

EAO's Assessment of an Application for Certificate Amendment

*Mt. Milligan Copper-Gold Project
EA Certificate #M09-01*

Amendment #4, Immediate Term Water Sources

Requested by:
Thompson Creek Metals Company Inc.

August 31, 2018

Pursuant to Section 19 of the Environmental Assessment Act, S.B.C. 2002, c.43

1. OVERVIEW OF PROPOSED AMENDMENT

On March 16, 2009, Terrane Metals Corp. was issued Environmental Assessment Certificate #M09-01 (Certificate) under the *Environmental Assessment Act* (Act) for the Mt. Milligan Copper-Gold Project (Mt. Milligan). Mt. Milligan consists of an open pit copper-gold mine and mill, located approximately 90 kilometres (km) northeast of Fort St. James and 90 km west of Mackenzie.

Since March 2009, the Environmental Assessment Office (EAO) has issued three Amendments to the Certificate. The Certificate was first amended on March 1, 2013, to relocate the ore concentrate rail load-out facility for Mt. Milligan to Mackenzie and to construct and operate a camp near the mine site to house workers during the operations phase of Mt. Milligan. The second amendment was completed on March 3, 2017, to change the ownership of the Certificate from Terrane Metals Corp. to Thompson Creek Metals Company Inc. (TCMC). A third amendment was granted to TCMC on January 22, 2018, to allow withdrawals of water from Meadows Creek during the spring freshet in 2018 and Philip Lake 1 until October 31, 2018.

TCMC is now seeking a fourth amendment to its Certificate to address further immediate-term water needs. Amendment #4 is proposed to include the following project changes:

- Accessing groundwater from anywhere in the tailings storage facility (TSF) and one well outside of the TSF for the operating life of the mine; and
- Continued access to previously authorized withdrawals from Philip Lake 1 (November 1, 2018 to October 31, 2019), including winter withdrawals, as well as removal of the 60 litres/second (l/s) rate of withdrawal restriction in the Certified Project Description (CPD).

Amendment #4 is considered an immediate term measure focusing on water sources that are likely to take minimal time for review. TCMC is developing information to support further requests for medium term water sources and the EAO understands that this amendment request is likely to be submitted and considered by the EAO in the fall of 2018. Together, the immediate and medium term amendments constitute short-term measures while TCMC develops a new long-term water supply plan, in consultation with regulatory agencies and Indigenous Groups.

2. AMENDMENT REVIEW PROCESS

TCMC's initial Application for Amendment #4 included a number of water sources intended to provide water for the mine in the short-term while a long-term plan was developed. However, in order to ensure a timely process to address TCMC's immediate need for water, TCMC's Application evolved over the Amendment review process. The evolution of changes from the initial Application is described below.

TCMC initially informed the Province of British Columbia (the Province) on June 1, 2018 that it would be seeking authorizations to withdraw groundwater and submitted a draft Project Description and draft Amendment Application Information Requirements. This request was made as TCMC had determined that its predicted water volumes in the TSF would not be able to maintain mine production at the maximum permitted rate through 2018.

On June 7, 2018, TCMC indicated that prior to filing any further information, it wanted to undertake internal work to develop and communicate an updated, effective and efficient regulatory plan. Subsequently, TCMC submitted its June 28, 2018, amendment Application to the EAO with technical information related to groundwater, but it did not contain technical information related to surface water.

The Application included the following key changes from the June 1, 2018 request:

- Request for authorization to withdraw groundwater within a two km radius (area-based approach) for a two year term; and
- Inclusion of surface water withdrawals from Meadows Creek, Philip Lake 1 and a new source from Rainbow Creek.

Recognizing TCMC's immediate need to access water, and that some of the requested water sources would be relatively straightforward to assess given the information available whereas others would require more information and more time, the EAO, the Ministry of Energy, Mines, and Petroleum Resources (EMPR)'s Major Mines Permitting Office (MMPO), TCMC, Nak'azdli Whut'en First Nation (Nak'azdli), McLeod Lake Indian Band (MLIB), and Takla Lake First Nation (Takla) discussed an alternative draft regulatory plan that would triage the review to focus first on those sources that could be considered in relatively short timelines. The water sources that could not be addressed in the immediate term would be considered in a subsequent (medium term) amendment application.

On August 8, 2018, TCMC formally requested that the EAO replace the specific amendment request contained in TCMC's June 28, 2018 correspondence with the proposals set out in an attached draft regulatory plan, dated August 7, 2018. On August 20, 2018, TCMC submitted to the EAO an Addendum to the Application for Amendment #4. The Addendum clarified that TCMC's request focused on groundwater sources, previously authorized withdrawals from Philip Lake 1 to be extended for up to two years (potentially including winter withdrawals), and the removal of the rate of withdrawal limitation of 60 l/s from Philip Lake 1.

During the assessment of TCMC's amendment request, TCMC further considered its requested term for the immediate term water sources. The requested term for water withdrawal from Philip Lake 1 was revised to be a one year term (November 1, 2018 to October 31, 2019) and the term for groundwater was revised to be for the operating life of the mine.

A coordinated amendment review process with the EAO and MMPO was established to ensure efficient use of resources given the overlap of technical review and consultation required for the proposed Amendment #4 and TCMC's permit applications. The reduced and focused scope of Amendment #4 allowed the EAO and MMPO to develop, in collaboration with Nak'azdli, MLIB, and Takla, a streamlined process with the objective of referring the proposed amendment for decision by the end of August 2018.

MMPO established a Mine Review Committee (MRC) pursuant to Section 9 of the *Mines Act* and Part 10.3.1 of the Health, Safety and Reclamation Code for Mines in British Columbia. The MRC also served as the EAO's technical advisory Working Group (WG) for the review of the Amendment Application. The WG/MRC included membership by Nak'azdli, MLIB and Takla, local governments (Fort St. James and the

District of Mackenzie), Northern Health Authority, Ministry of Environment and Climate Change Strategy (ENV), the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) and EMPR.

For the review process, the EAO determined the following approach to consultation, which is further described in the Sections 3.0 and 4.0 below:

- Potential adverse economic, social, health, and heritage effects were viewed as nil to low due to the nature of the proposed changes. However, potential adverse environmental effects were viewed as low due to the immediate-term potential impacts of water withdrawals and ability to set thresholds protective of the environment;
- The EAO worked in collaboration with Nak'azdli, MLIB and Takla, according to a draft collaboration plan, throughout the amendment process to discuss project-specific issues and potential adverse effects on asserted or determined Aboriginal rights, including title, and treaty rights (Aboriginal Interests) and seek consensus on proposed conditions and recommendations to Decision Makers; and
- The EAO notified West Moberly First Nations, Halfway River First Nation, and Yekooche First Nation of the Amendment application.

Through the course of the proposed amendment, there were three technical meetings with the WG/MRC that allowed discussion on technical concerns, the assessment of effects and potential Environmental Assessment (EA) and permitting conditions. The resolution of technical issues or outstanding issues for the assessment of the proposed amendment is captured in Section 3 of this Amendment Assessment Report. The draft decision materials were circulated to the WG/MRC and TCMC for comment and revised in consideration of their input.

3. SUMMARY OF ISSUES AND EFFECTS

Nak'azdli, MLIB, Takla, FLNRORD, MMPO and TCMC engaged in discussions and provided views/comments on TCMC's proposed immediate term water sources and the EAO's draft assessment, conclusions and/or conditions. The main issues during Amendment review #4 are discussed below and were related to groundwater well authorizations and surface water withdrawals from Philip Lake 1.

3.1. GROUNDWATER WELLS

TCMC does not currently have any groundwater authorizations for Mt. Milligan. TCMC has recently undertaken a number of groundwater investigations and is seeking a Certificate amendment to access multiple groundwater wells within the TSF and one external well near Meadows Creek. The number or location of groundwater wells in the TSF, rates of withdrawal, or volume of water withdrawn would not be limited in the Certificate but determined at permitting. In its permit applications, TCMC is seeking a water license approval from FLNRORD to withdraw groundwater at a rate of 70 l/s. The water license, if issued, will identify each specific well in the TSF, and can be amended to add additional wells, but the total rate of groundwater would not exceed 70 l/s.

For the external well, FLNRORD has indicated that hydraulic connection with Meadows Creek is not probable due to thick clay between the aquifer and creek. TCMC has indicated that hydraulic connection between the external well and Rainbow Creek is possible due to the potential for the creek valley to cut into the overlying till and clay unit. However, if a conservative assumption was made for potential impacts to Rainbow Creek that there was 100 percent connectivity and the well was pumping at full capacity (16 l/s) during the lowest flow period in Rainbow Creek (400 l/s), the result would be four percent of the lowest flow, which is considered a negligible impact. Further to this, TCMC has indicated that a monitoring program and an Adaptive Management Plan would be required during the water license reviewing process, which would address potential impacts.

Members of the WG/MRC supported TCMC accessing groundwater in the TSF, and no specific issues were raised regarding potential adverse effects from accessing groundwater within the TSF itself or from the specific well. The WG/MRC also discussed whether there was any technical reason to limit the term of withdrawals to a two-year term within the Certificate. In consideration of the general support of the WG/MRC for groundwater sources within the TSF, the information available on the wells and permitting requirements, including adaptive management requirements, that would be included in any water license (if issued), the EAO recommends that Amendment #4 allow TCMC to access groundwater wells generally within the TSF (without restriction on water volumes, rates of water withdrawal, or number or location of wells) and specifically authorize the external well. The EAO also recommends that the term of withdrawal be for the operating life of the mine.

During the review, an inconsistency was identified between the application for the EA Amendment and the project description supplied to EMPR. TCMC clarified that the pipeline infrastructure to convey water from the well external to the TSF near Meadows Creek would need to be buried to avoid the risk of freezing should TCMC need to reduce its withdrawals to avoid impact on nearby creeks. Burying the pipeline was described in the Project Description submitted to EMPR, but not in the EA Amendment Application.

The EAO notes that the well external to the TSF and all associated infrastructure would be within the *Mines Act* permit M-236 boundary. All requirements under the *Mines Act* permit would apply to the external well near Meadows Creek and pipelines, including the Construction Environmental Management Plan, Chance Find Procedures and Reclamation Plan. EMPR requires updates to these plans and the overarching Environmental Management System to account for the proposed conveyance infrastructure associated with water withdrawals from the external well near Meadows Creek. An updated Construction Environmental Management Plan and reclamation cost estimate is to be submitted prior to construction. In light of the existing regulatory framework in place, the EAO did not see any need for specific conditions related to the development of the infrastructure associated with the groundwater source.

3.2. WINTER WITHDRAWALS

TCMC requests that its Certificate be amended to access water from Philip Lake 1 until October 31, 2019. The proposal under the regulatory plan is to continue the withdrawals from Philip Lake 1 that were authorized in Amendment #3 and subsequent water licence issued under the *Water Sustainability Act* (WSA). TCMC's request includes withdrawals during winter months.

MLIB and Takla have indicated concerns about the stranding of lake whitefish eggs due to winter withdrawals at Philip Lake 1. MLIB/Takla notes their view that the Environmental Assessment (EA) Amendment #3 in January 2018 that allowed winter withdrawal was based on an emergency request and that winter withdrawals would not be repeated. The winter 2018-2019 proposal for winter withdrawals would be a more substantial amount of water than previously considered, involving the potential for more drawdown.

MLIB/Takla have concerns that conditions in the limits imposed under the existing short term use approval issued under the WSA for Philip Lake 1 (that require a minimum lake elevation of 994.980 metres above sea level to be maintained) may not protect the littoral zone, including the lake whitefish eggs around the shoreline of the lake. The advice from the provincial fisheries biologist on the WG/MRC is that the 2018 limits in the water license is accepted as protective of the environment, as the limit set in the water license is likely within the natural variability of the lake during the winter months, and therefore population-level effects to lake whitefish would not be expected. Further, the provincial fisheries biologist will be a part of the discussions during permitting on other potential thresholds and adaptive management plans to avoid and mitigate significant adverse effects.

However, Takla/MLIB expressed concerns that a minimum lake elevation may not be the best threshold for ensuring protection of lake whitefish eggs, and proposed that a threshold for maximum drop in lake elevation is needed, or an appropriate threshold developed by a Qualified Professional (QP) (i.e. fisheries biologist).

Discussions with the WG/MRC indicate that a threshold tied to a maximum drop in lake elevation may have challenges; however, there was agreement that other metrics could be considered. TCMC indicated that it has data from a QP that would allow the WG/MRC to better understand the potential impacts of winter withdrawals on lake whitefish eggs, and to develop appropriate metrics to set thresholds and implement monitoring and adaptive management. The WG/MRC noted that consideration of other metrics would require further information and assessment.

The EAO is of the view that sufficient information is available to conclude that lake whitefish eggs can be adequately protected in order to avoid population level effects through the setting appropriate thresholds. However, the EAO notes that further assessment by a QP is required to determine the best threshold(s) to apply, and monitoring and adaptive management will be important to ensuring the effectiveness of the threshold. The EAO also notes that further assessment will occur through the WSA permitting process, which will be a collaborative process with Nak'azdli, MLIB and Takla. However, the outcomes of the permitting process cannot be known at this time, and there is residual uncertainty around the ability to protect lake whitefish eggs given information limitations at this time.

Therefore the EAO is proposing that the Certificate be amended to extend previous authorizations at Philip Lake 1 to October 31, 2019, and that the Certificate amendment include a condition to support the EAO's conclusions that TCMC's withdrawal of water during winter will be done in a manner that is protective of lake whitefish eggs. The condition (Condition #9) proposed by the EAO requires that a QP develop, and TCMC to implement, a plan to ensure winter withdrawals are protective of lake whitefish eggs, including

identification of appropriate thresholds and an adaptive management plan. The EAO also proposes a condition (Condition #8) that requires monthly reporting on withdrawal throughout the period authorized by this amendment, should it be approved, so that Indigenous Groups and provincial agencies are aware of any potential effects arising from the withdrawals and to build a better understanding of the Philip Lake 1 water source in order to inform those parties' review of further amendment applications from TCMC.

3.3. SURFACE WATER SOURCES

The Mt. Milligan Certified Project Description (CPD) currently restricts the maximum withdrawal rate from Philip Lake 1 to 60 l/s and TCMC has requested this restriction be removed. TCMC is of the view that there is no environmental protection basis for the 60 l/s rate (as it was an engineering constraint) and that removing this restriction would not result in any impacts to Environmental Flow Needs thresholds or previously assessed and authorized conditions. The WG/MRC has not raised any concerns with this request and the EAO proposes to remove this restriction in the CPD as part of Amendment #4.

4. ABORIGINAL CONSULTATION

The EAO, MMPO and FLNRORD have engaged in a collaborative process with Nak'azdli, MLIB and Takla in the review of the proposed amendment. Collaboration involved working together to design the regulatory process, establish agreed to timelines and seek consensus on the conclusions of the assessment of the proposed amendment as well as the proposed conditions. Nak'azdli, MLIB and Takla were active participants in the WG/MRC and made important contributions to the technical review and discussion, the development of this report and the proposed conditions. The EAO provided capacity funding to each of Nak'azdli, MLIB and Takla to defray costs of a collaborative amendment process for the immediate and medium term amendments.

Nak'azdli stated that its community members and Keyoh holders are continuing their current use of the land base near the mine site and would be directly impacted by any changes to the mine. Nak'azdli raised concerns about overlapping claims from Takla and stated that Nak'azdli had the primary claim. Due to this position, Nak'azdli's agreement to participate in collaboration discussions for Amendment #4 was without prejudice. While the Nak'azdli's concerns were not resolved during the review of the proposed Amendment, the Province is continuing discussions with Nak'azdli that seek to clarify the historic and current roles and ongoing presence of Nak'azdli relating to Mt. Milligan, and this will further inform the EAO's consideration of Nak'azdli's Aboriginal Interests for future amendments, including TCMC's proposal for long term water sources. Nak'azdli confirmed that it did not have any concerns with the proposed immediate term amendment and proposed EA conditions.

Throughout the review of the Amendment, Takla and MLIB have expressed concerns about expedited timelines. Takla and MLIB have also expressed concerns that in their view, TCMC has not provided adequate information to support understanding water withdrawals or the impacts on their Aboriginal Interests, despite Takla and MLIB identifying the need for this information during the review of Amendment #3 and Takla's and MLIB's expectation that the information would be available to support consideration of future amendment requests. Amendment #3 included specific conditions to require TCMC to develop some of the information related to understanding MLIB's and Takla's Aboriginal Interests. The

EAO will work with TCMC, MLIB and Takla to understand the specific information gaps of concern in order to identify appropriate information to support future EA reviews, particularly the long-term water proposal.

With respect to the proposed immediate term amendment, MLIB and Takla confirmed that they are comfortable with the approvals for the immediate term amendment, given:

- The conditions proposed by the EAO that will require a QP to identify appropriate thresholds for winter withdrawal and the requirement for an adaptive management strategy; and
- The commitment from MMPO and FLNRORD that there will be a collaborative process with MLIB and Takla to further discuss the appropriate winter withdrawal thresholds subsequent to the EA amendment decision (should the amendment be approved).

In the course of the review of the proposed amendment, MLIB/Takla requested additional information regarding how TCMC will ensure that the water that is obtained through surface water and groundwater and stored in the TSF remains available for use in the mill and for covering tailings (e.g. is not lost through seepage). The EAO and MMPO have committed to further discuss this issue during the review of TCMC's forthcoming medium-term amendment anticipated in fall 2018.

In concluding the review of proposed Amendment #4, MLIB/Takla requested clarification on whether Amendment #4 had any implications for the implementation of Condition #13 in Amendment #3. Condition #13 requires TCMC to develop reports on addressing impacts to Aboriginal Interests for both short-term and long-term report water withdrawals. The EAO confirmed that TCMC is still required to meet the requirements of Condition #13, which requires submission of the long-term report no later than October 31, 2018.

The EAO also notified West Moberly First Nations, Halfway River First Nation, and Yekooche First Nation of the Amendment Application. The Province assessed that the Amendment Application was not anticipated to adversely impact the Aboriginal Interests of these Indigenous Groups, and that consultation at the notification level is appropriate. No comments were received from West Moberly First Nations, Halfway River First Nation, and Yekooche First Nation on the Amendment Application.

5. CONCLUSIONS

Based on:

- The information contained in the Amendment Application and supplemental information provided during the Amendment Application review;
- Comments on the Amendment Application by Nak'azdli, MLIB, Takla, provincial government agencies as members of the WG/MRC, and TCMC's responses to these comments;
- The fact that Mt. Milligan Copper-Gold Mine would be subject to subsequent permitting approvals under the *Water Sustainability Act*;
- The proposed Amendment conditions; and

- The engagement of Nak'azdli, MLIB and Takla, as per the draft Collaboration Plan during the Amendment process.

The EAO is satisfied that:

- The Amendment assessment has adequately identified and assessed the potential adverse changes to the environmental, economic, social, heritage and health effects of Mt. Milligan resulting from the proposed Amendment;
- Issues identified during review of the Amendment Application, which were within the scope of the assessment of the proposed EA Amendment, were adequately and reasonably addressed by TCMC or the EAO's proposed conditions;
- Practical means have been identified to prevent or reduce any potential adverse environmental, economic, social, heritage and health effects of the proposed Amendment such that no significant adverse effect is predicted or expected as a result of this proposed Amendment;
- The potential for adverse effects on asserted or established Aboriginal Interests has been avoided, minimized or otherwise accommodated to an acceptable level;
- The provincial Crown has fulfilled its obligations for consultation and accommodation of Nak'azdli Whut'en First Nation, McLeod Lake Indian Band, and Takla Lake First Nation relating to the issuance of an Amendment to Certificate #M09-01; and
- Notification of the West Moberly First Nations, Halfway River First Nation, and Yekooche First Nation about the proposed Amendment has been carried out adequately by the EAO and fulfills the Provincial Crown's obligations for consultation and accommodation.

The EAO recommends that Certificate #M09-01 for the Mt. Milligan Copper-Gold project be amended under Section 19 of the *Environmental Assessment Act*, to allow access to groundwater and additional surface water, as described in this Amendment report.