

## YUKON TERRITORY WATER BOARD

Pursuant to the *Yukon Waters Act and Regulations*, the Yukon Territory Water Board, hereinafter referred to as the Board, hereby grants to

Hudson Bay Mining and Smelting Co. Ltd.  
P.O. Box 1500  
Flin Flon, Manitoba R8A 1N9

hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the *Yukon Waters Act and Regulations* made thereunder and subject to and in accordance with the conditions specified in this Licence:

Licence Number: QZ99-046

Water Management Area: 02 Yukon

Licence Type: B

Nature of Undertaking: Quartz Mining

Location: Sekie Creek #2

Tributary of: MacMillan River

Latitude: 63° 06'                      Longitude: 130° 05'

Purpose: To deposit a waste for a Quartz Mining Undertaking

Effective Date: January 1, 2003

Expiry Date of Licence:              December 31, 2012

**PART A - GENERAL CONDITIONS****1. Definitions**

- a) "*Act*" means the *Yukon Waters Act* and any amendments thereto.
- b) "Application" and "Water Use Application" mean Water Use Application QZ99-046, including any additional submissions and/or revisions submitted to the Board by the Licensee up to the date of the Board's decision.
- c) "Board" means the Yukon Territory Water Board.
- d) "Deleterious Substance" means deleterious substance as defined in Section 34(1) of the *Fisheries Act*.
- e) "*Regulations*" means the *Yukon Waters Regulations*.
- f) "Inspector" means any person designated as an inspector under the *Act*.
- f) "Waste" means any substance defined in Section 2 of the *Act*.

**Representations, Warranties and Undertakings**

2. The Board has relied on the representations, warranties and undertakings provided by the Licensee in the material filed in the Application. Such representations, warranties and undertakings are considered by the Board to be a part of the licence, but shall be subject to, and may be modified by, the conditions of the licence.
3. Where there is a discrepancy between the Application and the conditions of this licence, then the conditions of this licence shall prevail.

**Other Uses**

4. If, subsequent to the issuing of this licence, the Licensee uses water and/or deposits waste in one or more ways not authorized in this licence, and the combined effect of those uses, as determined by an inspector:
  - a) has no potential for significant adverse environmental effects;
  - b) does not interfere with existing rights of other water users or waste depositors; and
  - c) satisfies the criteria set out in Column II of Schedule VII of the Regulations,no amendment to this licence will be required for that use of water and/or deposit of waste.

**Other Laws**

5. No condition of this licence limits the application of any other federal, territorial, first nation or municipal legislation.

Correspondence

6. Where any direction, notice, order, or report under this licence is required to be in writing, it shall be given:

a) To the Licensee, if delivered, faxed or mailed by registered mail to the following address:

Hudson Bay Mining and Smelting Co. Ltd.  
P.O. Box 1500  
Flin Flon, Manitoba R8A 1N9  
Fax: (204) 687-5793

and shall be deemed to have been given to the Licensee on the day it was delivered or faxed, or seven (7) days after the day it was mailed, as the case may be.

b) To the Board, if delivered, faxed or sent by registered mail to the following address:

Yukon Territory Water Board  
Suite 106, 419 Range Road  
Whitehorse, Yukon Y1A 3V1  
Fax: (867) 668-3628

and shall be deemed to have been given to the Board on the day it was delivered or faxed, or seven days after the day it was mailed, as the case may be.

Non-Compliance

7. In the event that the Licensee fails to comply with any provision or condition of this licence, the Board may, with the approval of the Minister and subject to the Act, cancel the licence.

Deleterious Substances

8. Subject to the provisions of this licence, deleterious substances shall be used, transported, stored and disposed of in such a manner that they are not deposited in, or allowed to be deposited in, any waters.

Term of Licence

9. The term of this licence is from the effective date to December 31, 2012.

Reports

10. All monitoring data and reports shall be submitted to the Board in an unbound printed form that is reproducible by standard photocopier and shall be accompanied by five copies.

11. All monitoring data and reports shall also be submitted in digital form on diskette using an IBM compatible format that is readable using commonly available software.

Annual Reports

- 12. Annual reports shall be submitted to the Board by the Licensee. The reports shall cover the period from January 1 to December 31 of each year and shall be submitted to the Board on or before April 1 of the following year.
- 13. Annual reports shall include the information required by this licence and by the *Regulations*, including, but not necessarily limited to:
  - a) all monitoring data required to be collected by this licence; and
  - b) a report on all activities carried out during the preceding year as part of any study required by this licence.

Spills and Unauthorized Discharges

- 14. The Licensee shall immediately contact the 24-hour Yukon Spill Report telephone number (867) 667-7244 and implement the spill contingency plan should a spill or an unauthorized discharge occur. A detailed written report on any such event, including but not limited to, dates, quantities, parameters, causes and other relevant details and explanations, shall be submitted to the Board not later than ten days after its occurrence.

Hazardous Materials Storage

- 15. A complete inventory of chemicals, fuels, oils, lubricants and other hazardous materials, and their locations, shall be maintained by the Licensee.

**PART B - OPERATING CONDITIONS**

Waste Deposit

- 16. Subject to the terms of this licence, the Licensee is hereby authorised to deposit waste in the form of discharge water from the existing mine adit to Sekie Creek #2 as described in the Application and subject to the terms of this licence.

**PART D - EFFLUENT QUALITY STANDARDS**

- 17. After September 30, 2005, a grab sample of any waste discharge at Station W5, and any other point of entry of a waste discharge into receiving waters, shall meet the following effluent quality standards:

PARAMETER	CONCENTRATION
Arsenic (dissolved)	1.0 mg/L
Copper (total)	0.6 mg/L
Lead (total)	0.4 mg/L

PARAMETER	CONCENTRATION
Nickel (total)	1.0 mg/L
Zinc (total)	1.0 mg/L

**PART D - MONITORING**

19. The Licensee shall conduct monitoring activities at the following locations:

Station	Location	Description
W2	Tom Creek	First upstream tributary from the mine adit, approximately 200 m from the confluence with Sekie Creek #2.
W3	Sekie Creek #2 upstream of site.	Approximately 500 m upstream of the mine adit and of the exploration camp and small waterfall on Sekie Creek #2.
W3B	Sekie Creek #2 upstream of W3 and mining disturbances.	Approximately 300 m to 500 m upstream of W3 and the mining-related disturbances on Sekie Creek #2.
W5	Adit discharge.	Less than 10 m from the adit portal.
W6	Sekie Creek #2 downstream of adit.	Approximately 200 m downstream of the confluence of the adit discharge and Sekie Creek #2 and downgradient of the rock dump.
W8	Sekie Creek #2 crossing.	North Canol Road crossing of Sekie Creek #2.
W11	MacMillan River upstream of Sekie Creek #2.	Meander in river adjacent to airstrip approximately 800 m upstream of the mouth of Sekie Creek #2.
W12	MacMillan River downstream of Sekie Creek #2.	Straight section of river adjacent to North Canol Road approximately 950 m downstream of the mouth of Sekie Creek #2 and 1.3 km upstream from Macintosh Creek.
W13	MacMillan River #2 Crossing.	15 km downstream from the mouth of Sekie Creek #2.

20. As part of the first annual report, the Licensee shall provide UTM coordinates for each of the monitoring stations.
21. The following data shall be obtained at each monitoring station:

Field Measurements

- i) conductivity
- ii) pH
- iii) water temperature
- iv) rate of flow
- v) field notes
- vi) photographs

Laboratory Analysis

- i) physical tests: pH; conductivity; water temperature; Total Suspended Solids; and hardness.
- ii) dissolved anions: alkalinity; acidity; and total sulphate.
- iii) total and dissolved ICP metals: Including but not necessarily limited to Aluminum; Antimony; Arsenic; Barium; Cadmium; Calcium; Chromium; Copper; Iron; Lead; Nickel; Selenium; Silver; Thallium; and Zinc.

22. Frequency of Sampling:

From the effective date of this licence until December 31, 2004, sampling shall be carried out at each monitoring station in May, July and September of each year. After December 31, 2004, sampling shall be carried out at each monitoring station in May and September of each year.

23. All data collection and analysis shall be conducted in accordance with the current edition of Standard Methods for the Examination of Water and Waste Water, prepared and published jointly by the American Water Works Association and the Water Pollution Control Federation.

**PART E - STUDIES**

24. By December 31, 2003, the Licensee shall submit to the Board a plan for a study to examine contaminant loadings in Sekie Creek #2. The plan shall include a schedule for reporting data, conclusions and any proposed mitigative measures to the Board. The Licensee shall implement the study when instructed to do so by the Board.
25. The purpose of the study to examine contaminant loadings in Sekie Creek #2 will be:
- a) To evaluate contaminant loadings to Sekie Creek #2 from natural and anthropogenic sources, including both underground and surface sources;
  - b) To evaluate changes in contaminant loadings to Sekie Creek #2 since exploration activity commenced in the area, and provide predictions about future conditions;

- c) To evaluate the effects on the South MacMillan River of the undertaking in combination with other nearby activities, including consideration of whether conditions in the South MacMillan River have changed since the commencement of exploration activities in the area;
- d) To provide proposals for actions that might be taken to diminish the oxidation rate, discharge flows, or contaminant concentrations for anthropogenic contaminant sources; and
- e) To identify conditions that would warrant further mitigation of contaminant loadings.

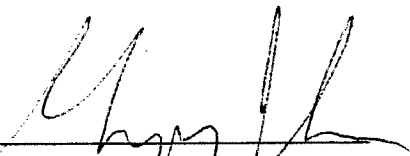
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Dated this 17 day of

December, 2002

  
Witness

Approved by:

  
Chairperson  
YUKON TERRITORY WATER BOARD

REASONS FOR DECISION  
WATER USE APPLICATION QZ99-046  
HUDSON BAY MINING AND SMELTING CO. LTD.

The Yukon Territory Water Board ("the Board") has concluded deliberations regarding water use application QZ99-046, which is an application for a type B licence for Quartz Mining Undertaking submitted by Hudson Bay Mining and Smelting Co. Ltd. ("HBMS").

Notice of application was provided in accordance with the requirements of the *Yukon Waters Act* ("YWA"). In response, the Board received interventions from

Fisheries and Oceans Canada, Navigable Waters Protection Division ("Coast Guard")  
Environment Canada ("EP")  
Nick De Graff, and  
Indian and Northern Affairs Canada ("DIAND")

Prior to making licensing decisions, the Board undertook an environmental screening of the project pursuant to the *Canadian Environmental Assessment Act* ("CEAA"). The CEAA determination was 20(1)(a): "... taking into account the implementation of any mitigation measures that the responsible authorities consider appropriate, the project is not likely to cause significant adverse environmental effects, .."

In the application, HBMS applied for a licence to deposit a waste at the Tom Valley Mine, located at the Macmillan Pass area in east central Yukon, approximately 175 km north east of the community of Ross River. The property has been the subject of several exploration projects, but is not an active mine. The purpose of the application is to authorize a discharge of mine water from underground workings.

Because this application was for a licence to authorize the deposit of a waste it presented difficulties for the Board in coming to grips with how it could comply with the requirements of sub-section 14(4)(c) of the YWA.

14. (1) *Subject to this section, the Board may issue type A licences and type B licences.....*

(4) *Where an application for a licence is made, the Board **shall not issue** a licence unless the applicant satisfies the Board that.....*

*(c) any waste that would be produced by the appurtenant undertaking will be treated and disposed of in a manner that is appropriate for the maintenance of*

*(i) water quality standards prescribed by regulations made under paragraph 33(1)(h) or, in the absence of such regulations, such water quality standards as the Board considers acceptable, and*

*(ii) effluent standards prescribed by regulations made under paragraph 33(1)(i) or, in the absence of such regulations, such effluent standards as the Board considers acceptable; and....*

*(emphasis added)*

In this case there are no applicable regulations made under Section 33 of YWA. Neither the current Metal Mine Liquid Effluent Regulations ("MMLER") nor the upcoming Metal Mine Effluent Regulations apply to this site, thus ss. 15(5) of YWA has no effect for this licensing decision. Canadian Council of Ministers of Environment Guidelines ("CCMEG") for Aquatic Health or Drinking Water are guidelines which the Board has an obligation to consider, and always has, but since they are not regulations they are not legally binding on the Board in the context of either its YWA ss. 14(4)(c) or ss. 15(5) obligations.

Data collected in the region for many years and included in the application clearly indicate that a strict application of CCMEG for Aquatic Health is not appropriate for this site as the guidelines could never be achieved since natural background exceeds these guidelines for most parameters of interest.

This issue boils down to what is acceptable to the Board for both a water quality standard (which we interpret from the context of YWA to be a receiving water quality standard) and an effluent standard. Where a licence authorizes the deposit of a waste, the Board can not issue a licence that does not deal with these issues.

In the past the Board has generally applied effluent standards that are based on MMLER but largely these have concerned producing mines, not old exploration adits, even though the standard is applicable to all discharges at the site licensed. For zinc, which appears to be the metal of primary concern in this case, most licences issued by this Board that contain a effluent discharge standard for metal content refer to 0.5 mg/l total zinc for a grab sample (this is based on the monthly average for MMLER). In cases where MMLER did not legally apply either this effluent standard was followed or one oriented at maintaining CCMEG in the receiving environment was proposed by interveners and / or the applicant and adopted by the Board.

HBMS did submit information relevant to establishing appropriate water quality standards. Section 5.2.2 of Exhibit 1.5 (the Gartner Lee report titled "Tom Valley Property 2000 Water Quality Study" and dated April, 2001) examines the incremental loading increase from the adit discharge on the South MacMillan River. This section shows the minimal effect on concentration of zinc in the South MacMillan River 12 km. downstream of Seki Ck #2 from hypothetical treatment of adit discharge to what is arguably a zinc background of 5.7 mg/l but it does not propose a standard that would be applicable. Although the application (Section 5.1 of Exhibit 1.5) alludes to setting site specific water quality objectives it does not apply these principles to clearly lay out and justify an approach to determining what receiving water standard would be appropriate for this site. Exhibit 1.3.6 contains excerpts of a report that refers to setting a site specific water quality objective for Zn but the objective was not stated nor was the

section of the report describing the objective included in the application. HBMS has not convinced the Board of any acceptable standard.

The Board examined several avenues of approach in dealing with this matter. One was to deny the application as HBMS had not satisfied the Board of the matters specified in ss 14(4)(c) of YWA. Another approach considered was to send the application back to the HBMS and seek further information on what appropriate standards could be included in the licence and require HBMS to convince the Board of an appropriate standard. The history of this application has involved long delays, not all of which are the responsibility of the HBMS, but which the Board does not wish to see continue. The first approach was unacceptable as there appears to be an existing waste deposit that should not be ignored. The second approach would allow the Board to satisfy its obligations but would not allow the Board to define the time allowed for resolution of the matter. The only mechanism available to the Board to require submission of information within a specific time frame is a water licence.

The third approach considered, and the one adopted by the Board, was to include effluent discharge standards that the Board has considered acceptable in the past but not make them effective for a period of time. During that time period it is the Board's intention that HBMS will choose a course of action, present it to the Board and seek whatever additional authorization or licence amendment is needed. The possible courses available to HBMS are many and might include installing and operating a water treatment plant, examining the cause of high zinc levels in adit discharge and applying other mitigation and / or preparing and submitting to the Board information that will allow it to make a decision on some other standard that is appropriate for this situation. The Board adopted the metal content specified in MMLER for total Zn, Pb, Cu, As and Ni for a grab sample as the effluent standards that would be acceptable. In choosing this approach the Board was satisfied by the detailed information filed by the HBMS as Exhibit 1.3.15, which demonstrates that HBMS has considerable experience and expertise treating similar waters elsewhere, that the waste can be treated with conventional technology, but at considerable expense, in a way that will maintain acceptable effluent standards. Including the effluent standard as a licence condition satisfied the Board that the waste will be disposed of in a way that maintains acceptable standards during the licence term, if not immediately. Maintenance of these effluent standards would imply a slight improvement in receiving water quality which is within the range of receiving water quality standards acceptable to the Board. The Board notes, however, that while HBMS described a treatment plant in its application, it has not proposed to build such a plant in the application, thus, the plant is not authorized by this licence and an amendment of this licence would be required to construct it.

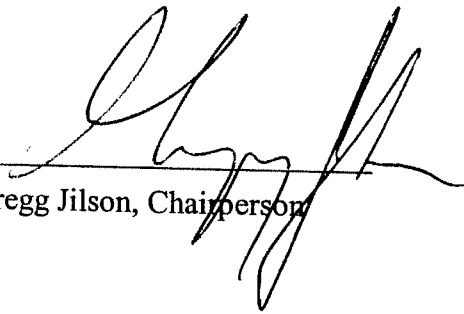
While the Board can not indicate what other, more locally appropriate, standards would be acceptable to it, some guidance on the matter may be helpful. In determining standards that

would be acceptable to the Board, it would likely want to be convinced of matters such as fish habitat and utilization in the area. The current application is of limited help in this regard. The application (at page 2 of Exhibit 1.3.1) mentions Chinook Salmon spawning in the South MacMillan River 40 to 50 km. downstream of the confluence of Seki Ck #2. The application also describes the lack of suitable habitat in the river above the confluence and it mentions a few greyling having been observed between those two locations. This leaves a considerable length of river which the application indicates contains suitable fish habitat, at least locally, that is utilized, although perhaps not heavily (Exhibits 1.3.8, 1.3.10 and 1.3.12). The Board would need to know what species use the river, where, for what life processes, at what times of year, what the sensitivities of those life processes to the various contaminants in the adit discharge might be and what the contribution of the adit discharge to South MacMillan River water quality would be at that time and place. Without this information the Board is unable to provide any guidance, in advance, of what standards are acceptable for this situation. The Board is able to indicate that the ultimate objective it expects to see realized is no permanent further deterioration of the existing valued aquatic resources in the area downstream of the adit, with particular focus on the South Macmillan River. The Board can also indicate that it would expect to see specific standards proposed by HBMS and justified as appropriate to achieving this objective.

Several proposed licence conditions were advanced by the interveners. Most of these were accepted as appropriate by the Board and included in the licence. The Board determined that the frequency of sampling proposed by EP would not be included as the Board agreed with HBMS that winter sampling may be unnecessarily hazardous for routine monitoring. There may, however, be a need for some low flow sampling as part of specific studies and the Board is satisfied that these can be completed with appropriate safety considerations as such work is commonly done in Yukon.

Both DIAND and EP requested several studies related to the contaminant loading from the adit, the relative magnitude of loading related to other natural and anthropogenic sources, possible increase of loading over time, evaluation of potential effects on the receiving environment and potential mitigation to control or reduce loadings. The Board's decision on effluent standards, outlined above, may make some of these studies unnecessary or potentially duplicative of undertakings that HBMS may choose to complete as a result of its choice of a course of action. The Board determined that there should be a requirement to deal with the issues identified by DIAND and EP and has required that HBMS submit a plan for these studies in the first year of the licence term. This plan will provide an opportunity for HBMS to coordinate its choice of undertakings with the identified studies. The Board has included a provision requiring notice to proceed with implementation of the plan so that there is an opportunity for parties to comment on the proposed studies.

The term of the licence is ten years, expiring Dec 31, 2012, as requested by HBMS. The Board considered requests for a shorter term from DIAND and EP but determined that the conditions of the licence gave the Board ample assurance that there will be an opportunity to revisit the issues of concern to DIAND and EP during the term of the licence.

  
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Gregg Jilson, Chairperson

Dec 31 2002