



MiningWatch Canada

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MiningWatch Canada's Comments on the Proposed Mount Milligan Gold Copper Project, Canadian Environmental Assessment Registry # 08-03-39778

Submitted to:
Canadian Environmental Assessment Agency
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1.0 Introduction

MiningWatch Canada is a coalition of 18 labour, Aboriginal, environmental, social justice and development organizations from across Canada with a mandate to support communities affected by mining in Canada, and affected by Canadian mining companies around the world. We respond to the issues of public health, water and air quality, fish and wildlife habitat and community interests posed by irresponsible mineral policies and practices.

MiningWatch Canada has an interest in the proposed Mt. Milligan Mine due to its potential to negatively impact on First Nation communities and important aquatic resources in the area. In particular, we are concerned about the proposed use of Schedule 2 of the Metal Mining Effluent Regulations as a mechanism to destroy healthy aquatic ecosystems, an increasingly common practice in the sector. For this reason our review of the Comprehensive Study Report (CSR) and the proponent's environmental impact statement (EIS) has focussed on the alternatives assessment, fisheries impacts, and proposed fish habitat compensation plan.

Fisheries biologist Dr. David Levy (Levy Research Services Ltd.) was contracted by MiningWatch to provide technical assistance for this review. Dr. Levy's comments and concerns regarding the CSR and EIS have been incorporated into this submission.

Our review has found significant gaps, errors and inconsistencies with the CSR which are detailed below. We are also very concerned about the degree of appropriate consultation and accommodation of the two First Nations which have a direct interest in the project area, McLeod Lake Indian Band and Na'kadzli. It is our understanding that as of the current date the Na'kadzli are opposed to the project as proposed and the McLeod lake have not provided final consent to the project as proposed. For these reasons we strongly recommend that no Federal permits should be provided to the proponent until the technical concerns with the CSR and the Free Prior and Informed Consent of both of the directly affected First Nations is obtained.

2.0 Alternatives Assessment

2.1 Narrow Selection of Alternatives

The most important consideration in examining the various alternatives for the mine plan is the management of waste rock and tailings. Three of the four alternatives selected for examination in the Alternatives Assessment are only differentiated by their location, rather than by any attempt to explore different methods of managing the wastes. The fourth option considers separation of potential acid-generating (PAG) wastes from non-acid generating wastes (NAG), however as with the other options both the facilities would be conventional impoundments.

All of the options presented would result in the destruction of productive fish habitats. Given that this is a significant ecological impact and requires a federal regulatory amendment, a full evaluation of possibilities should have included at least one option that does not require the destruction of fish habitat.

Given the estimates of the relatively small percentage of PAG in the total waste stream from the mine, there is reason to consider a variety of waste disposal options other than the ecologically intrusive destruction of fish-bearing waters and construction of extensive impoundments that require long-term maintenance and monitoring.

In the alternatives assessment the option of using multiple facilities is discriminated against based on an assumption that more facilities equal a greater likelihood of failure. There is, however, no consideration that a single large facility to contain all tailings and PAG waste rock may have a greater potential of failure than an alternative that included a smaller impoundment for PAG tailings and waste rock and separate permanent dry storage of NAG wastes.

There is no mention, let alone an assessment of the full range of alternatives for tailings management that could further reduce environmental impacts of the project. Alternative methods of tailings management that are being implemented in a variety of regions and conditions include co-disposal, dry, thickened and paste tailings disposal. In addition to possible environmental

benefits, these alternatives could have economic advantages over conventional impoundments, especially when life cycle costs and liabilities are considered.

2.2 Assessment Should Consider Lifecycle Costs and Longterm Liabilities

This project proposes to leave behind infrastructure requiring ongoing care and maintenance in perpetuity, thus it cannot be considered to be a temporary use of the land. Significant costs, and liabilities will be incurred after the mine ceases operation, during the closure and post-closure phases. Despite the importance of these phases no alternatives were provided that differ in their closure requirements or long-term liabilities.

A recent study of tailings management alternatives using “Lifecycle Costs Assessment” has shown that when projected forward 20 years beyond mine life, relative costs and impacts of tailings management options can actually reverse their relative environmental and economic rankings (ie. options that are costly upfront may reduce medium and long-term economic and ecological costs).¹ While closure costs are considered in this assessment the reliance on a single method of disposal (impoundments) and the consideration of costs only to closure, have resulted in biased and narrow assessment.

2.3 Wildlife and Vegetation Impacts

The Proponent’s alternatives assessment has made a huge and inappropriate assumption regarding the impacts of the 4 options on terrestrial habitats and species at risk. Despite the fact that different elements of the various plans are several kilometres apart, it is assumed that simply examining the footprint of each option can assess the relative impacts on wildlife and vegetation.

While limiting the footprint is an important goal, this approach ignores any differences in wildlife use, presence of rare plants, and the presence of species of interest to local communities. Such factors could significantly effect the assessment of the options and must be included in a robust alternatives assessment. Consultation with Aboriginal communities can often highlight differing ecological and cultural values of areas with a relatively close proximity. These perspectives need to be considered in an alternatives assessment

3. 0 Fisheries and Aquatic Ecosystems - Impacts and Habitat Compensation

3.1 Flow Reductions in Rainbow Creek

In the CSR, the RAs recognise that the project, if approved, would have “unavoidable harmful alteration, disruption or destruction of fish habitat in Meadows Creek, Alpine Creek and King Richard Creek”, but state these can be addressed through the proposed mitigation and compensation measures. We have concerns that impacts will extend beyond these sub-

¹ C. Reid, V. Becaert, Michel Aubertin, R.K. Rosenbaum, L. Deschênes. 2009. Life cycle assessment of mine tailings management in Canada. *Journal of Cleaner Production*. 17 (2009): 471-479.

watersheds into Rainbow Creek and question the ability of the compensation options to achieve the goal of No Net Loss (NNL) of fish habitat.

Both the EIS nor CSR dismiss the impacts of flow reductions to Rainbow Creek resulting from capturing and diverting the surface flows from upstream drainage basins. Predicted flow reductions are up to 27% during the spring freshet². We are aware that this issue was also of concern to provincial and federal agencies but has not been adequately addressed in the current EIS³. In justifying their determination of the non-significant nature of the flow reductions to Rainbow Creek, the proponent has selectively used models dismissing results that show a potential impact. Further, the predicted flow reduction will result in a significant decrease of fish habitat (relative to the BC Instream Flow Threshold Guidelines) and this reduction has not been incorporated into the Fish Habitat Compensation Plan.

Reductions in peak flows are of particular concern as the freshet provides an important expansion of habitat during a critical time of year for a variety of fish species. High flows in Rainbow Creek are also important to provide access to habitat for species otherwise resident in the Nation River and that are of particular interest to local communities.

The CSR erroneously accepts the proponent's assertion that negative impacts will not occur to habitat in Rainbow Creek. These impacts need to be more carefully assessed and addressed in the habitat compensation plan.

3.3 Elimination of Fen Ecosystems

The CSR states that 48% of the fish habitat in King Richard Creek that will be lost can be classified as fen, making this the dominant habitat type in the watershed. The ecological role of these fens is only considered with regard to the direct provision of marginal fish habitat. The compensation of the fen habitat is then lumped into the general habitat pool. No consideration is given to the unique contribution the fen habitat is likely playing in the downstream productivity of the watershed. Fens can be an important source of organic carbon and in downstream systems⁴. These exports of carbon, in turn can play important roles in productivity and bioavailability of metals downstream.⁵ Given the high background concentrations of some metals in the watershed, the role of DOC and any potential changes in its supply from the project activities need to be assessed.

² Station 5, 2 km downstream of the Meadows Creek confluence.

³ Memo from Brad Horne, AMEC to Elizabeth Miller, BC MOE. December 12, 2008

⁴ Urban, N.R., S.E. Bayley and S.J. Eisenreich. 1989. Export of dissolved organic carbon and acidity from peatlands. *Water Resour. Res.*, 25(7), 1619–1628.

⁵ D.R.J Moore. 1998. Ambient Water Quality Criteria for Organic Carbon in British Columbia. Government of B.C. Environment and Resource Management Department Ministry of Environment, Lands and Parks. Available online: <http://www.env.gov.bc.ca/wat/wq/BCguidelines/orgcarbon/index.html>

3.3 Adequate Ratios and Timely Compensation

There have been a number of retrospective studies to evaluate the effectiveness of Canadian fish habitat compensation projects in achieving the conservation goal of no net loss of productive capacity.⁶ Increasing compensation ratio (compensation area: impacted area) requirements to 2:1 was insufficient to achieve NNL for all projects, suggesting that the ability to replicate ecosystem function is clearly limited. It is evident that Canada has had a mixed track record with achieving NNL. It cannot be assumed that mining project mitigation and compensation projects will function as designed and so, to be conservative, it is necessary to apply a compensation ratio of 2:1 (minimum) and where practical, to develop compensation projects in advance of mining activities.

The February 2009 habitat compensation plan offers a compensation ratio of only 1.2:1. Given the above, this is clearly inadequate to have confidence in the proponent achieving NNL. In the EIS and during a recent consultation meeting⁷, the proponent has identified additional compensation measures including the restoration of stream flow under culverts and the restoration of habitat in the Meadow Creek watershed after mine closure and the filling of the pit. We have concerns about both these approaches as described in the EIS and CSR.

While culvert restoration is a valid and useful habitat rehabilitation and compensation activity, we do not feel that adequate information has been provided to fully judge the potential for compensation of habitat units. The proponent should be required to complete a full assessment of the available habitat upstream of the culverts prior to any permitting for the destruction of fish habitat or the granting of an EA certificate. This form of habitat compensation should not be quantified as “like-for-like” as the habitat upstream of the culverts presently exists independently from the proposed mining development.

The use of Meadows Creek as part of their NNL compensation equation is inappropriate given the long time delay for implementation. If, the mine achieves the lifespan predicted by the proponent’s recent press release, this habitat would not be available for at least 42 years. This delay does not include time for the habitat to re-gain productivity after being re-submerged. Such a long time delay is problematic for a number of reasons.

A delay of 42 plus years represents a significant loss of productive capacity in the Local Study Area and an increased risk that the compensation will not occur. Given the turbulent nature of the metal sector, the further in the future the proposed compensation occurs, the higher the

⁶ a) Harper, D.J. and J.T. Quigley. 2005A. A comparison of the areal extent of fish habitat gains and losses associated with selected compensation projects in Canada. *Fisheries* 30: 18-25.

b) Harper, D.J. and J.T. Quigley. 2005B. No net loss of fish habitat: a review and analysis of habitat compensation in Canada. *Env. Mgmt.* 36: 343-355.

c) Minns, C.K. 2006. Compensation ratios needed to offset timing effects of losses and gains and achieve no net loss of productive capacity of fish habitat. *Can. J. Fish. Aquat. Sci.* 63: 1172-1182.

d) Quigley, J.T. and D.J. Harper. 2006. Effectiveness of fish habitat compensation in Canada in achieving no net loss. *Env. Mgmt.* 37: 351-366.

⁷ MMER Amendment Consultation Meeting, hosted by Environment Canada. Government Conference Centre, Ottawa. October 26, 2009.

potential for the failure of the company and subsequent inability to meet its obligations. While the province will require reclamation bonds, reviews of the amounts of bonds required by governments in other jurisdictions have shown these amounts are often inadequate.

We support Terrane's intent to rehabilitate the Meadow's Creek watershed post-closure, and suggest it remain as a commitment for permitting. Given the long delay before implementation it should not, however, be included in the calculation of an appropriate (2:1 minimum) compensation ratio.

3.4 Longevity of Habitat Complexing for Compensation of Permanently Lost Habitat

The majority (56%) of the proponent's habitat compensation would be achieved through habitat complexing using boulder clusters and large woody debris (LWD) in Rainbow Creek. While references are provided to indicate the effectiveness of the proposed techniques, there is no indication of the expected functional life span of these "improvements".

LWD is a dynamic aspect of stream morphology as logs can be washed away, broken up or at best will eventually rot in the stream. Boulders, though less ephemeral, can be moved off station, be buried in sediment or even removed from the stream channel by ice and extreme flow events. Compensating for permanent loss of habitat with relatively temporary habitat enhancement elsewhere is not appropriate for achieving NNL.

3.4 Monitoring and Enforcement

Terrane outlines a vague and conceptual monitoring plan for the compensation options. Given the lack of success in past compensation projects, it is critical that new projects include rigorous and scientifically valid monitoring programs. The monitoring program as described is too vague to provide legal or financial assurances that such a program will be implemented. Prior to any federal permitting a detailed monitoring plan should be completed (which requires completion of a detailed compensation plan). The type, frequency and extent of sampling should be described and an estimation of annual costs provided.

Given the limited resources of both provincial and federal regulators, if this project should proceed, it is unlikely that adequate monitoring by regulators will occur. A permit condition should be the formation and funding of a community monitoring agency to review and report on the implementation and success of compensation and other environmental management practices. The funding to this group must be guaranteed as a permit requirement to prevent any undue influence from the proponent being able to unilaterally withdraw its support.

3.5 Xanthate Toxicity

The proponent and RAs consideration of contamination by xanthate as a minor pathway for aquatic impacts is appropriate given that under properly managed situations xanthate is likely to biodegrade within the TIA. However, the statement that "in the unlikely event of xanthate escaping into the receiving environment, there is little chance of it having any adverse effects on

fish health or survival” (pg. 56 of the CSR) is false. Furthermore, during the MMER amendment hearings the proponent’s environmental manager stated that he was not aware of any toxicity issues related to use of xanthates. Though a relatively low risk, when managed properly xanthates are toxic to fish and aquatic ecosystems.⁸ Proper caution and monitoring of xanthate use at a mine site is important and needs to receive careful attention within the EIS and CSR.

3.6 Mercury

The information in Section 5.1.1.2.17 Mercury Methylation of the CSR is disturbing in its lack of rigour, all the more disconcerting given the toxicity of this metal and its potential to accumulate and harm consumers of wild foods.

The CSR states that the project area has low levels of mercury in water and fish and later in the same paragraph states that baseline concentrations in fish are above BC guidelines. With background levels already elevated any addition of bio-available mercury is of concern and should be fully evaluated.

Even more problematic is the fact that the CSR assesses only the potential of mercury methylation from the flooding of the water supply pond and no consideration is given to the potential releases of mercury from the TIA or the pit after closure. This is a major oversight of the CSR and a failure in the responsibility of the RAs.

4.0 Conclusion

In reviewing only two sections of the CSR and relevant chapters of the EIS, we have found significant flaws, omissions and errors. This leads us to have a great concern for the quality of analysis conducted by the RAs and by the quality of the information presented by the proponent in the EIS. Unfortunately given our limited resources, and the limited amount of time available for review of the CSR, we have not been able to review additional sections but fear if we did we would continue to find substantive concerns.

The selection of the proposed mine plan has been done without adequate consideration of the full range of waste management alternatives available and without considering long-term costs and liabilities. No options were presented that could avoid the destruction of productive fish habitats.

It is our assessment that the proposed fish habitat compensation plan is unlikely to achieve the requirement of No Net Loss for the identified impacts. We further note that an important impact on Rainbow Creek has not been included in current calculation of the proposed projects impacts on fish habitat.

⁸ Commonwealth of Australia. 1995. Public Report, Sodium Ethyl Xanthate PRIORITY EXISTING CHEMICAL NO. 5 May 1995. Available online: http://www.nicnas.gov.au/publications/car/PEC/PEC5/PEC_5_Full_Report_PDF.pdf

Perhaps our most concerning finding is the CSR's contradictory and cursory treatment of the potential for contamination of downstream water bodies with mercury. Given the already high levels of mercury in fish in the area, and the importance of fish to the affected First Nations this is an area which must receive much more careful and thorough evaluation.

Until such time as the above issues are addressed it would be inappropriate for the federal RAs to proceed with permitting of the proposed Mt. Milligan Gold-Copper Mine.