



Conservation and Water Stewardship

Climate Change and Environmental Protection Division
Environmental Approvals Branch
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CLIENT FILE NO.: 5621.00

September 24, 2013

Jay Cooper
Hudson Bay Mining and Smelting Co., Limited
P.O. Box 1500
Flin Flon, MB R8A 1N9

Enclosed is **Environment Act Licence No. 3065** dated September 24, 2013 issued to **Hudson Bay Mining and Smelting Co., Limited** for the construction and operation of the Reed Mine, a 1,300 tonnes/day underground copper mine and supporting infrastructure located approximately 91 kilometers east-southeast of Flin Flon and approximately 80 kilometers west-southwest of the Town of Snow Lake in the Grass River Provincial Park in accordance with the Proposal received December 11, 2012 and subsequent information provided on February 21, 2013, February 27, 2013, March 6, 2013, March 8, 2013, and June 12, 2013.

We have determined that public concerns have been addressed through the additional information and/or through licence conditions. Consequently, pursuant to Section 11(10) of *The Environment Act*, I have decided not to recommend a public hearing for this project to the Minister of Conservation and Water Stewardship. Pursuant to Section 27 of *The Environment Act*, my decision in this matter can be appealed to the Minister of Conservation and Water Stewardship within 30 days of the date of this letter.

Also pursuant to Section 27 of *The Environment Act*, my licensing decision can be appealed to the Minister of Conservation and Water Stewardship within 30 days of the date of this letter.

In addition to the enclosed Licence requirements, please be informed that all other applicable federal, provincial and municipal regulations and by-laws must be complied with. A Notice of Alteration must be filed with the Director for approval prior to any alteration to the Development as licensed. For further information on the administration and application of the Licence, please feel free to contact Tim Prawdzik, Environment Officer @ 204-622-2123.

Yours truly,

“originally signed by”

Tracey Braun, M.Sc.
Director
Environment Act

c: Don Labossiere, Director, Environmental Compliance and Enforcement
Chris Beaumont-Smith, A/Director, Innovation, Energy, and Mines
Public Registries, Public Distribution (see attached)

NOTE: Confirmation of Receipt of this Licence No. 3065 (by the Licencee only) is required by the Director of Environmental Approvals. Please acknowledge receipt by signing in the space below and provide a copy (letter only) to the Department by October 8, 2013.

On behalf of the Hudson Bay Mining and Smelting Co., Limited

Date

LICENCE

Licence No. / Licence n° 3065

Issue Date / Date de délivrance September 24, 2013

In accordance with *The Environment Act* (C.C.S.M. c. E125)
Conformément à *la Loi sur l'environnement* (C.P.L.M. c. E125)

Pursuant to Section 11(1) / Conformément au Paragraphe 11(1)

THIS LICENCE IS ISSUED TO: / CETTE LICENCE EST DONNÉE À:

HUDSON BAY MINING AND SMELTING CO., LIMITED;
the Licencee

for the construction and operation of the Reed Mine, a 1,300 tonnes/day underground copper mine and supporting infrastructure located approximately 91 kilometers east-southeast of Flin Flon and approximately 80 kilometers west-southwest of the Town of Snow Lake in the Grass River Provincial Park in accordance with the Proposal received December 11, 2012 and subsequent information provided on February 21, 2013, February 27, 2013, March 6, 2013, March 8, 2013, and June 12, 2013 and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence,

“**accredited laboratory**” means an analytical facility accredited by the Standard Council of Canada (SCC), or accredited by another accrediting agency recognized by Manitoba Conservation and Water Stewardship to be equivalent to the SCC, or be able to demonstrate, upon request, that it has the quality assurance/quality control (QA/QC) procedures in place equivalent to accreditation based on the international standard ISO/IEC 17025, or otherwise approved by the Director;

“**affected area**” means a geographical area, excluding the property of the Development;

“**AP**” means the maximum acid-generation potential, expressed as tonnes of CaCO₃ per 1000 tonnes of a material tested, determined in accordance with a static Acid-Base Accounting method satisfactory to the Director;

“**approved**” means approved by the Director or assigned Environment Officer in writing;

“**as-built drawings**” means drawings complete with all dimensions which indicate all surface features of the Development as it has actually been built;

“**CCME**” means the Canadian Council of Ministers of the Environment;

“**composite sample**” means as defined in the federal *Metal Mining Effluent Regulations* (MMER);

“**contaminated soil**” means soil which contains contaminant concentrations in excess of the applicable remediation criteria cited in the CCME's “Canadian Environmental Quality Guidelines” report ISBN 896-997-34-1, update 5.0, 2006, or any future amendment thereof;

“**Director**” means an employee so designated pursuant to *The Environment Act*;

“**Director of Mines**” means the Director of Mines Branch of Innovation, Energy and Mines;

“**effluent**” means mine water released from the Development into the environment;

“**EEM**” means environmental effects monitoring;

“**Environmental Management System (EMS)**” means the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy;

“**Environment Officer**” means an employee so appointed pursuant to *The Environment Act*;

“**final discharge point**” means an identifiable discharge point at the mine, beyond which the Licencee no longer exercises any further control over the quality of the effluent, which for the purposes of this Licence is the effluent discharge outfall from the polishing pond;

“**fugitive emissions**” means particulate matter escaping from sources within the Development into the atmosphere other than through any of the emission stacks or vents;

“**grab sample**” means a grab sample as defined in the federal *Metal Mining Effluent Regulations* (MMER);

“**Metal Mining Effluent Regulations (MMER)**” means the *Metal Mining Effluent Regulations* (SOR/2002-222), or any future amendments thereto, promulgated under the federal *Fisheries Act*;

“**mine**” means any of the surface and sub-surface workings, overburden, waste rock and ore stockpiles, all ancillary buildings, wastewater treatment facilities, impoundment or control facilities, tailings management areas and such other on-site infrastructure as may be located on the mine site and associated with the Development;

“**mine site**” means the entire operational, disturbed or impacted surface area of land and water located within the boundaries of those surface rights acquired and held by the Licencee for the construction and operation of the Development;

“**mine water**” means water pumped to the surface from underground mine workings or from an open pit, or contaminated runoff or leachate from ore or waste rock stockpiles exposed to precipitation, or polluted mine site runoff, or any combination thereof, but excluding sewage;

“**MSDS**” means material safety data sheets;

“**mothballed**” means placed into a state of non use, or temporarily closed, while at the same time maintained in a state of readiness for potential re-use or re-opening;

“**noise nuisance**” means an unwanted sound, in an affected area, which is annoying, troublesome, or disagreeable to a person:

- a) residing in an affected area;
- b) working in an affected area; or
- c) present at a location in an affected area which is normally open to members of the public;

if the unwanted sound

- d) is the subject of at least 5 written complaints, received by the Director in a form satisfactory to the Director and within a 90-day period, from 5 different persons falling within clauses a), b), or c), who do not live in the same household; or
- e) is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses a), b) or c) and the Director is of the opinion that if the unwanted sound had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90-day period, from 5 different persons who do not live in the same household;

“**non acid-generating**” means having a NPR greater than 4, until or unless an appropriate alternate NPR cut-off value is determined, to the satisfaction of the Director, through detailed characterizations, evaluations and interpretations, or through kinetic testing, carried out on representative test material by qualified individuals;

“**NP**” means the maximum neutralizing potential, expressed as tonnes of CaCO_3 per 1,000 tonnes of material tested, determined in accordance with a static Acid-Base Accounting method satisfactory to the Director;

“**NPR**” means the neutralizing potential ratio as determined from the ratio of NP/AP;

“**odour nuisance**” means a continuous or repeated odour, smell or aroma, in an affected area, which is offensive, obnoxious, troublesome, annoying, unpleasant or disagreeable to a person:

- a) residing in an affected area;
- b) working in an affected area; or
- c) present at a location in an affected area which is normally open to members of the public;

if the odour, smell or aroma

- d) is the subject of at least 5 written complaints, received by the Director in a form satisfactory to the Director and within a 90-day period, from 5 different persons falling within clauses a), b) or c), who do not live in the same household; or

- e) is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses a), b) or c) and the Director is of the opinion that if the odour, smell or aroma had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90-day period, from 5 different persons who do not live in the same household;

“ore” means mineralized rock containing sufficient mineral value for the purposes of this Development;

“PAG” means potentially-acid generating;

“particulate matter” means any finely divided liquid or solid matter other than water droplets;

“polishing pond” means a constructed pond at the mine site which receives mine water;

“pollutant” means a pollutant as defined in *The Environment Act*;

“potentially acid-generating” means having the potential or uncertain ability to generate acid as indicated by a NPR of 4 or less, until or unless an appropriate alternate NPR cut-off value is determined, to the satisfaction of the Director, through detailed characterizations, evaluations and interpretations, or through kinetic testing, carried out on representative test material by qualified individuals;

“sewage” means household and commercial wastewater that contains human waste;

“solid waste” means solid waste as defined in *Manitoba Regulation 150/91*, or any future amendments thereto, respecting waste disposal grounds, excluding waste rock;

“Standard Methods for the Examination of Water and Wastewater” means the most recent edition of Standard Methods for the Examination of Water and Wastewater published jointly by the American Public Health Association, the American Waterworks Association and the Water Environment Federation;

“undiluted” means free of extraneous unpolluted sources of water which could feasibly be prevented from mixing with the mine water or effluent prior to its discharge at a designated final discharge point(s), and not having water added for the purpose of meeting any effluent quality limits specified in this Licence or in the MMER;

“waste disposal ground” means an area of land designated by a person, municipality, provincial government agency, or crown corporation for the disposal of waste and approved for use in accordance with *Manitoba Regulation 150/91*, or any future amendments thereto, or a Licence issued pursuant to *The Environment Act*;

“waste rock” means rock containing insufficient mineral value to the Development, excepting such rock which is inadvertently present in mined ore; and

“**WHMIS**” means Workplace Hazardous Materials Information System.

GENERAL TERMS AND CONDITIONS

Note: If any specification, limit, term or condition prescribed in this Licence or in any subsequent revision thereto, results in a contradiction of one or more requirements of any federal or provincial statute or regulation then the most stringent limit, term, or condition shall apply.

This Section of the Licence contains requirements intended to provide guidance to the Licencee in implementing practices to ensure that the environment is maintained in such a manner as to sustain a high quality of life, including social and economic development, recreation and leisure for present and future Manitobans.

Future Sampling

1. In addition to any of the limits, terms and conditions specified in this Licence, the Licencee shall, upon the request of the Director:
 - a) sample, monitor, analyze or investigate specific areas of concern regarding any segment, component or aspect of pollutant storage, containment, treatment, handling, disposal or emission systems, for such pollutants, ambient quality, aquatic toxicity, leachate characteristics and discharge or emission rates, and for such duration and at such frequencies as may be specified;
 - b) determine the environmental impact associated with the release of any pollutant(s) from the Development; or
 - c) provide the Director, within such time as may be specified, with such reports, drawings, specifications, analytical data, descriptions of sampling and analytical procedures being used, bioassay data, flow rate measurements and such other information as may from time to time be requested.

Sampling Methods

2. The Licencee shall, unless otherwise specified in this Licence:
 - a) carry out all preservations and analyses on liquid samples in accordance with the methods prescribed in the most current edition of Standard Methods for the Examination of Water and Wastewater or in accordance with equivalent preservation and analytical methodologies approved by the Director;
 - b) carry out all sampling of, and preservation and analyses on, soil and air samples in accordance with methodologies approved by the Director;
 - c) have all analytical determinations undertaken by an accredited laboratory; and
 - d) report the results to the Director, in writing and in an electronic format acceptable to the Director, within 60 days of the samples being taken.

Reporting Format

3. The Licencee shall submit all information required to be provided to the Director or Environment Officer under this Licence, in writing, in such form (including number of copies) and of such content as may be specified by the Director or Environment Officer, and each submission shall be clearly labeled with the Licence Number and Client File Number associated with this Licence.

Equipment Breakdown

4. The Licencee shall, in the case of physical or mechanical equipment breakdown or process upset where such breakdown or process upset results or may result in the release of a pollutant in an amount or concentration, or at a level or rate of release, that causes or may cause a significant adverse effect, immediately report the event by calling 204-944-4888 (toll-free 1-855-944-4888). The report shall indicate the nature of the event, the time and estimated duration of the event and the reason for the event.
5. The Licencee shall, following the reporting of an event pursuant to Clause 4:
 - a) identify the repairs required to the mechanical equipment;
 - b) undertake all repairs to minimize unauthorized discharges of a pollutant;
 - c) complete the repairs in accordance with any written instructions of the Director; and
 - d) submit a report to the Director about the causes of breakdown and measures taken, within one week of the repairs being done.

Future Studies

6. The Licencee shall actively participate in any future watershed and/or aquifer based management study, plan and/or nutrient reduction program, approved by the Director.
7. The Licencee shall actively participate in woodland caribou research, studies and/or monitoring activities in such a manner and within a geographical region that is acceptable to the Director.

On-Site Wastewater

8. The Licencee shall comply with the provisions of *Manitoba Regulation 83/2003* respecting *Onsite Wastewater Management Systems Regulation* and its amendment or any future amendment thereto.

Approvals and Permits

9. The Licencee shall obtain all necessary federal, provincial and/or municipal licences, authorizations, permits and/or approvals for construction of relevant components of the Development prior to commencement of any construction.

Safety and Security

10. The Licencee shall continually maintain an up-to-date inventory of any process and cleaning chemicals used and/or stored on-site that would be captured by any applicable federal/provincial WHMIS regulations and protocols, and make this information and applicable MSDS sheets available to an Environment Officer upon request.
11. The Licencee shall prepare and maintain an emergency response contingency plan in accordance with the Canadian Centre for Occupational Health and Safety “Emergency Response Planning Guide” or other emergency planning guidelines acceptable to the Director.
12. The Licencee shall implement and continually maintain in current status, an Environmental Management System (EMS) for the Development which is acceptable to the Director.

As-Built Drawings

13. The Licencee shall:
 - a) prepare “as-built drawings” for the surface components of the Development and shall label the drawings “As-Built Drawings”; and
 - b) provide to the Director, not later than six months after construction of the Development is completed, two electronic copies of the “as-built drawings” of the Development.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

Operation of the Mine Site

14. The Licencee shall restrict construction and operational activities to only such lands to which the Licencee possesses the mineral rights, surface rights or complete ownership, or which the Licencee has leased from another owner, wherein the leasing agreement clearly identifies the party which accepts full responsibility for any environmental liabilities incurred by the activities of the Licencee.
15. The Licencee shall not locate any petroleum storage tank within 100 metres of the shoreline of any waterway or water body.
16. The Licencee shall with respect to on-site earthen construction works, construct and maintain silt fences in the drainage routes transporting surface runoff off the property of the Development until vegetation has been re-established on the disturbed areas.
17. The Licencee shall:
 - a) provide the Director with:
 - i. written notice three months in advance of any imminent permanent closure of this Development; or

- ii. provide the Director with an immediate notice of any sudden decision to temporarily close this Development whereby the Development would be placed in a mothballed state for re-opening in the foreseeable future;
- b) comply with *Manitoba Regulation 67/99*, or any future amendment thereto, issued under *The Mines and Minerals Act*, respecting closure plans for mining developments, particularly in regards to addressing environmental issues including, but not necessarily limited to:
 - i. the decommissioning of the underground workings and surface infrastructure associated with the Development;
 - ii. the decommissioning of access roads and stream crossings used to access the mine site;
 - iii. the containment, control or treatment of pollutants originating from the mine site of the Development;
 - iv. the rehabilitation of the mine site area disturbed by the Development;
 - v. the restoration or replacement of fish habitats disturbed, adversely affected or lost as a result of the Development; and
 - vi. the strategy, scope, frequency and duration of post-closure environmental monitoring activities at the mine site; where applicable; and
- c) in the course of progressive rehabilitation, as well as upon permanent or temporary closure of this Development, implement the environmentally related aspects of the Closure Plan approved pursuant to *Manitoba Regulation 67/99*, or any future amendment thereto, to the satisfaction of the Director.

Operation of the Polishing Pond

18. The Licencee shall maintain an impervious liner within the polishing pond at all times.
19. The Licencee shall direct all mine water pumped to the surface from the underground mine workings at the Development into the designated polishing pond.
20. The Licencee shall not release any effluent from the polishing pond into the environment:
 - a) other than through the final discharge point of the polishing pond;
 - b) if the effluent is acutely lethal, as defined in the MMER;
 - c) if the quality of the effluent is in non-compliance with the values listed in Appendix B, the Manitoba Surface Water Quality Standards, Objectives and Guidelines Tier 1 standards and/or the water quality criteria set out in Schedule 4 of the MMER;
 - d) where the quality of the effluent is having an adverse impact on or is likely to result in, a downstream degradation of the water quality within Whitehorse Creek, the Grass River, and Reed Lake, relative to the Manitoba Water Quality Standards, Objectives, and Guidelines; and
 - e) when such a discharge would cause or contribute to flooding in or along the effluent drainage route.

21. The Licencee shall take such corrective action and within such a time frame as is satisfactory to the Director, to mitigate any seepage losses from the polishing pond, where such seepage losses and their quality are determined by the Director to be unacceptable.

Solid Waste

22. The Licencee shall remove all non-recyclable solid waste resulting from demolition, upgrading and general operational activities at the mine site from the mine site as soon as practical, and deposit such solid waste into a waste disposal ground operating under the authority of:
- a) a permit issued pursuant to the *Manitoba Waste Disposal Grounds Regulation 150/91*, or any future amendment thereto; or
 - b) an Environment Act Licence issued pursuant to *The Environment Act*.
23. The Licencee shall not deposit bulky metallic wastes, used tires, used oil or other fluid lubricants, hydraulic fluids, and any other class of recyclable waste substances as may be specified by the Director, into the environment except to:
- a) a facility or infrastructure which accepts such materials for recycling; or
 - b) a waste disposal ground where these recyclable substances are kept distinctly segregated from each other and are not buried, unless otherwise specified by the Director, so as to readily facilitate their recycling.

Dangerous Goods or Hazardous Waste

24. The Licencee shall not release dangerous goods or hazardous wastes into the sewage collection system.
25. The Licencee shall comply with all the applicable requirements of:
- a) the *Manitoba Dangerous Goods Handling and Transportation Act*, and regulations issued thereunder, respecting the handling, transport, storage and disposal of any dangerous goods brought onto or generated at the Development; and
 - b) *Manitoba Storage and Handling of Petroleum Products and Allied Products Regulation 188/2001*, or any future amendments thereto.
26. The Licencee shall collect, transport and store used oil or hydraulic fluids removed from on-site machinery in secure, properly labeled, non-leaking containers and shall regularly send them to a recycling or disposal facility approved to accept hazardous wastes.
27. The Licencee shall install and maintain spill recovery equipment at the Development at all times.

Air Emissions

28. The Licencee shall limit fugitive emissions from any source within the mine site such that:
- a) distinct plume forming fugitive emissions do not exceed an opacity of 5%; and
 - b) non plume forming fugitive emissions are not visible at any time;

when measured or viewed in the atmosphere at any point beyond the mine site in an area zoned commercial or residential.

29. The Licencee shall not cause or permit an odour nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate an odour nuisance.
30. The Licencee shall not cause or permit a noise nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate a noise nuisance.

Waste Rock

31. The Licencee shall operate a PAG waste rock storage pad at the development, as shown in Appendix A, such that:
 - a) only non-acid generating rock material is utilized for construction;
 - b) a stockpile of 250,000 tonnes of waste rock is not exceeded, unless otherwise specified in writing by the Director; and
 - c) the height of the waste rock stockpile is such that it is not visible from areas which are normally open to members of the public.
32. The Licencee shall, unless otherwise specified by the Director, dispose of all waste rock brought to surface at this Development by:
 - a) placing all material in 3 to 4 metre high lifts with a 300 millimeter layer of crushed limestone between each lift at the designated waste rock storage pad; and
 - b) using as backfill for the underground operations, as necessary.
33. The Licencee shall:
 - a) not use, nor release to any person, any contaminated soil, or potentially acid-generating rock/materials, as a construction material; and
 - b) undertake such remedial work as may be specified by the Director should any of the construction materials used by the Licencee in the course of constructing or altering this Development be determined to be contaminated soil or acid generating rock/material.

Ore

34. The Licencee shall operate the ore storage pad at the development, as shown in Appendix A, such that:
 - a) an impervious liner is maintained at all times;
 - b) only non-acid generating rock material is utilized for construction;
 - c) a stockpile of 5,000 tonnes of ore is not exceeded, unless otherwise specified in writing by the Director;
 - d) the height of the ore stockpile is such that it is not visible from areas which are normally open to members of the public; and

- e) runoff is collected in a surface sump and pumped to an underground sump with discharge to the polishing pond.
35. The Licencee shall, unless otherwise specified by the Director, transfer all ore brought to the surface of this Development from the ore storage pad by truck to the Flin Flon Metallurgical Complex and shall not process any ore at the Development.

MONITORING AND REPORTING REQUIREMENTS

Downstream Water Sampling

36. The Licencee shall, once a month during open water conditions:
- a) collect a representative grab sample of water from Unnamed Lake 3, at a location acceptable to the Director, which is down gradient of the waste rock storage pad;
 - b) analyze the samples for those parameters listing in Appendix D of this Licence; and
 - c) report the data determined pursuant to sub-clause 36(b) of this Licence to the Director within 30 days of receipt of the results.

Waste Rock Sampling

37. The Licencee shall collect and analyze bulk samples of waste rock for analysis of acid neutralization potential, acid generation potential and percent sulphur content in a manner and frequency acceptable to the Director.

Polishing Pond Effluent Volume

38. The Licencee shall, in accordance with criteria contained in the MMER, and upon the commencement of mining:
- a) install, operate, maintain and annually calibrate a continuous flow measuring device, for the purpose of measuring the inputs to the polishing pond, rated to an accuracy within $\pm 15\%$; and
 - b) measure and record each monthly volume (in cubic metres) of effluent pumped to the polishing pond for release through the final discharge point.

Polishing Pond Effluent Sampling

39. The Licencee shall:
- a) in such a manner, and once per week and at least 24 hours apart, as specified in the MMER and Appendix C:
 - i. collect sufficient undiluted composite or grab samples, as the case may be, of effluent being released at the final discharge point of the polishing pond and have the samples analyzed for pH and each deleterious substance and characteristic as laid out in Appendix C including such additional parameters, characteristics and information as may otherwise be requested in writing by the Director; and

- ii. collect sufficient undiluted and representative samples of effluent released from the final discharge point of the polishing pond once per month but not less than 15 days apart and have each such obtained sample subjected to acute lethality tests and *Daphnia magna* toxicity tests; and
- b) unless otherwise requested by the Director, collect, at monthly intervals, composite or grab samples of the final effluent and have these samples analyzed for the parameters listed in Appendix D.

Environmental Effect Monitoring

- 40. The Licencee shall, in consultation with the Water Science and Management Branch and Fisheries Branch of Manitoba Conservation and Water Stewardship, implement downstream environmental effects monitoring, as approved by the Director.
- 41. The Licencee shall submit to the Director, an annual environmental monitoring report which summarizes all monitoring data collected during the previous 12 months and including an interpretative report on the environmental impact of the polishing pond effluent on the receiving water body. The report shall include a trend analysis comparing current data to previous reporting years and baseline data respecting the receiving water, sediment, and any biological monitoring conducted as required under Clause 39 of this Licence.

REVIEW AND REVOCATION

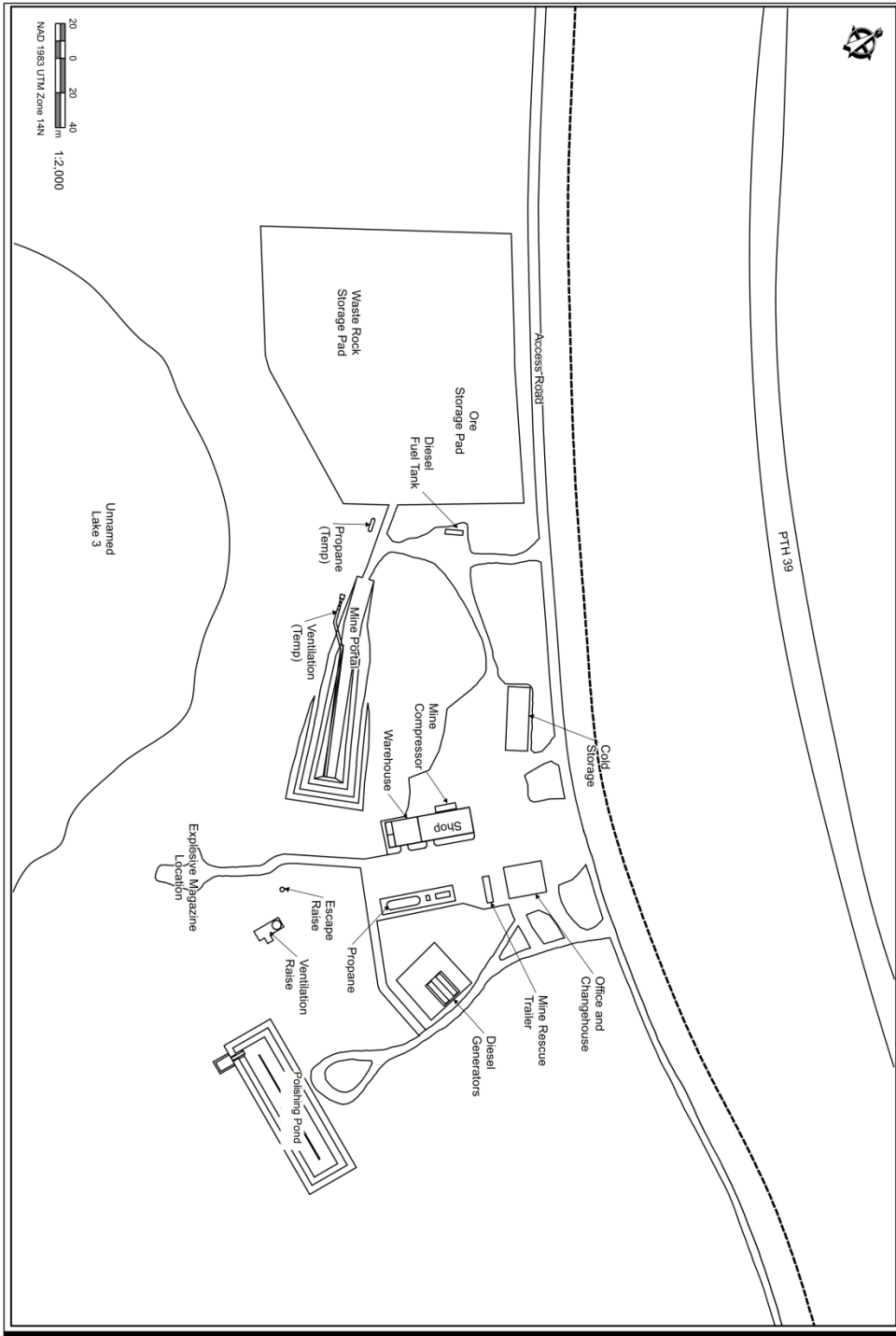
- A. If, in the opinion of the Director, the Licencee has exceeded or is exceeding or has or is failing to meet the specifications, limits, terms, or conditions set out in this Licence, the Director may, temporarily or permanently, revoke this Licence.
- B. If, in the opinion of the Director, new evidence warrants a change in the specifications, limits, terms or conditions of this Licence, the Director may require the filing of a new proposal pursuant to Section 11 of *The Environment Act*.

“originally signed by”

Tracey Braun, M.Sc.
Director
Environment Act

Appendix A of Environment Act Licence No. 3065 Pursuant to Clauses 31 and 34

Last saved by: CLOUSTONC (2013-08-27) Last Plotted: 2012-12-03 Project Management Initials: Designer: Checked: Approved: ANSI B 279.4mm x 431.8mm
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Reed Mine
Environment Act Proposal
 Hudson Bay Mining and Smelting Co., Limited

Operations on Site

Figure 1

Appendix B of Environment Act Licence No. 3065

Maximum Discharge Limits Pursuant to Clause 20

Deleterious Substance	Maximum Authorized Monthly Mean Concentration	Maximum Authorized Concentration in a Composite Sample	Maximum Authorized Concentration in a Grab Sample
Arsenic	0.50 mg/L	0.75 mg/L	1.00 mg/L
Copper	0.30 mg/L	0.45 mg/L	0.60 mg/L
Lead	0.20 mg/L	0.30 mg/L	0.40 mg/L
Nickel	0.50 mg/L	0.75 mg/L	1.00 mg/L
Zinc	0.50 mg/L	0.75 mg/L	1.00 mg/L
Total Suspended Solids	15.00 mg/L	22.50 mg/L	25
Radium 226	0.37 Bq/L	0.74 Bq/L	1.11 Bq/L
pH	6.0 to 9.5 units		
Total Phosphorus	1.0 mg/L		
Acute toxicity testing	Non lethal	Non lethal	Non lethal

These parameters are subject to change by the Director

Appendix C of Environment Act Licence No. 3065

Weekly Sampling Variables Pursuant to Clause 39

Arsenic
Copper
Cyanide
Lead
Nickel
Zinc
Total Suspended Solids
Radium 226
Manganese
Iron
Cadmium
pH
Total Phosphorus

***all concentrations are total values**

These parameters are subject to change by the Director

**Appendix D of Environment Act Licence No. 3065
Monthly Sampling Variables Pursuant to Clauses 36 and 39**

Parameter	Detection Limit	Units
pH	0-14	pH units
Alkalinity		mg/L
Conductivity	20	µS/cm
Total suspended solids	1	mg/L
Total phosphorus as P	0.001	mg/L
Total dissolved phosphorus as P	0.001	mg/L
Ammonia nitrogen as N	0.01	mg/L
Nitrate-nitrite nitrogen as N	0.01	mg/L
Total Kjeldahl nitrogen as N	0.01	mg/L
Total Hardness	0.07	mg/L (CaCO ₃)
Ammonia	0.001	mg/L
Total Calcium	0.01	mg/L
Total Magnesium	0.05	mg/L
Total Potassium	0.002	mg/L
Total Sodium	0.01	mg/L
Soluble Chloride	0.2	mg/L
Soluble Sulphate	0.5	mg/L
Total Aluminum	0.001	mg/L
Total Cadmium	0.00004	mg/L
Total Iron	0.01	mg/L
Total Manganese	0.0002	mg/L
Total Arsenic	0.0002	mg/L
Total Copper	0.0002	mg/L
Total Lead	0.0002	mg/L
Total Nickel	0.0002	mg/L
Total Zinc	0.001	mg/L
Total Boron	0.01	mg/L
Total Barium	0.0002	mg/L
Total Beryllium	0.0002	mg/L
Total Bismuth	0.0002	mg/L
Total Cobalt	0.0002	mg/L
Total Chromium	0.0002	mg/L
Total Cesium	0.0001	mg/L
Total Lithium	0.0002	mg/L
Total Molybdenum	0.0001	mg/L
Total Rubidium	0.0002	mg/L
Total Antimony	0.0002	mg/L
Total Selenium	0.0002	mg/L
Total Tin	0.0002	mg/L
Total Silicon (SiO ₂)	0.01	mg/L
Total Silver	0.00002	mg/L
Total Strontium	0.001	mg/L
Total Tellurium	0.0002	mg/L
Total Titanium	0.0002	mg/L
Total Thallium	0.00002	mg/L
Total Thorium	0.0002	mg/L
Total Uranium	0.0001	mg/L
Total Vanadium	0.0002	mg/L
Total Zirconium	0.002	mg/L
Dissolved Aluminum	0.001	mg/L
Total Mercury	0.00002	mg/L

These parameters are subject to change by the Director