley, E.I.T. on Thursday June 23, 2016. AAM personnel Mr. Jeff Moore was also present for a portion of the inspection, and was available on site if assistance was required. This report provides AAM with a summary of slope stability observations and safe work procedures for personnel accessing the Brown-McDade pit.

Prior to undertaking the open pit inspection, Tetra Tech EBA personnel received a general description and walk through of the sampling work currently being undertaken within the open pit. It is our understanding that EDI Environmental Dynamics Inc. personnel undertake a water sample profile of both lakes (if water is available for sampling from the ephemeral southern lake) about once monthly. Currently the small lake at the south end of the pit is dry, however water sampling is still undertaken in the northern pit lake.

Tetra Tech EBA completed an inspection of the site in the summer of 2012 and the amount of rock fall observed and documented in this report is compared to the photos from that inspection. While undertaking the pit slope stability inspection, Mr. Hunt and Ms. McAuley also flagged areas of high risk rock fall using stakes labeled "Rock Fall". It is advised that personnel accessing the pit keep away from these stakes and the sources of rock fall that are identified, as much as is practicable.

This memo outlines key findings of the reconnaissance and compares the amount of rock fall within the pit to the inspection undertaken by Tetra Tech EBA in 2012. Further recommendations and protocols for access to the pit lakes for sampling can be found in Appendix A.

2.0 METHODOLOGY

In order to assess the amount of change since 2012, Tetra Tech EBA maintained the same sector nomenclature as outlined in the EBA report issued August 2012 titled "Brown-McDade Assessment at the Mt. Nansen Mine Site". During this inspection, the pit was divided into 21 different sectors. Photos outlining observations can be seen in the Photographs section of this report and a pit map outlining the sectors is appended and labeled Figure 1. Observations made during the site reconnaissance were compared with the 2012 report to identify areas where rock fall had occurred, and other key areas with elevated rock fall risk.

3.0 KEY OBSERVATIONS

Key observations of the various open pit sectors are presented in Table 1 below. Also included in this table are the photo numbers corresponding to the Photographs section of this report. Figure 1 corresponds to these observations by noting the amount of change since the 2012 inspection.

Table 1: Key Observations

Sector	Key Observations	Reference Overview Photo
1	No changes noted – personnel should not be at the base of this sector as they should be in the middle of the pit entrance	1
2	No changes noted – personnel should not be at the base of this sector as they should be in the middle of the pit entrance	8
3	No changes noted – personnel should not be at the base of this sector as they should be in the middle of the pit entrance	1, 2
4	No changes noted	1, 2, 3
5	No changes noted	2, 3
6	No changes noted	2, 3, 4
7	Some minor changes noted, some rock fall activity	2, 3
8	No changes noted	3, 4
9	Some minor changes noted, some rock fall activity	4, 5
10	Some raveling noted which appears to be falling into Sector 9 below	4, 5
11	Some changes noted, some rock fall activity	7, 8
12	No changes noted – personnel should not be at the base of this sector as they should be in the middle of the pit entrance	7, 8
13	No changes noted – personnel should not be at the base of this sector as they should be in the middle of the pit entrance	7, 8
14	No changes noted – personnel should not be at the base of Sector 1 as they should be in the middle of the pit entrance	1, 2, 3
15	Some rock fall noted, contained on catchment bench	2, 3, 4, 5
16	Major rock fall noted	7, 8
17	Some erosion noted within soil deposit in this sector	6, 7, 8
18	a Tension cracks noted, rock dilation, through rock failure, and major rock fall	6, 7, 8
	b Major erosion of gullies within soil noted	6, 7, 8
	c Major rock fall noted however failure is imminent	6, 7, 8
	d Major evidence of rock fall	6, 7, 8
19	Difficult to identify changes as the lake level has changed dramatically, assumed as minor rock fall	6, 7, 8
20	No changes noted	4, 5
21	No changes noted – material is re-handled waste rock	6

4.0 DISCUSSION OF RISK TO PERSONNEL

In this memorandum we define risk as the probability of an event occurring multiplied by the consequence of that event. This memo therefore discusses both the probability and causation of rock fall as well as the potential consequences, specifically to contractors undertaking water sampling in the pit. This memo however does not provide AAM with a comprehensive quantitative risk assessment of rock fall to contractors.

4.1 Causation of Rock Fall

Wyllie and Mah (2005) present data from California on the causes of rock falls. In summary:

- 30% of rock fall occurs due to rain.
- 21% due to freeze thaw conditions.
- 12% due to fractured rock.
- 12% due to wind.
- 8% due to snowmelt.
- The remaining 17% are due to other causes, in particular 0.3% due to animals.

The applicability of this data to the Mt. Nansen site is considered to be generally relevant. Arguably at Mt. Nansen potentially more rock fall caused by snow melt and freeze / thaw conditions might occur, and almost certainly more rock fall caused by rainfall. Based on this data, if one takes some simple precautionary measures to avoid or be extra vigilant in the pit at times of rainfall, freeze thaw, snowmelt and wind then the likelihood that a rock fall occurs when people are in the pit can be substantially reduced.

4.2 Rock Fall Danger Area

The danger area is defined as the location where a rock fall could impact. The danger area extends from the base of a rock slope out by a given distance. As the distance from the slope base increases, there is an exponential decrease in the number of rock falls impacting and rolling out from the base of a slope. The Oregon Department of Transportation (ODoT) rock fall guidelines present data on different rock slope heights, the distance from the base of a slope of the first impact, and also the roll out distance from the base of a slope.

At the Brown-McDade Pit with slope angles from between sub-vertical to 45 degrees and bench face slope heights of 6 to 10 m the ODoT rock fall guidelines can be used as a basis to consider rock fall impact distances. The guidelines only start at 12 m slope heights, and as a consequence this is considered conservative for Mt. Nansen in that most bench faces are less than a 12 m height. With regards to first impact ODoT indicates that 90% of the first impacts will occur within 1.8 m for 76° slopes; 1.2 m for 63° slopes; and 0.9 m for 53°. Given these first impact dimensions we recommend that the base of all rock slopes be avoided and that a minimum clearance of 3 m be used as a general “no go” distance from the pit slope toe.

We have focused in this assessment on first impacts and not roll out. The basis of this is that with a vigilant spotter in place as soon as a rock fall is spotted then a warning can be given to members of the crew. However this would assume that the rock fall trajectory is “occupied” by a worker, an aspect which is discussed below.

4.3 Qualitative Probability of Worker Being in the Path of a Rock Fall

We understand that monthly water sampling occurs in the pit. As a consequence there is probably one time of the year when significant freeze thaw events and “freshet” conditions exist. As noted above for the other periods of sampling if an allowance is made for some flexibility in the timing, then this will reduce the probability that rock fall occurs when workers are in the pit. For instance, by not undertaking sampling following or during heavy rainfall, snowmelt, or wind/storms, the probability might be reduced to between 30% and 40%.

This probability of rock fall can be further reduced if one considers the quantity of actual rock fall that has occurred in the pit over the last 4 years and the occupancy time of workers in the pit. Very little rock fall has occurred in the pit where access is most frequent (ie from the ramp to the northern lake). Where this has occurred the rock fall is concentrated at key prescribed zones (which we have staked and marked) as well as within 3 m of the pit bench faces (which we have specifically asked people not enter as discussed above). Although open to some conjecture, conservatively there might have been 5 or 6 rock falls outside of the prescribed areas and 3 m from the bench toe, each year.

We understand that workers are in the pit for 4 hours per month or 48 hours over a given year. From this one might estimate that the probability that a worker is in the pit at the same time as a rock fall is $0.033 (48 / ((365/6 \text{ rock falls per year}) \times 24 \text{ hr per day}))$. Assuming workers do not go into the pit during weather events this might be reduced by 70% (9.86×10^{-3}).

The area in grey on Figure 1 is the area where controlled access and spotters are required to aid in observing potential rock fall (ie the area outside the prescribed zones and outside of 3 m away from the toe of the slopes). This area is some 200 m in length, and on average 10 m wide (even if one considers the flooding of the southern ephemeral ponding area). There are therefore 2000 square metres where rock fall might occur, during water sampling, 4 of these square metres might be occupied (assuming a 4 person crew). If a given rock fall traverses or occupies 15 square metres then the probability of someone being struck in an occupied cell is $1.5 \times 10^{-5} (4/2000) \times (15/2000)$. The overall probability therefore is estimated to be $(9.86 \times 10^{-3}) \times (1.5 \times 10^{-5}) = 1.5 \times 10^{-7}$.

When conducting this type of semi-quantitative analysis often thorough sensitivity analysis is undertaken to assess the impact in changing factors. In this report we have conducted only a basic type of semi quantitative assessment, the purpose of which is to highlight that we believe there is a low risk to workers in accessing the pit from the rock fall hazards. This assumes that some basic precautions are taken, such as:

- Staying out of the prescribed zones as marked by stakes within the pit (refer to annotated photos).
- Maintaining at least a 3 m width or distance from the base of the pit slopes (including sampling within the flooded area).
- Not going into the pit if intense rainfall has occurred or is in the forecast. Similarly stay out of the pit during wind storms, and during snow melt.
- Undertake sampling following a clearly set out procedure such as that provided in Appendix A.

4.3.1 Sampling during freeze thaw conditions

During the winter all rock is frozen in place and rock fall should be very rare even from the active slopes in the northern part of the pit. It is acknowledged that probably once a year water sampling will have to be undertaken during freeze thaw or “freshet” conditions. Ideally sampling would be put off until the pit is thawed, however we understand that this means that a non-continuous water testing record would result. In such conditions our recommendation is to undertake the sampling in the early morning when the rock is still frozen on cold days where

ideally the temperature is below 0°C in the mornings. This should mean that sources of rock fall are frozen. However, a site specific assessment of the conditions during this particular testing period should occur. If rock fall is seen on top of snow or ice, or if fresh rock fall is thought to have occurred then it may be prudent to abandon the testing until more favorable conditions exist.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Overall, the Mt. Nansen Brown-McDade Pit is comprised of poor quality rock that is generally very weathered, and is highly affected by natural rock fall triggers (ie. rainfall, freeze-thaw, snowmelt). Some rock fall in this pit should be expected due to its poor rock mass quality, however some sectors are more prone to rock fall than others. Table 2 below summarizes the amount of rock fall in each sector since Tetra Tech EBA's inspection in 2012. This table can also potentially be used to identify where more rock fall is expected to occur in the future. However this does not mean that rock fall will not occur in the sectors that appear relatively unchanged.

Table 2: Key observations for each pit sector

Rock Fall Observation	Pit Sectors
Minimal Change Observed	1-6, 8, 12-14, 20, 21
Minor Rock Fall	7, 9, 10, 11, 15, 17, 19
Major Rock Fall	16, 18

Upon Tetra Tech EBA's assessment, it is recommended that any personnel accessing the pit read, understand and agree to the procedure outlined in Appendix A attached. This is to promote worker safety and to remain vigilant when assessing if pit access should be undertaken. This also assumes the following basic precautions are undertaken:

- Staying out of the prescribed zones as marked by stakes within the pit (refer to annotated photos).
- Maintaining at least a 3 m width or distance from the base of the pit slopes (including sampling within the flooded area).
- Not going into the pit if intense rainfall has occurred or is in the forecast. Similarly stay out of the pit during wind storms, and during snow melt.
- Undertake sampling following a clearly set out procedure such as that provided in Appendix A.

Assuming the procedure and practices set out in this memo are adhered to, the risk of rock fall to workers is considered low and the pit can be accessed safely for water testing purposes. During freshet and freeze thaw conditions particular vigilance should occur and extra pre-cautions may need to be considered.

6.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Assessment and Abandoned Mines Branch of the Department of Energy, Mines, and Resources of Yukon Government and their agents. Tetra Tech EBA Inc. 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 Assessment and Abandoned Mines Branch of the Department of Energy, Mines, and Resources of Yukon Government, 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 attached to this memo.

7.0 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.

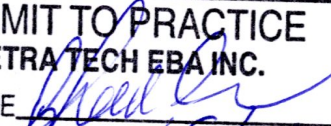



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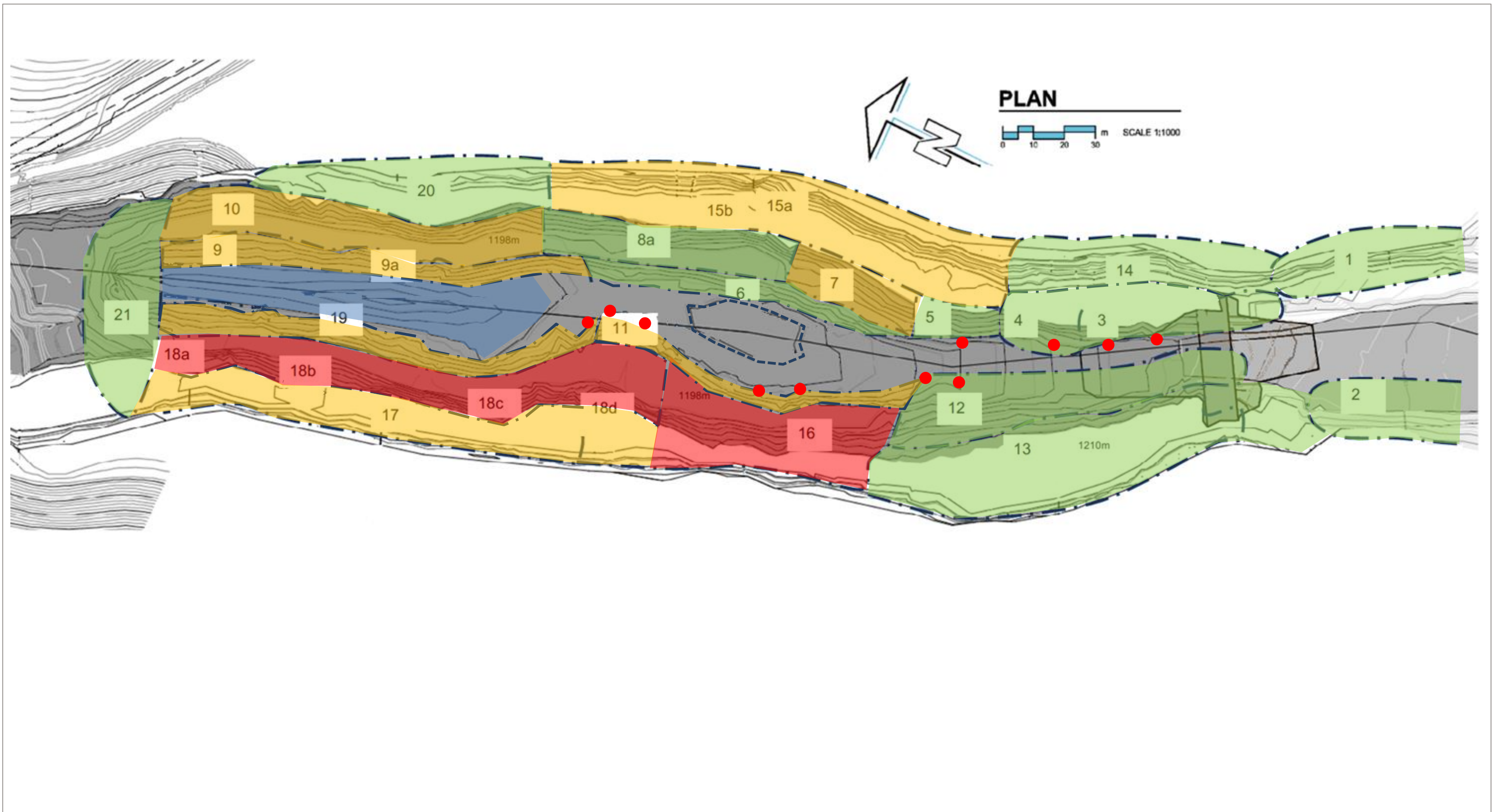


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PERMIT TO PRACTICE TETRA TECH EBA INC.	
SIGNATURE	
Date	
PERMIT NUMBER PP003 Association of Professional Engineers of Yukon	

FIGURES

Figure 1: Outline of Pit Sectors and Amount of Rockfall Observed



LEGEND

- · — · Outline of Pit Sectors
- Outline of ephemeral lake
- Approximate location of northern pit lake
- Area identifying Minimal Change Observed
- Area identifying Minor Changes Observed
- Area identifying Major Changes Observed
- Approximate location of "Rock Fall" stakes

NOTES

STATUS
ISSUED FOR USE

CLIENT



MOUNT NANSEN PIT WALL STABILITY ASSESSMENT

Outline of Pit Sectors and Amount of Rockfall Observed

PROJECT NO. ENG.ROCK03020-01	DWN SM	CKD CH	APVD CH	REV 0
OFFICE EBA-VANC	DATE JULY, 2016			

Figure 1

PHOTOGRAPHS

Photos 1 - 8 Overview Photos

Photos 9 - 13 Detailed Photos

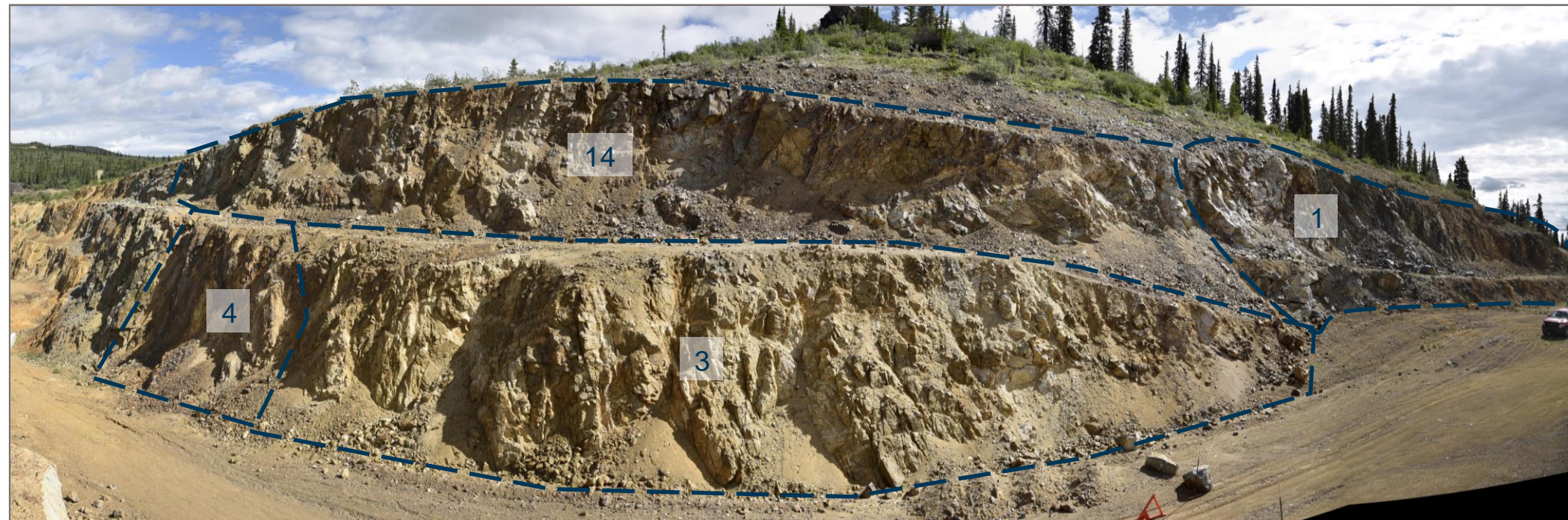


Photo 1: Overview of sector 1, 3, 4, and 14 (taken June 23, 2016).

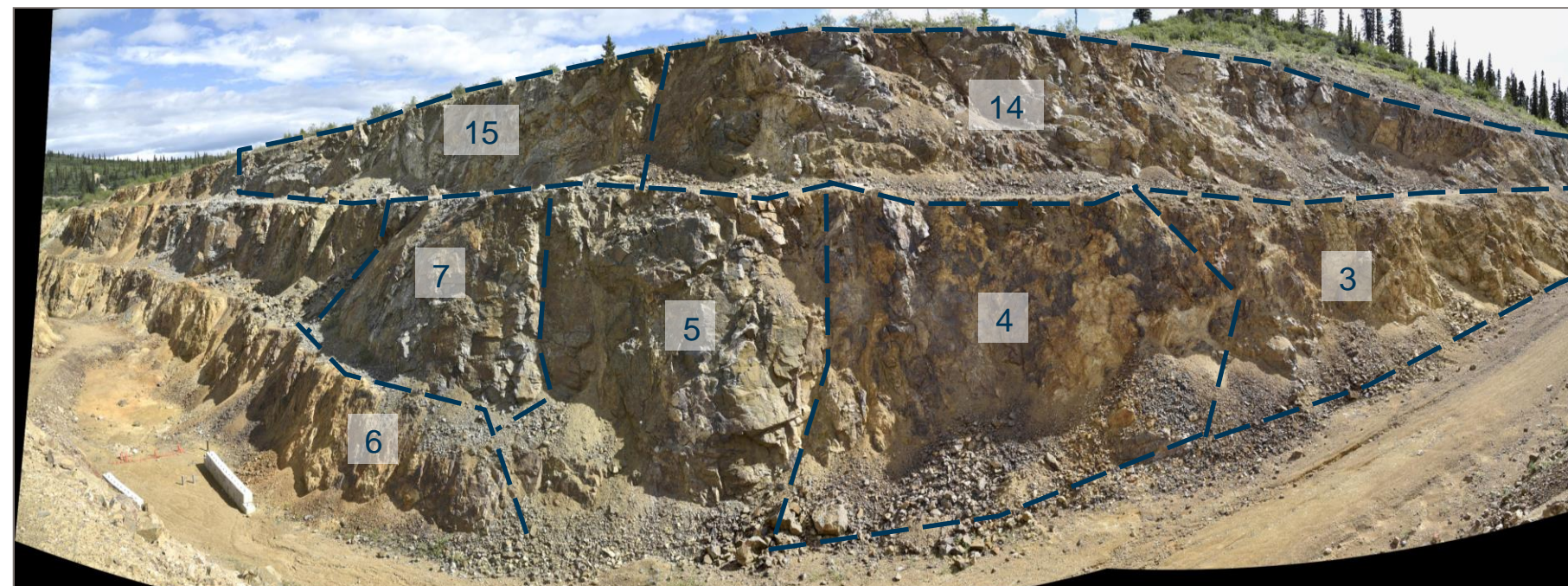


Photo 2: Overview of sectors 3, 4, 5, 6, 7, 14, 15 (taken Jun 23, 2016).

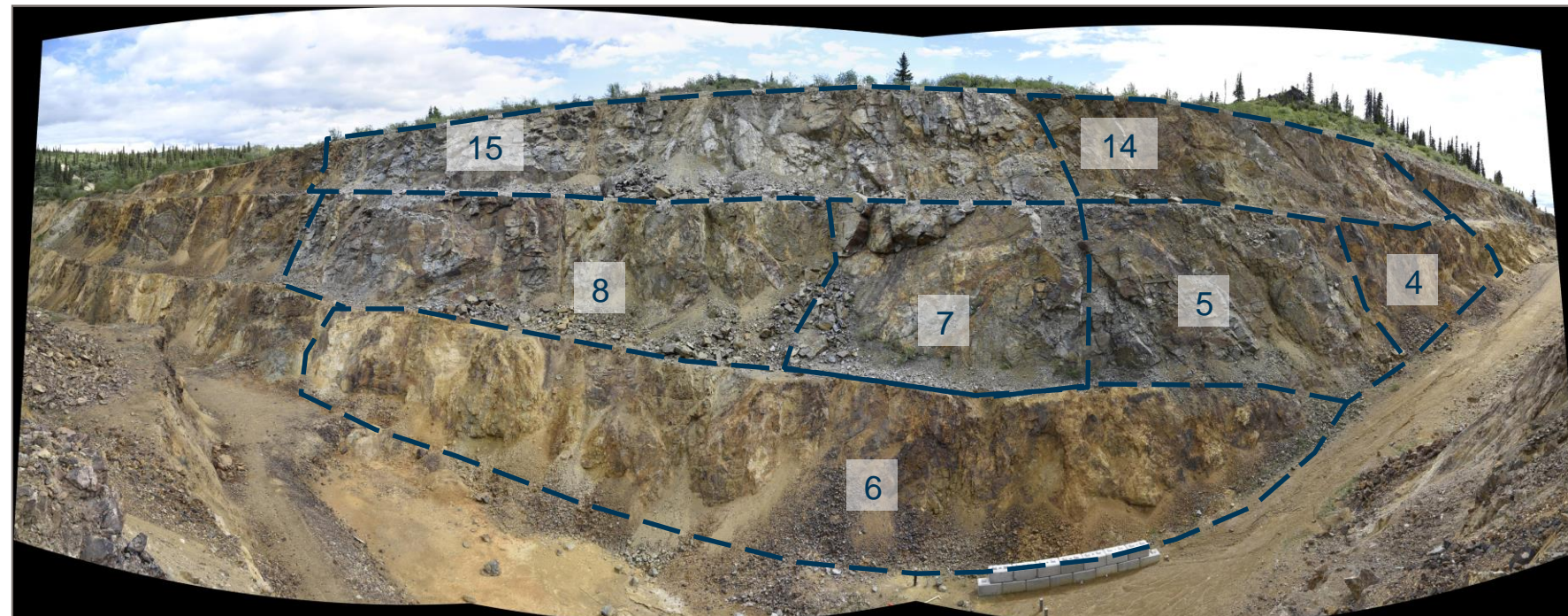


Photo 3: Overview of sectors 4, 5, 6, 7, 8, 14, 15 (taken June 23, 2015).

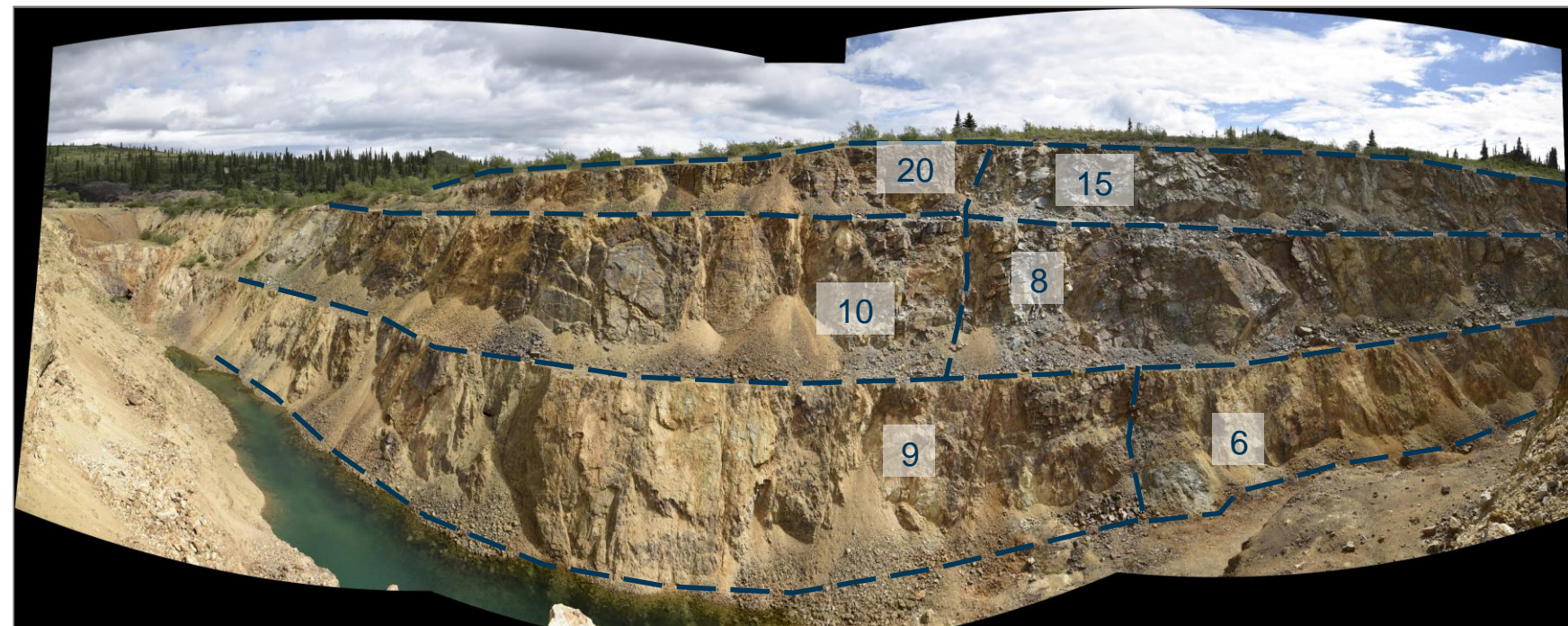


Photo 4: Overview of sectors 6, 8, 9, 10, 15, 20 (taken June 23, 2016).

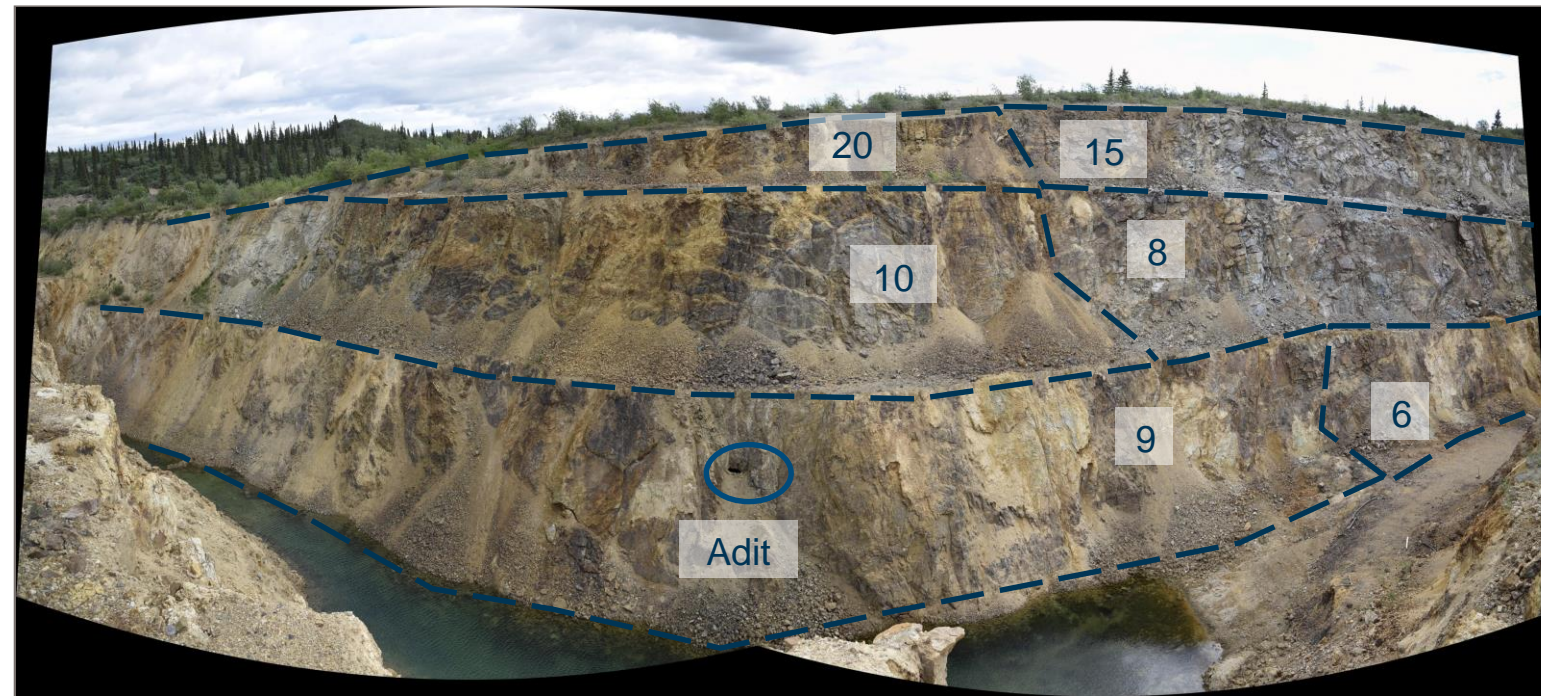


Photo 5: Overview of sector 6, 8, 9, 10, 15, 20 (taken June 23, 2016).

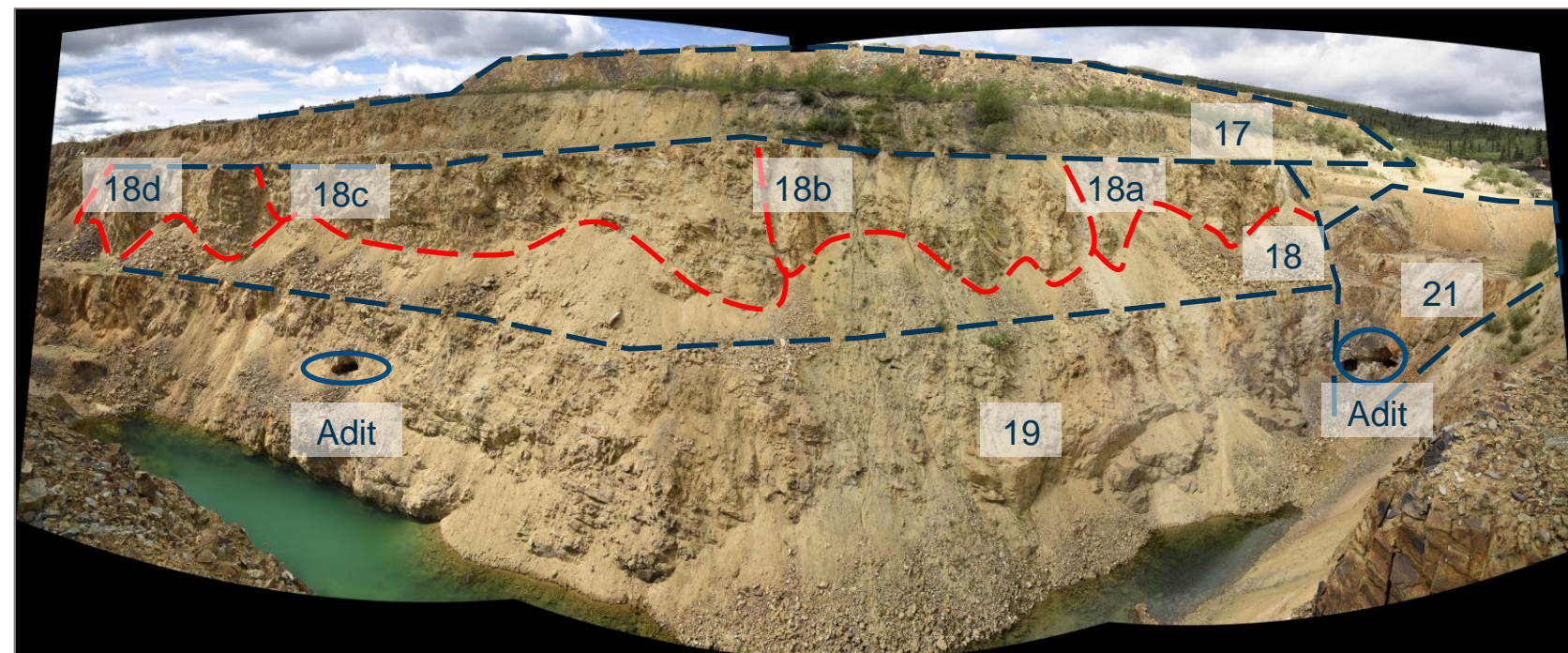


Photo 6: Overview of sector 17, 18, 19, 21 (taken June 23, 2016).

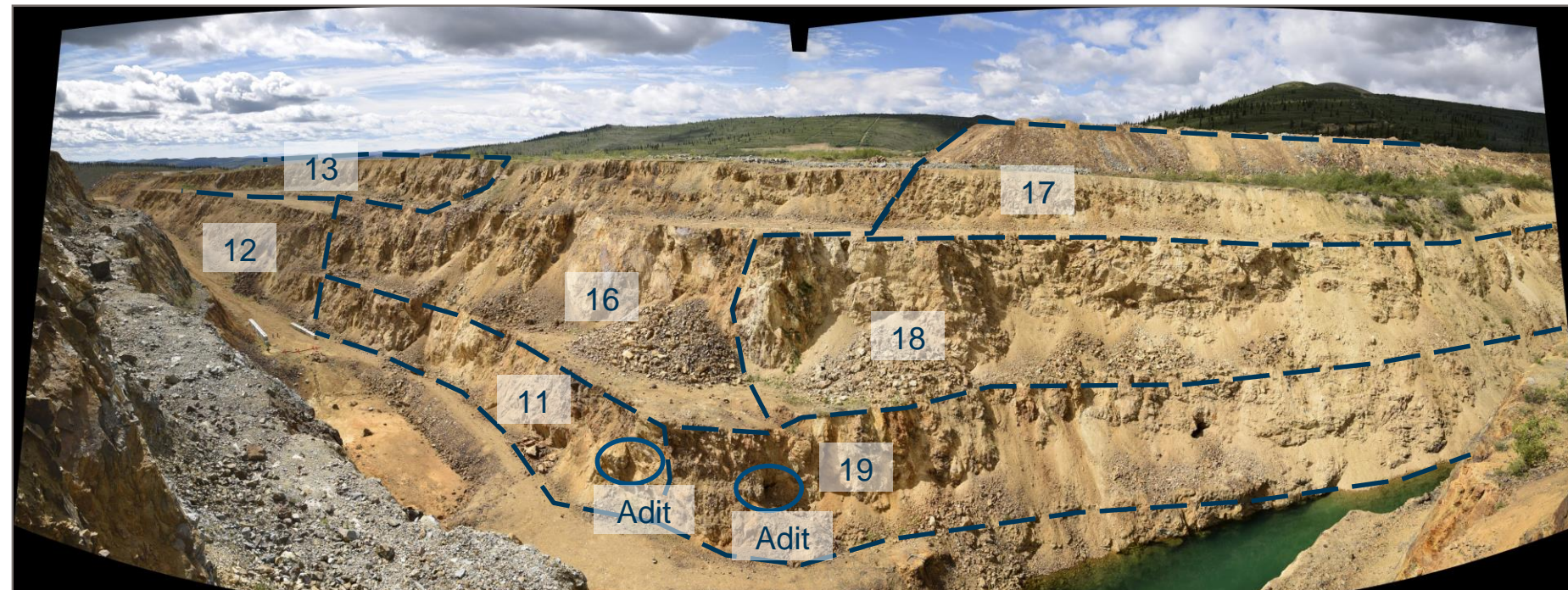


Photo 7: Overview of sector 11, 12, 13, 16, 17, 18, 19 (taken June 23, 2016).

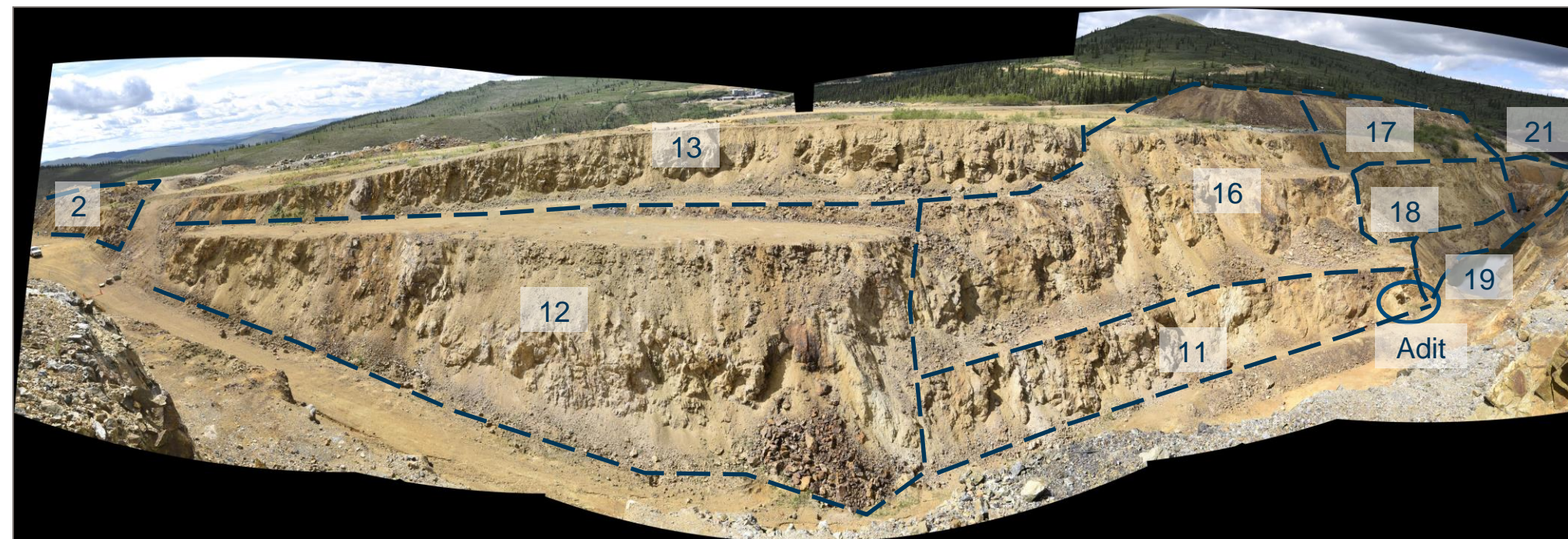


Photo 8: Overview of sector 2, 11, 12, 13, 16, 17, 18, 19 (taken June 23, 2016).



Photo 9: Overview of entry path that should be taken into the pit. Personnel should not come within 3 m of pit walls. Photo taken June 23, 2016



Photo 10: Location of “Rock Fall” stakes. Photo taken June 23, 2016



Photo 11: Area above sector 18 showing dilated rock and tension cracks indicating imminent failure. Photo taken June 23, 2016

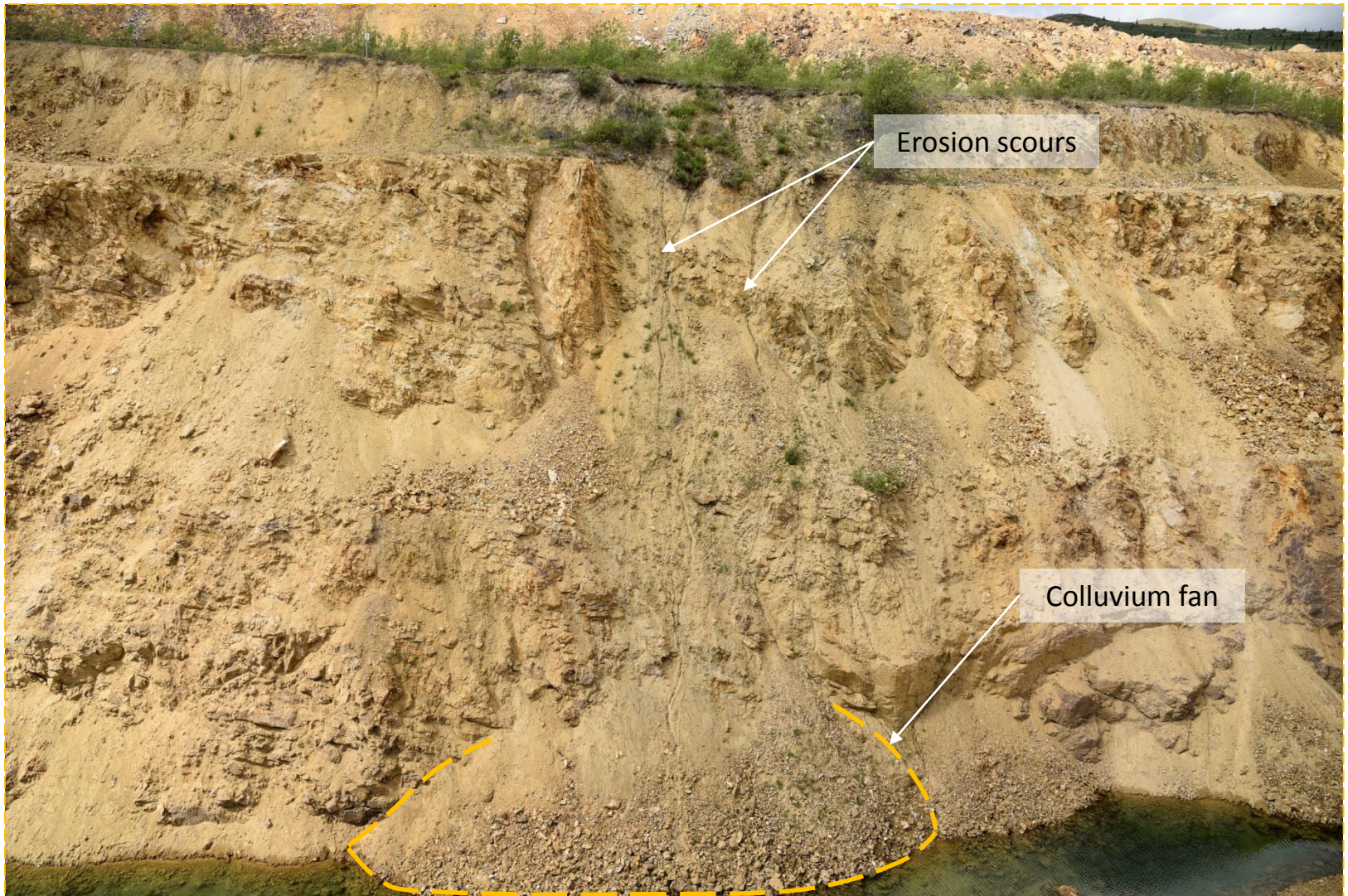


Photo 12: Sector 18b showing deep erosional scours, colluvium fan show material migration. Photo taken June 23, 2016

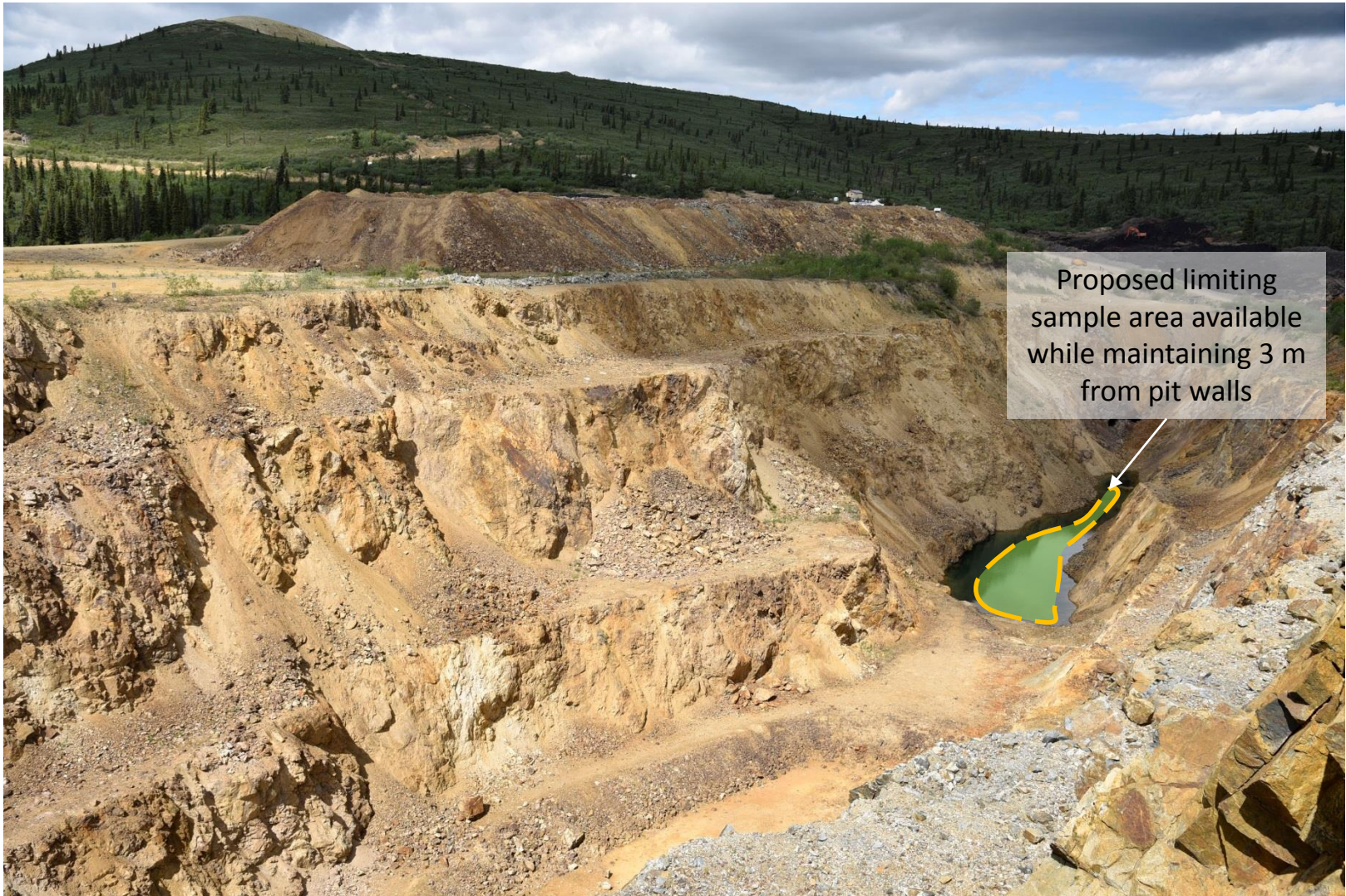


Photo 13: Maintain 3 m from pit walls while undertaking profile sampling within the pit lake. Photo taken June 23, 2016

APPENDIX A

Mt. Nansen Brown-McDade Open Pit Access Procedures
Procedure Photos

MT. NANSEN BROWN-MCDADE OPEN PIT ACCESS PROCEDURES

The following procedure should be adhered to by personnel conducting water sampling within the Mt. Nansen pit lakes. Should other work require entry into the pit, this procedure can be used as a baseline but a specific risk assessment should be undertaken for the task required.

1. Prior to entering the pit, radio the bunkhouse and inform them of the time you expect to exit the pit. The spotter should also check in and radio the bunkhouse every 30 minutes.
2. Back up the vehicle with a spotter to within the jersey barriers. Spotter should be in the centre of the ramp, and watching for rock fall.
3. Unload boat, identify who will be the rock fall spotter and who will be collecting water samples.
4. With the sampling team watching above the spotter for rock fall, the spotter should advance 30 m towards the sampling location, keeping in mind to stay 3 m from the pit walls and stakes marked with "Rock Fall". Once the spotter is in place, the sampling team may then mobilize the boat and sampling equipment to where the spotter is located. At this time the spotter is looking for rock fall above the crew moving the boat and sampling equipment. From there, the spotter may advance another 30 m with the sampling team watching for rock fall above their path. The sampling team may then continue to the spotter's location. This should continue until the sampling team and spotter reach the northern pit lake. Then standard sampling procedures should be undertaken, however the boat and personnel should always remain at least 3 m from the pit walls, even in the lake.
5. The designated spotter should remain vigilant and watchful for rock fall from the boat when sampling is underway. They should not be involved in the sampling activities as they should be scanning the lake for rock fall. If an extra person is available, they may stay on land with a radio to contact the bunkhouse in the event of an emergency.
6. Once sampling is complete, a similar method of staged egress should be undertaken in no lengths greater than 30 m.
7. The bunkhouse should be notified upon safe exit from the pit.

The following elements should be read and understood by all personnel before entering the Brown-McDade Pit.

1. This pit is at high risk of rock fall. These high risk zones are marked with stakes. Please maintain 3 m from pit walls at all times. To access the pit walls, a separate risk assessment should be undertaken.
2. Hearing protection, earbuds, or headphones are not to be worn while entering, working in, or leaving the pit.
3. A spotter is required for any work undertaken within the pit (including water sampling from the bottom of the pit).
4. It is recommended that when personnel are accessing the northern pit lake, they traverse the center of the pit (including the center of the southern pit lake when possible).
5. Water sampling should be conducted at the center of the pit, as opposed to the deepest location so as to maintain fair distance from the pit slope walls.

Pit access should be restricted in the following events.

1. Excessive rainfall has occurred within 24-48 hours (greater than about 50 mm over 24 hours).

2. Freeze-thaw conditions are observed.
3. Excessive wind is observed within, or on the ramp of the pit.
4. It is a time of heavy snowmelt (freshet).
5. Blasting is being undertaken within the vicinity.
6. A rock fall spotter is not available.

All personnel entering the pit must sign a document saying they have read, understand, and will comply with the Mt. Nansen Brown-McDade open pit access procedure, unless an emergency situation should arise.



Photo 1: Overview of entry path that should be taken into the pit. Personnel should not come within 3 m of pit walls. Photo taken June 23, 2016



Photo 2: Location of "Rock Fall" stakes. Photo taken June 23, 2016

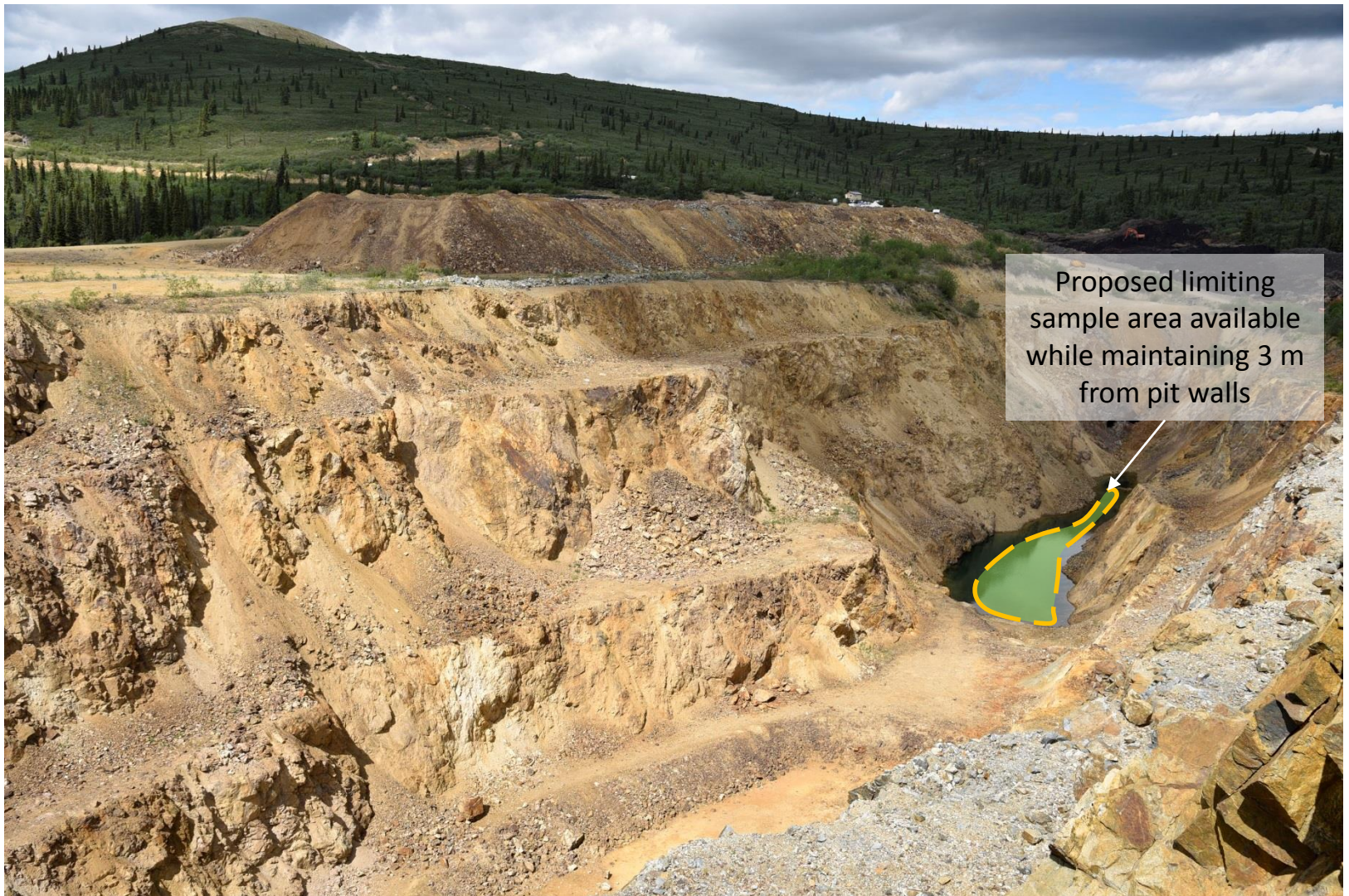


Photo 3: Maintain 3 m from pit walls while undertaking profile sampling within the pit lake. Photo taken June 23, 2016

APPENDIX B

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 testholes and/or soil/rock exposures. Stratigraphy is known only at the locations of the testhole or exposure. Actual geology and stratigraphy between testholes 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.