# APPENDIX J

## PERMANENT AND TEMPORARY ACCESS ROADS

TETRA TECH WARDROP

SEABRIDGE GOLD

# Appendix J1

## Winter Access Road

A TETRA TECH COMPANY

June 6, 2012

ISSUED FOR USE
EBA FILE: E14101069
Via Email: b.murphy@theedge.com

Seabridge Gold Inc.
106 Front Street East
Suite 400
Toronto, ON M5A 1E1

**Attention:** Brent Murphy, P.Geol.
Vice President, Environmental Affairs

**Subject:** Evaluation of Alternate Glacier Access Routes
Kerr Sulphurets Mitchell Project

# 1.0 INTRODUCTION

Seabridge Gold Inc. (Seabridge) requested EBA Engineering Consultants Ltd. operating as EBA, A Tetra Tech Company (EBA) to evaluate the feasibility of winter road access to the proposed Kerr Sulphurets Mitchell (KSM) Mine. The winter access road would be used to mobilize initial equipment and supplies into the mine site. The equipment and supplies would be used over two years to enable preliminary construction work to be carried out at the mine site, as well as to construct an extension to the existing access road from the Eskay Creek Mine site in the Unuk River valley to the proposed KSM mine site area.

In 2009, EBA, assisted by Nuna Logistics Limited (Nuna), conducted a preliminary evaluation of a winter haul road. The route would begin near the Granduc Mine following the Bowser River valley north until reaching the Frank Mackie Glacier, where it would traverse the glacier into the Ted Morris Creek valley and end at Sulphurets Creek. The winter access road was to be used to mobilize a relatively small fleet of construction equipment and supplies to allow tunnelling and road construction to begin on site before the main access road was constructed to site from Highway 37. The total length of the initially proposed winter access road was on the order of 42 km with roughly 29 km of the route being on the glacier. The evaluations carried out in the fall of 2009 and spring of 2010 identified that the portion of the route in the Bowser Creek valley was going to be fairly challenging because of the topography in the valley. In addition, as logistics planning continued on the project, the overall project design team expressed a desire to mobilize both larger and more equipment to site using this winter access road. The results of the initial evaluations were presented in a report titled, "Preliminary Evaluation, Proposed Winter Access Road, Kerr Sulphurets Mitchell Mine, BC" dated May 2010.

In 2011, EBA was asked to further evaluate both the initially proposed route and alternate routes on the Berendon Glacier, which terminates very close to the Granduc Mine site and also connects to the Frank Mackie Glacier. Pretium Resources Inc. (Pretium), the operators of the nearby Brucejack Lake property, used the initial portion of this route to move limited construction and exploration equipment into their site during the winter of 2010/11. Some of the mobilized equipment is being used to construct an access trail from an abandoned trail in the Bowser River Valley onto the Knipple Glacier. Using the Berendon Glacier to gain access to the Frank Mackie Glacier may be a better route than using the over land winter trail, which



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would have to be constructed in the Bowser Creek valley. The Berendon Glacier route might even increase the length of time that the haul road could be used.

The 2011 evaluation included reconnaissance of the Berendon Glacier route, the Knipple Glacier route, and also a quick assessment of potential access onto the Salmon Glacier. This letter report discusses the feasibility of utilizing the noted potential routes for early access into the KSM site.

# 2.0 2011 ROUTE RECONNAISSANCE

The 2011 route reconnaissance was carried out by Kevin Jones, P.Eng., of EBA and Brett Wildman of Nuna on September 12 and 13, 2011. The potential routes were examined using helicopter support operating out of Seabridge's Sulphurets camp. The general locations of the various routes are shown on Figure 1 and each is discussed in the following sections.

## 2.1 Berendon Glacier to Frank Mackie Glacier Route

Pretium utilized the Berendon Glacier and Frank Mackie Glacier to gain access to the Brucejack Lake area during the winter of 2010/11. The route on the glaciers was still visible during the September reconnaissance. Seabridge also provided EBA with photos taken during the winter of 2011 showing the location of the routes utilized to gain access onto the Berendon Glacier near the Granduc Mine (see Photo 1). Photo 1 clearly shows the large amounts of snow that collect in this area. Enough snow falls to fill in most of the crevasses on the glacier.

Figure 2 shows the potential route up the Berendon Glacier eventually joining the Frank Mackie Glacier. The suggested route follows the route used by Pretium to gain access to the Frank Mackie Glacier during the winter of 2010/11. However, four locations along the route will likely be challenging for mobilizing significant sized equipment:

1. Station 0+200 to 1+000 – This section is quite steep and as shown on Photo 1 (winter) and Photo 2 (summer) the access route used by Pretium follows one of two narrow valleys between outcropping rock. The width of the two small narrow valleys and the steepness of the route will be a challenge. Some of the loads may have to be moved by winching up this section.

2. Station 6+800 to 7+100 – This is the steepest section of the entire route, being an approximately 30% upwards grade on the haul leg (see Photos 3, 4, and 5). Pretium appeared to have moved directly up this slope with the equipment that they mobilized, but the actual method that they used is not known. The loads may have been winched up the slope. Switchbacks may have to be constructed in this area to be able to haul the types of loads expected for the Seabridge haul. The empty returning tractors and sleighs will likely have to be held back with a winch from the top of the slope to ensure that they do not get into a runaway situation.

3. Station 7+100 to 8+400 – This portion of the route is quite steep being approximately an upwards 15% grade on the loaded leg of the haul. Additional tractors or winching may be required to haul some of the larger loads in this area.

4. Station 10+100 to 10+900 - This portion of the route is quite steep being approximately a downwards 15% grade on the loaded leg of the haul. The loads may have to be held back with an additional tractor from the rear to ensure that they do not get into a runaway situation

An alternate route, continuing further up the Berendon Glacier (Berendon Glacier Route 2, see Figure 1), was found to not be feasible because of a very steep rock face between the Berendon and Frank Mackie Glaciers.

## 2.2 Knipple Glacier Route

As noted above, Pretium is constructing an access trail from the abandoned trail in the Bowser River Valley to gain access onto the Knipple Glacier. The Bowser Lake trail and Knipple Glacier were utilized many years ago to gain access into the Brucejack Lake area. At that time, equipment was apparently barged to the west end of Bowser Lake and then a trail was constructed from there to the toe of the Knipple Glacier. EBA was provided with route alignment (plan and profile) drawings of the newly proposed route prepared by Cypress Forest Consultants Ltd. for Pretium. The total length of the proposed Pretium route is 79.3 km with 10.1 km of the route being on the Knipple Glacier (see Figure 1). Pretium's current plan involves construction of 35.1 km of new road from Highway 37 up the Wildfire Creek valley to the Todedada Creek valley connecting to the existing trail at the west end of Bowser Lake. The existing Bowser Lake trail, which will be upgraded, is 29.5 km long. Upgrades include installing several bridges and culverts, and raising the embankment along much of its length. The retreat of the Knipple Glacier necessitates that the existing Bowser Lake trail now be extended 3.4 km to gain access onto the Knipple Glacier.

The existing trail from Bowser Lake was visually examined from the helicopter during the site reconnaissance. The trail is extremely overgrown along much of its length and culverts and bridges have either been removed or washed away. The last 5 km of the trail near the Knipple Glacier is very narrow with numerous switchbacks and steep grades and much of it is cut into the side of the valley. Some construction work, including drilling and blasting, was being carried on the 3.4 km long trail extension at the time of the site reconnaissance (see Photos 6 and 7). The route of the extension appears to be prone to avalanches and rockfalls. In fact, a portion of the trail extension that was constructed in 2011 had already been buried by a significant rockfall.

Winter access from the Brucejack Lake area into the KSM project area would have to be down either the Sulphurets Glacier or the Mitchell Glacier. These options are discussed in Section 2.3. Alternatively, a summer access trail could possibly be constructed from the Brucejack area down into the Sulphurets valley, a distance of at least 10 km. This would entail a large construction effort because the road would have to be cut into the side of the steeply sloping valley wall along much of it length. As such, this is not likely a good option for quick mobilization of the pioneering construction equipment.

## 2.3 Sulphurets and Mitchell Glacier Routes From Brucejack Lake

### 2.3.1 Brucejack Lake to Kerr Sulphurets

Site reconnaissance was conducted on potential routes to evaluate if access could potentially be gained into the Sulphurets valley by continuing from near Brucejack Lake down one of the two glaciers that flow into the Sulphurets valley. Access to the Brucejack Lake area could be either by the Berendon Glacier route, as

done by Pretium in the winter of 2011, or from the Knipple Glacier as Pretium is proposing for the future. Figure 3 shows possible glacier routes leading to the Sulphurets valley from the Brucejack Lake area. These routes were examined during the reconnaissance and it was determined that it would not be feasible to haul equipment into the site along these routes because of excessive grades and extensive crevassing in at least two locations (see Figure 3).

### 2.3.2 Brucejack Lake to Mitchell Deposit

Potential routes from Brucejack Lake into the Mitchell valley are shown on Figure 1 and in more detail on Figure 3. These routes were not examined in the field; however, the topography shown on the potential routes from the Knipple Glacier to the Mitchell Glacier appears to have very steep grades, even steeper than the problem areas on the Sulphurets Glacier (see Figure 3).

In addition to the above routes, the access road currently being constructed to gain access onto the Knipple Glacier was examined. It was found to be a very narrow and potentially unstable road and is not likely going to be suitable for hauling equipment of the size required by Seabridge. Therefore, a glacier haul route using the Knipple Glacier to gain access to the Mitchell Glacier or into the Sulphurets valley is not likely feasible.

## 2.4 Salmon Glacier Route

The Salmon Glacier connects to the Frank Mackie Glacier and flows into the valley in which the access road (NFD 88) to the Granduc Mine is located. At its closest, the road is within roughly 0.5 km of the edge of the glacier, but is at an elevation of at least 300 m higher than the glacier (see Figure 1). Reconnaissance of the east slope of the valley did not identify a potential winter access route from the road to the glacier because of the very steep slope. It would likely be possible to construct an access road from the Granduc road to the glacier, but this would require considerable construction effort. The Salmon Glacier itself appears to provide good access to the Frank Mackie Glacier.

## 2.5 Frank Mackie Glacier Route

The initially proposed route on the Frank Mackie Glacier was discussed in detail in the May 2010 EBA report noted in Section 1.0 and is shown on Figure 1. As noted in that report, Kirk Keller of Nuna conducted a site visit on April 15, 2010 together with Brent Murphy of Seabridge. Mr. Keller's notes from the April 2010 reconnaissance are summarized in the following points:

- The road (NFD 88) from Stewart to the Granduc Mine was snow covered and prone to avalanches along most of the route. This area had lots of snow.
- After passing the Granduc site, there was less snow than was expected all the way to the toe of the Frank Mackie Glacier in the Bowser Creek valley and certainly less than around the Granduc Mine.
- Bowser Creek was open all the way to the small lake at the toe of the Frank Mackie Glacier. It would take longer than initially expected to fill the wash outs in the side valleys along the route, but it would be possible. The snow cats would have to push snow farther than initially expected.

- The rest of the Frank Mackie route was good, but in the Ted Morris Creek valley it was observed that there was less snow in this area (see Photo 8). Due to the snow conditions, it would take longer to push snow along a route over the boulder field coming down off the glacier. There was little snow in the valley, north of the glacier in the Ted Morris Creek valley and all the way over to the camp in the Sulphurets valley.
- At the Sulphurets camp, the helicopter pilot noted that the snow cover was perhaps 0.5 m less than normal.
- To the north of the KSM area, near the Eskay Creek Mine, there was more snow.

Access to the Frank Mackie Glacier from the Berendon Glacier, as shown on Figure 2, eliminates the need to utilize an approximately 9 km long winter trail down the Bowser Creek valley, a portion of which could be quite difficult to construct and operate.

Pretium's use of the Berendon and Frank Mackie Glaciers to gain access into the Brucejack Lake area clearly shows the feasibility of mobilizing some construction equipment on these glaciers. The area above Ted Morris Creek was not utilized by Pretium, so the feasibility of this portion of the proposed Seabridge route has not been proven.

The portion of the Frank Mackie route in the Ted Morris Creek valley (see Figure 2) was again examined in September 2011. Although it was somewhat difficult to compare, it seemed that there had been more rockfalls onto the toe of the glacier and some of the boulders appeared to be bigger than in 2009 (see Photos 9, 10, and 11). This portion of the route (km 32 to km 36 on Figure 2) may be the most challenging portion of the route depending on the amount of snow that accumulates in the valley. Brett Wildman of Nuna had considerable experience operating snow cats around the Eskay Creek Mine and noted during the 2011 reconnaissance that the area had huge amounts of snow when he worked there in 2009 (see Photos 12 and 13). The information available to date indicates that there is less snow in the KSM area than there is both to the north (Eskay Creek) and to the south (Granduc area). This brings some concern because the Ted Morris Creek Valley may not have enough snow to be able to pad over the very rough bouldery terrain.

Nuna feels that it will be feasible to move snow to pad over the very rough terrain if more snow exists earlier in the season than was observed in mid April 2010. It may also be feasible to create avalanches from higher up on the valley slopes to increase the snow cover in the valley.

## 3.0 RECOMMENDATIONS

Figure 2 provides an approximate routing for the now preferred glacier haul route which starts at the Granduc Mine, runs up the Berendon Glacier and then across and onto the Frank Mackie Glacier. The route then follows the previous identified route down the glacier into the Ted Morris Creek valley. This route is shorter than the original Frank Mackie Glacier route being only an estimated 38.5 km long versus 41.7 km. Considerably more of the preferred route (Berendon/Frank Mackie) is on glacier ice rather than on a winter trail that would be constructed on land in the Bowser Creek Valley.

Observations from the winter of 2010 along the road to Granduc have indicated that the road is very prone to avalanches and has extensive snow cover. Therefore, our recommendation is still to mobilize the equipment to Granduc during the summer. The area around the Granduc Mine appears to offer an ideal

location for a laydown area for all the equipment and supplies. However, it is understood that Castle Resources has plans to rehabilitate the Granduc Mine with an ambitious schedule to start mining at this location by 2014/15. It is unknown what impact this could have on the feasibility of using the immediate developed area for a laydown yard.

There remains some concern regarding the amount of snow in the Ted Morris Creek valley. This should be further evaluated during the coming winter.

Following the initial evaluation in 2009/10, EBA was asked on several occasions if more and larger equipment could be mobilized on the winter access route. We do not feel that it would be feasible to mobilize anything more than originally considered and which was documented in the list of equipment in the May 2010, EBA/Nuna report.

Further evaluation of the route would benefit from the collection of LiDAR data to be better able to refine the route and evaluate expected grades.

The other routes discussed above do not appear to be good alternates to the preferred route. Having said that, it is appropriate to continue to monitor the progress of the construction of the Pretium access roads in the Bowser Lake valley and in particular near the Knipple Glacier to be better able to understand the capabilities of the road. If Pretium makes additional hauls on the glacier into the Brucejack Lake area, the success and procedures that they use should be monitored to provide guidance to Seabridge's potential winter road haul.

The list of equipment to be mobilized to site and equipment needed to construct and maintain the road was provided to EBA by Seabridge in 2009 and is documented in EBA October 2010 report. Additional information (topographic data, snowfall, winter river flows, etc.) has not been obtained that would allow the route to be optimized beyond its current conceptual level of design. Therefore, at this stage we do feel that it would be appropriate to revise the previously provided cost estimate. It was understood that the limited fleet of equipment would be utilized to construct some early access roads and to start work on tunnel construction.

EBA would like to reiterate the following:

1. Because of the climate, snow conditions, and terrain to be crossed, the proposed road would be a snow road rather than a higher capacity "ice road" as typically used much further north. We are limited to the construction of snow roads for access on and off of the glaciers and would rely on sufficient glacial ice thickness, identified by Ground Penetrating Radar, to support the heavy loads.

2. The majority of the equipment would be loaded onto skid mounted trailers at the laydown area near Granduc and would be hauled to site using tracked tractors. Track mounted equipment such as small dozers may be walked in. Normal trucks will not be able to be driven on this type of winter trail.

3. Maximum equipment loads/sizes were to be limited to the sizes permitted on normal highway tractor trailer units. The road from Stewart to Granduc is understood to be in relatively poor condition north of the Salmon Glacier and is only a single lane along much of its length. The tunnel that was constructed to avoid a particularly avalanche-prone section of the route is currently blocked and regardless, appears to be of a size that would only support a normal-sized highway truck even if it was

stabilized and reopened. The equipment would be mobilized to Granduc during the summer where it would be stockpiled until the winter road was usable. This avoids having to try to main the avalanche-prone road to Granduc during the winter. For this reason, it is suggested that the maximum load size considered would be equivalent to a normal sized highway tractor trailer (e.g. BC maximum GVW is 63,500 for normal loads, this equates to a 33 tonne maximum load for a four axle semi-trailer, 2.6 m maximum width). Loads of this size could be hauled to site from Granduc on the skid mounted trailers (sleighs). Sleighs of this size are typically available, but anything larger would likely have to be manufactured.

EBA has also been asked about the construction schedule and hauling window for the proposed winter access route. The report noted above contained a construction and operating schedule that was provided by Nuna. Examination of the schedule shows a road construction start date of mid-December and a start date for hauling at the beginning of January. It was felt that the noted list of equipment could be hauled to site in roughly 39 days with another 14 days to demobilize and recover temporary supports and other materials from along the route. It is estimated that the available window for hauling could be as much as 14 days longer than the 39 days required to mobilize the listed equipment.

The question of hauling additional larger mining equipment to site was raised several times in 2010 as we understand that there were some concerns over whether the Coulter Creek road could be constructed in the time frame required to support mine start-up. For instance, EBA was asked if the following equipment could be brought into site on the winter road:

- CAT 797 Haul Truck: shipped in pieces, the largest piece being: 12 m x 4 m x 4 m, weighing 70,000 kg., and
- Hitachi EX8000 Shovel: 10.5 m x 4.5 m x 3.7 m, weighing 90,000 kg.

With the information that we currently have regarding the road to Granduc and the potential winter road route, we do not believe that it would be possible to mobilize this type of equipment to site on the road as it is currently envisioned.

## 4.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Seabridge Gold Inc. and their agents. EBA Engineering Consultants Ltd. operating as 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 Seabridge Gold Inc., 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 Services Agreement. EBA's General Conditions are provided in Appendix A of this report.

## 5.0 CLOSURE

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

Sincerely,
EBA Engineering Consultants Ltd.

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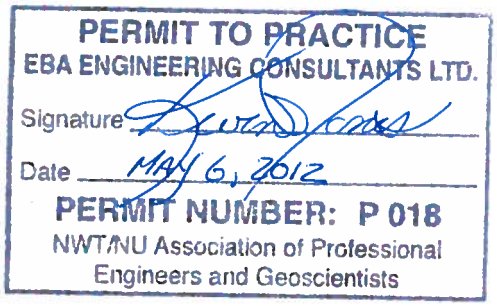
/ktd



# FIGURES

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MITCHELL DEPOSIT

KERR SULPHURETS

BRUCEJACK LAKE

PRETIUM ROADROUTE

GRANDUC MILL

GRANDUC ROAD

N 6,271,000
N 6,266,000
N 6,261,000
N 6,256,000
N 6,251,000
N 6,246,000
N 6,241,000
N 6,236,000
N 6,231,000
N 6,231,000
N 6,226,000

E 411,000
E 416,000
E 421,000
E 426,000
E 431,000
E 436,000
E 441,000

LEGEND:

| | |
|---|---|
| ( ~ 42 km ) | - FRANK MACKIE GLACIER ROAD |
| ( ~ 13 km ) | - BERENDON GLACIER ACCESS 1 |
| ( ~ 10 km ) | - BERENDON GLACIER ROUTE 2 |
| ( ~ 14.5 km ) | - KNIPPLE GLACIER ROUTE |
| ( ~ 14 km ) | - BRUCEJACK MITCHELL ROUTE 1 |
| ( ~ 14 km ) | - BRUCEJACK MITCHELL ROUTE 2 |
| ( ~ 10 km ) | - BRUCEJACK SULPHURETS ROUTE 1 |
| ( ~ 7 km ) | - BRUCEJACK SULPHURETS ROUTE 2 |
| ( ~ 24 km ) | - 2010/2011 BRUCEJACK ROUTE |
| ( ~ 29 km ) | - SALMON GLACIER ACCESS |
| | - ACCESS ROAD |

NOTE:

UTM ZONE: 9
COORDINATE SYSTEM: NAD 27
CONTOUR INTERVAL: 100 ft.

0 5 km

Scale: 1: 150 000 (metres)

CLIENT

SEABRIDGE GOLD

eba A TETRA TECH COMPANY

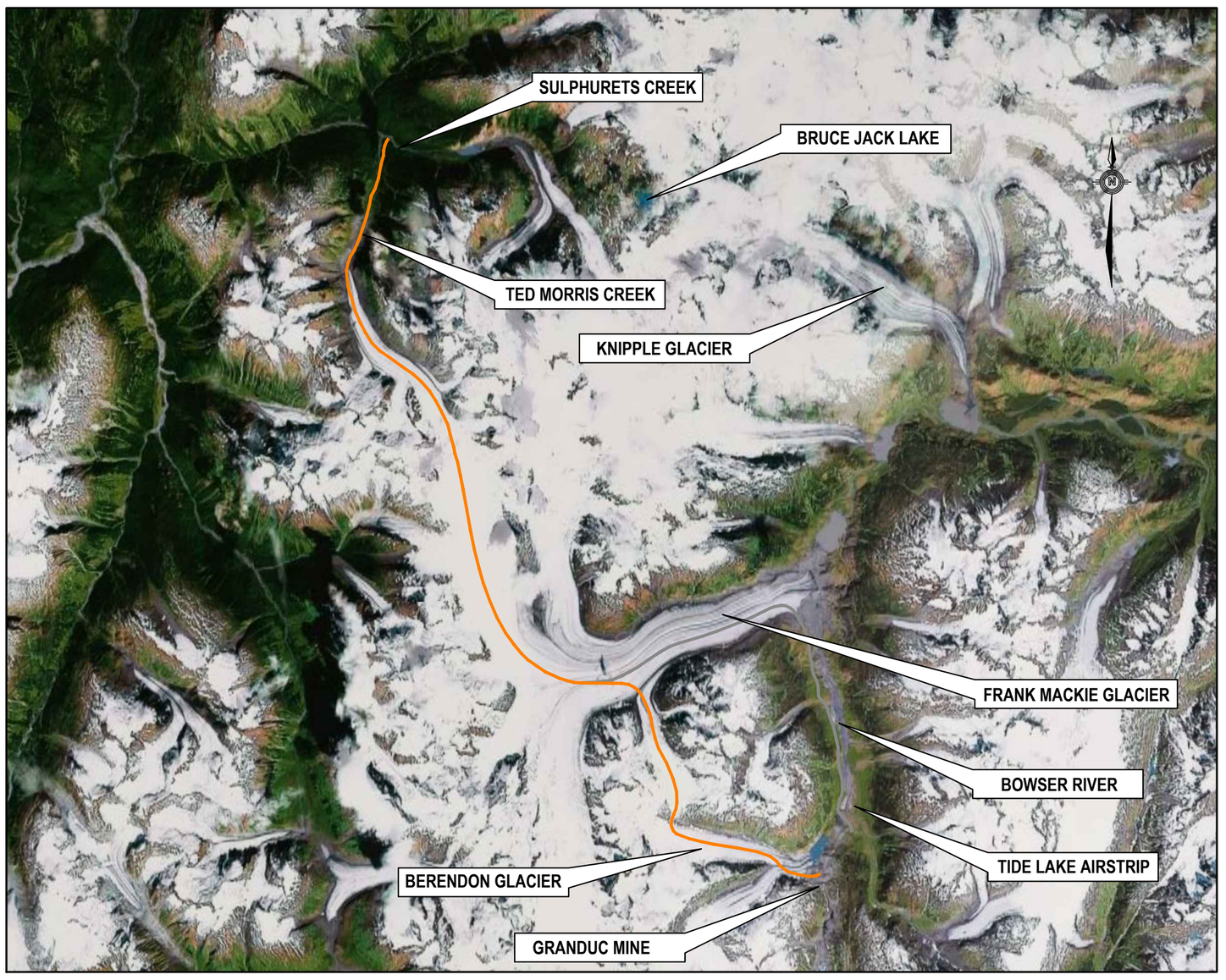
**KERR SULPHURETS MITCHELL MINE**
**EARLY CONSTRUCTION ACCESS EVALUATION**

**WINTER/GLACIER ROAD ROUTES INVESTIGATED**

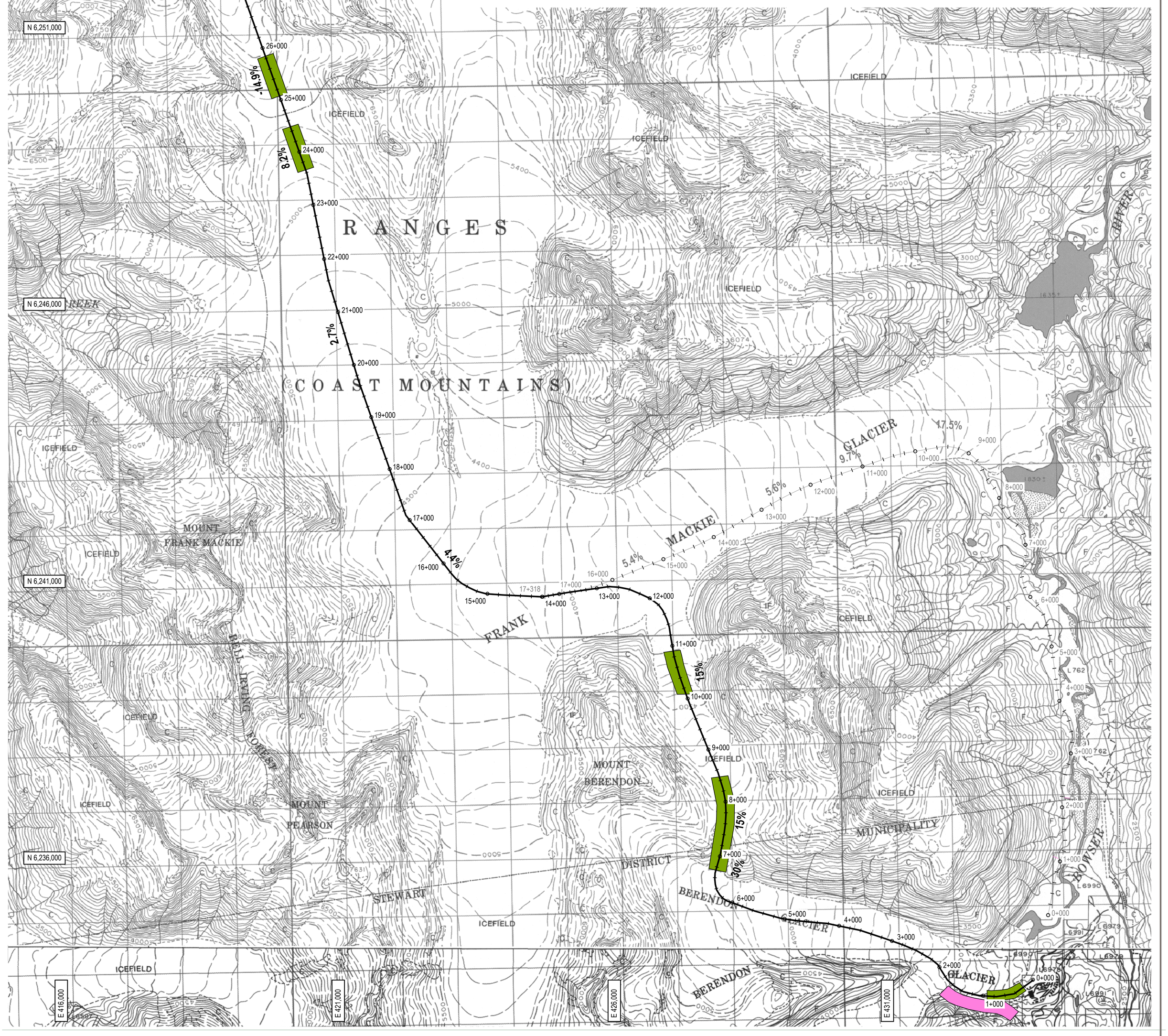
| PROJECT NO. | DWN | CKD | REV |
|---|---|---|---|
| E14101069 | DRG | KJ | 0 |

| OFFICE | DATE |
|---|---|
| EDM | January 19, 2012 |

**Figure 1**




**KEY PLAN**
N.T.S.




LEGEND:

- AVALANCHE OR ROCKFALL CONCERNS
- STEEP GRADE
- CREEK CROSSINGS
- CREVASSES
- BOULDERS

0 2 000
Scale: 1: 40 000 (metres)

NOTE:
UTM ZONE: 9
COORDINATE SYSTEM: NAD 27
CONTOUR INTERVAL: 100 ft.

CLIENT
SEABRIDGE GOLD

# KERR SULPHURETS MITCHELL MINE
# EARLY CONSTRUCTION ACCESS EVALUATION

## REVISED WINTER/GLACIER ROAD ROUTE

eba
A TETRA TECH COMPANY

| PROJECT NO. | DWN | CKD | REV |
|---|---|---|---|
| E14101069 | DRG | KJ | 2 |

| OFFICE | DATE |
|---|---|
| EDM | December 21, 2011 |

**Figure 2**

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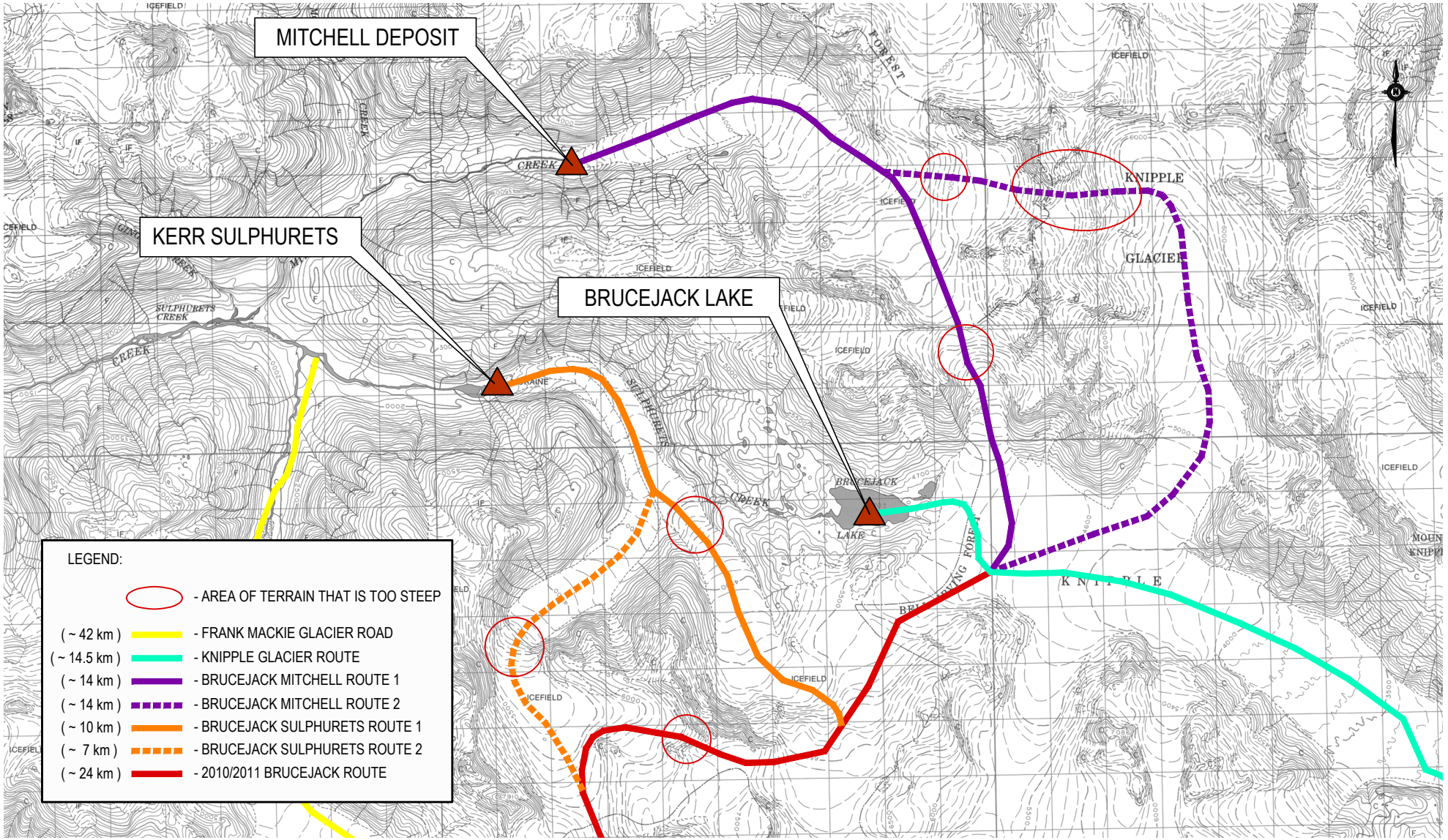


NOTE:

UTM ZONE: 9

COORDINATE SYSTEM: NAD 27

CONTOUR INTERVAL: 100 ft.

0 50 000

Scale: 1: 100 000 (metres)

CLIENT

SEABRIDGE GOLD

A TETRA TECH COMPANY

**KERR SULPHURETS MITCHELL MINE**
**EARLY CONSTRUCTION ACCESS EVALUATION**

**INVESTIGATED ROUTES FROM BRUCEJACK LAKE TO SULPHURETS AND MITCHELL VALLEYS**

| PROJECT NO. | DWN | CKD | REV |
|---|---|---|---|
| E14101069 | DRG | KJ | 0 |

| OFFICE | DATE |
|---|---|
| EDM | January 19, 2012 |

**Figure 3**

# PHOTOGRAPHS

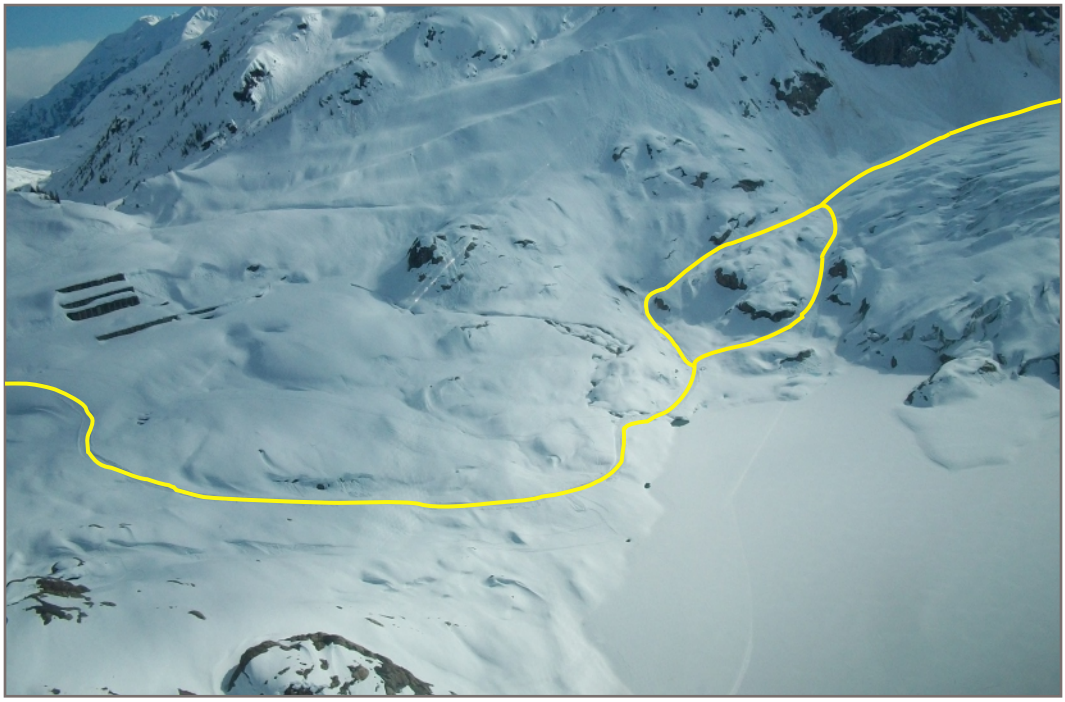

**Photo 1:** Looking west up the toe of the Berendon Glacier in the winter of 2011. The routes used by Pretium to haul equipment into their Brucejack Lake site are highlighted in the photo. The abandoned Granduc mill building foundations are visible on the left side of the photo.

**Photo 2:** Looking west at the toe of the Berendon Glacier in the summer. The tents on the left side of the photo are located near the old Granduc Mine facilities.

**Photo 3:** Looking east down the Berendon Glacier. The trail used by Pretium is highlighted. The small tongue of the narrow and steep glacier that was used to gain access to the Frank Mackie Glacier is just visible in the middle of the photo on the left side.

**Photo 4:** Looking to the southwest from near the top of the narrow and steep side glacier at approximately Sta. 7 +000 on Figure 2. The Berendon Glacier is in the background.

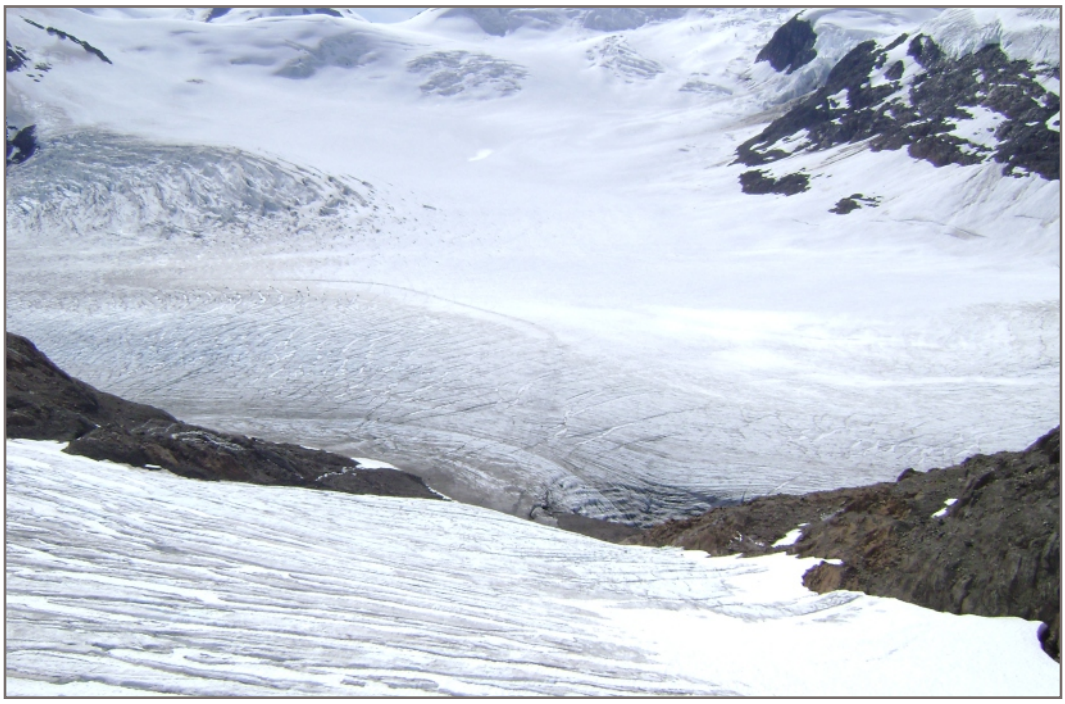

**Photo 5:** Looking to the south at the narrow and steep side glacier (approximately Sta. 7 +000 on Figure 2. The Berendon Glacier is in the background.

**Photo 6:** Looking to the northwest at a portion of the access road being constructed/ rehabilitated by Pretium to gain access onto the Knipple Glacier. The Knipple Glacier is visible in the distance on the right side of the picture.

**Photo 7:** The backhoe on a portion of Pretium's newly constructed access road near the Knipple Glacier. It is believed that this machine was walked into site on the Berendon/Frank Mackie Glacier in the winter of 2010/11.

**Photo 8:** Looking south up the Ted Morris Creek valley at approximately Sta. 33+500, April 15, 2010. Note the relative lack of snow in this area at this time of year and the lack of avalanche and rockfall evidence.

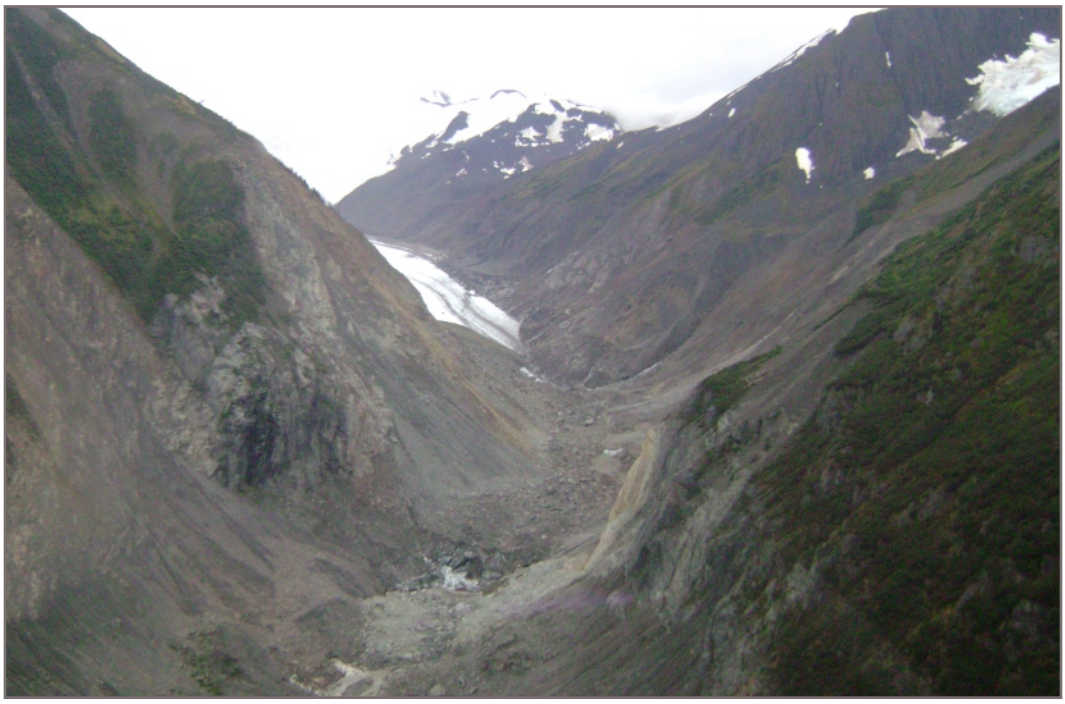

**Photo 9:** Looking south up the Ted Morris Creek valley at approximately Sta. 34+200. Note the creek emerging from a melt water tunnel in the glacier and rock fall debris on the glacier surface and in the bottom of the valley.

**Photo 10:** Looking south up the Ted Morris Creek valley at approximately Sta. 33+400. Note the size of some of the boulders that exist above the underlying glacier ice.

**Photo 11:** Looking to the south-southwest up the Ted Morris Creek valley at approximately Sta. 33+400, again showing the size of the rock rubble that exists in the valley.

**Photo 12:** Photo from Brett Wildman of Nuna taken in the winter of 2009 showing a snowcat creating access trails in the area immediately south of the Eskay Creek Mine.


**Photo 13:** Photo from Brett Wildman of Nuna taken in the winter of 2009 showing a backhoe creating a drilling pad in the area immediately south of the Eskay Creek Mine.

# 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.