UPDATED TECHNICAL REVIEW

OF

THE MEADOWBANK GOLD MINE

TYPE A WATER LICENSE RENEWAL
(NWB 2AM MEA0815)

Prepared By:

NUNAVUT TUNNGAVIK INC.

And

KIVALLIQ INUIT ASSOCIATION

December 11, 2014

Prepared For:

NUNAVUT WATER BOARD

INTRODUCTION

Nunavut Tunngavik Inc. (NTI) and the Kivalliq Inuit Association (KIA) have completed a technical review of the Type A Water License Renewal for Agnico-Eagle Mines Limited's (AEM) Meadowbank Gold Mine.

The KIA, represents the Inuit beneficiaries of the Kivalliq Region, at the territorial and regional levels, and supports sustainable economic development opportunities for Inuit beneficiaries.

The purpose of this technical review of the Meadowbank gold Mine Type A Water License Renewal was to ensure adequate protection of the environment through best practices of the mitigation and monitoring programs.

The review was completed by the KIA's long-time technical consultants GeoVector Management Inc. (GeoVector) of Ottawa, and Hutchinson Environmental Sciences Ltd. (HESL) of Bracebridge, Ontario.

This review is an update to the original review and is based on AEM's response to the NWB completeness reviews of the Type A water license renewal application for NWB 2AM MEA0815. The Appendices have also been updated and contain the following information:

1) Appendix 1 provides a list of the information reviewed,
2) Appendix 2 documents the detail on the issues outlined by HESL during their review.
3) Appendix 3 documents the detail on the issues outlined by GeoVector during their review.

A total of thirty-one (31) issues were identified as KIA-IR-01 to KIA-IR-031 in the original review in September, 2014 as requiring a response from AEM to the KIA as part of the NWB water license renewal process. The responses from AEM to the NWB completeness review have resolved fifteen of the original issues, in particular, KIA-IR-02, 03, 06, 07, 08, 10, 11, 20, 22, 23, 35, 26, 28, 29, 30 and 31.

The remaining sixteen issues (KIA-IR-01, 01B, 04, 05, 09, 12, 13, 14, 15, 16, 17, 18, 19, 21, 24 and 27) are summarized below. The detailed responses of AEM, HESL and GeoVector for each issue are found in Appendices 2 and 3. The potential significance of any impacts on the environment in the area of the Meadowbank Gold Mine will be discussed further with AEM in the lead up to the January 14th-15th, 2015 technical meetings in Baker Lake.

NTI – P.O. Box 1269, Cambridge Bay, Nunavut, X0B 0C0, Tel; (867) 983-5600, Fax: (867) 983-5624
KIA- P.O. Box 340, Rankin Inlet, Nunavut, X0C 0G0, Tel: (867) 645-2800, Fax: (867) 645-3855

1.0 Main Supporting Document and Water License

1.1 Water License

Change in obtainable freshwater limit (KIA-IR-01 and KIA-IR-01B)
AEM has proposed an increase in annual water takings from Third Portage Lake and state that no significant impacts to the local aquatic ecosystem are anticipated as a result of the requested increase in fresh water use, because the total volume withdrawn for mining under maximum use for 2010 – 2018 would be less than 2.5% of the volume of Third Portage Lake. Withdrawal of 2.5% of the lake volume annually will represent a consumptive use of water until the pits are refilled and the rate of withdrawal needs to be considered against the annual inflow to the lake to determine its significance. The KIA suggests that AEM provide a comparison of the projected increase in water volume taking against the annual volume of inflow to Third Portage Lake.

Altered License Conditions

Part E Item 8: (KIA-IR-04)
The KIA recommend that the current schedule of annual comparisons of predicted water quality and quantity within the pits to measured water quality and quantity be continued.

Part F Item 2, Part F Item 3: (KIA-IR-05)
We request Portage Attenuation Pond effluent discharges monitored at Station ST-9 include weak acid dissociable cyanide as well as total cyanide in the suite of monitored parameters as it represents the toxic fraction of total cyanide and is associated with a CCME water quality guideline. We also request that effluent discharged from the Vault Attenuation Pond monitored Station ST-10 include the same provision for monitoring weak acid dissociable cyanide. The following row should be added to Part F Item 2 and Part F Item 3:

Parameter	Maximum Average Concentration	Maximum Allowable Grab Sample Concentration
Free Cyanide	0.0025 mg/L	0.005 mg/L

1.2 Main Supporting Document (KIA-IR-09)

Trend of Increasing Parameter Concentrations in Near Field sites **(**Review Freshwater Aquatic Environment between 2010 and 2013).

The KIA requests that AEM provide a discussion of mitigation measures which will be taken to address the trend of increasing key parameters in the Near Field sites. This discussion should provide modeled water quality in the Near Field receiving environment where appropriate and make comparisons of the observations with predictions made in the EIS.

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2.0 Review of Existing Monitoring Programs (CREMP)

2.1 Hold Times (CREMP QA/QC) (KIA-IR-12)
The KIA recommends that AEM commit to Part I, Item 23 of the existing water license requiring establishment of an accredited laboratory on-site. AEM has not adhered to this condition. Use of an on-site accredited laboratory will likely alleviate issues associated with sample hold times. As an alternative, please elaborate on what measures are being undertaken to improve holding time compliance.

2.2 Hold Times (CREMP Data Evaluation Criteria) (KIA-IR-13)
Yearly means are appropriate for sediment and benthic invertebrate samples as they are collected at a yearly frequency. Water quality samples are collected seasonally.
Seasonal means should be used for decision making purposes or triggers should consider individual measurements or repeated individual measurements as decision criteria.

2.3 Water Chemistry Discussion Criteria (CREMP Water Chemistry Discussion) (KIA-IR-14)
AEM should alter the minimum criteria to discuss parameters to provide greater assurance that all potential adverse changes to water quality resulting from mine activity are highlighted. The KIA recommends that parameters are discussed in future CREMP reports when:

1) greater than 10% of the samples are above the MDL, and

2) parameters that are detected less frequently than in 10% of samples but are >5x MDL in some samples where they were detected.

This will provide assurance that the mine has had no or reversible adverse impacts to the aquatic environment under current water license conditions. This is critical as the water license has not been significantly altered in the renewal application.

2.4 Elevated Sediment Concentrations: Zinc and Lead (CREMP Sediment Chemistry Discussion, table 3.4-1) (KIA-IR-15)
The KIA recommends that AEM harmonize the existing aquatic environment summary presented in the Main Supporting Document with results and findings presented in the CREMP. A discrepancy has been noted for zinc. The CREMP also does not discuss elevated lead concentrations in the WAL sediment samples. These concentrations are above both the trigger and threshold concentrations and require management actions. It is recommended that a condition be included in the water license that requires management actions when concentrations are above a threshold value. The KIA also requests an explanation as to why elevated lead concentrations were overlooked in the CREMP discussion.

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2.5 Elevated Sediment Concentrations: chromium (CREMP Sediment Chemistry Discussion) (KIA-IR-16)
The CREMP recommends management action to follow up with increased chromium concentrations. Management action can be coupled with more stringent discharge criteria for chromium in the water license. The KIA recommends a condition in the water license to address elevated chromium in TPE sediments prior to reaching the threshold value.

2.6 Zooplankton Sampling (Appendix B2, Sampling Frequency) (KIA-IR-17)
The distribution of samples is acceptable as it adequately characterizes both under ice conditions and the open water. However, the KIA are concerned that zooplankton and periphyton sampling will be discontinued. The KIA recognizes that zooplankton sampling is not required by EEM under MMER. However, the inclusion of zooplankton monitoring is required by the NWT in Aquatic Effects Monitoring Programs (AEMPs) within similar environmental conditions. Furthermore zooplankton are important to young of the year fish and can help characterize changes related to mine impacts. The KIA recommends to continue including zooplankton as part of the AEMP for the project.

2.7 Depth Samples (Appendix B2, Experimental Design) (KIA-IR-18)
The KIA recommends that depth samples should be required from 1 meter off lake bottom as part of the CREMP at sample sites where stratification has been demonstrated through routine lake profiles of field temperature, conductivity, dissolved oxygen and pH.

2.8 Statistical comparison of Biological Monitors (Appendix B2, Experimental Design) (KIA-IR-19)
Biological monitoring is inherently variable but can be partially addressed using an approach recommended by Wiens and Parker[1] and used in the Doris North AEMP analysis of benthos. This approach is an impact level-by-time analysis, where the benthos and other biological monitor trends at exposure sites are compared to the trends at reference sites to determine if there is evidence of non-parallelism over time. The KIA recommends the use of the Wiens and Parker approach in addition to the BACI assessment for biological monitoring results (benthic invertebrates, phytoplankton, zooplankton).

3.0 Review of Management Reports and Plans

3.1 Monitoring Parameters (Appendix B6, Event Monitoring Water License, Schedule I, Monitoring Group) (KIA-IR-21)
The KIA requests that AEM commit to use of the lowest commercially available detection limits for water quality parameters and present a list of what these will be.

WAD cyanide should be included in Group 1 and Group 3 or AEM should commit to taking a conservative approach and compare total cyanide with the CCME guideline for free cyanide: 0.005 mg/L free cyanide.

[1] *Wiens, J. A. and Parker, K. R. 1995. Analyzing the effects of accidental environmental impacts: approaches and assumptions. Ecological Applications 5 (4): 1069-83*

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3.2 Modeling Results and Mitigation (Appendix B18, Water Quality Modeling Report, Appendix D – Water Quality Report) (KIA-IR-24)

The KIA recommends that AEM provide modeling results for free cyanide or commit to comparing total cyanide to the free cyanide guideline in all samples. The approach varies between reports and plans and should be harmonized prior to renewal of the water license. The KIA also recommends that AEM provide modeling results in the water management report and plan indicating when pit water quality will meet CCME guidelines. This will provide insight into management actions AEM may consider to mitigate copper and ammonia concentrations in the pit water.

3.3 Anomalous Thermistor or Piezometer Reading Response (Appendix B20, 6.2.2 Anomalous Readings) (KIA-IR-27)

The KIA requests that AEM describe the frequency of monitoring associated with their instruction to "*increase monitoring frequency*". This will provide assurance that the response to thermistor and piezometer reading changes is sufficient to protect the aquatic environment from potential seepages resulting from TSF structural deficiencies and wear over time.

List of Appendices

Appendix 1:
Updated Information Reviewed for the Meadowbank Type A Water License (NWB 2AM MEA0815) Renewal

Appendix 2:
Updated HESL Technical Memorandum for the Meadowbank Type A Water License (NWB 2AM MEA0815) Renewal

Appendix 3:
Updated GeoVector Technical Memorandum Information Reviewed for the Meadowbank Type A Water License (NWB 2AM MEA0815) Renewal

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