

# Manitoba



## Sustainable Development

Environmental Stewardship Division  
Environmental Approvals Branch  
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**CLIENT FILE NO.: 1644.10**

June 20, 2018

Mr. Jay Cooper  
HudBay Minerals Inc.  
P.O. Box 1500, #1 Company Road  
Flin Flon, MB R8A 1N9

Dear Ms. Cooper:

Enclosed is **Environment Act Licence No. 3263** issued to **HudBay Minerals Inc.** for the expansion and continued operation of the Development being the Anderson Tailings Impoundment Area (TIA) located in the Snow Lake mining district southeast of the Town of Snow Lake in accordance with the Proposal filed under The Environment Act.

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 Cristal Huculak, Environment Officer, at 204-627-8248.

Pursuant to Section 27 of The Environment Act, this licensing decision may be appealed by any person who is affected by the issuance of this Licence to the Minister of Sustainable Development within 30 days of the date of the Licence.

Yours truly,

A handwritten signature in black ink that reads "Tracey Braun".

Tracey Braun, M.Sc.  
Director  
Environmental Approvals Branch

c: Don Labossiere/Tim Prawdzik/Cristal Huculak; Environmental Compliance and Enforcement  
Jennifer Winsor; Environmental Approvals  
Public Registries

**NOTE:** Confirmation of Receipt of this Licence No. 3263 (*by the Licensee 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 (Jennifer.Winsor@gov.mb.ca) by July 3, 2018.

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On behalf of HudBay Minerals Inc.

Date

**\*\*A COPY OF THE LICENCE MUST BE KEPT ON SITE AT THE DEVELOPMENT AT ALL TIMES\*\***

# LICENCE

Licence No. / Licence n° 3263

Issue Date / Date de délivrance June 20, 2018

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:

**HUDBAY MINERALS INC.;**  
**the Licencee**

for the expansion and continued operation of the Development being the Anderson Tailings Impoundment Area (TIA) located in the Snow Lake mining district southeast of the Town of Snow Lake, which receives mine tailings produced at the Stall Lake Concentrator with effluent discharge via the Anderson Dam to Anderson Creek which flows into Anderson Bay of Wekusko Lake and in accordance with the Proposal filed under The Environment Act on August 17, 2016 and additional information submitted on November 16, 2016 and subject to the following specifications, limits, terms and conditions:

## **DEFINITIONS**

In this Licence,

**"accredited laboratory"** means an analytical facility accredited by the Standards Council of Canada (SCC), or accredited by another accrediting agency recognized by Manitoba Sustainable Development 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;

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

**"Closure Plan"** means a plan indicating the actions to be taken for the closure of the Development;

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

**"day" or "daily"** means any 24-hour period;

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

**"Director of Mines"** means the Director of Mines Branch of Growth, Enterprise and Trade;

**"EEM"** means Environmental Effects Monitoring as defined in the federal Metal Mining Effluent Regulations (MMER);

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

**"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 designated pursuant to The Environment Act;

**"fecal coliform"** means aerobic and facultative, Gram-negative, nonspore-forming, rod-shaped bacteria capable of growth at 44.5° C, and associated with fecal matter of warm-blooded animals;

**"final discharge point"** means final discharge outlet of the Anderson TIA, which for the purposes of this Licence is the spillway at the Anderson Dam located prior to Anderson Creek;

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

**"MPN Index"** means the most probable number of coliform organisms in a given volume of wastewater or effluent which, in accordance with statistical theory, would yield the observed test result with the greatest frequency;

**"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 fluids used to transport tailings, or contaminated runoff or leachate from ore or waste rock stockpiles exposed to precipitation, or polluted mine site runoff, or seepage or run-off losses from tailings deposits stored on the surface of land, or any combination thereof, but excluding sewage;

**"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;

**"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;

**"pollutant"** means a pollutant as defined in The Environment Act;

**"record drawings"** means engineering drawings complete with all dimensions which indicate all features of the Development as it has actually been built;

**"SDS"** means safety data sheet;

**"solid waste"** means solid waste as defined in Manitoba Regulation 37/2016, or any future amendments thereto, respecting waste disposal grounds, excluding waste rock;

**"stage"** means a distinguishable period or step in the expansion of the Development;

**"Stage A"** means the increase in dam crest elevation to a minimum elevation of 280.20 metres;

**"Stage B"** means the increase in dam crest elevation to a minimum elevation of 282.00 metres;

**"Stage C"** means the increase in dam crest elevation to a minimum elevation of 283.75 metres;

**"Stall Lake Concentrator"** means the Hudson Bay Mining and Smelting Co., Limited Development operating under Environment Act Licence No. 765, or any revision thereto;

**"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;

**"TIA"** means Tailings Impoundment Area;

**"tailings"** means those granular solids which are discarded as waste material in the process of concentrating commercial minerals present in milled ore;

**"undiluted"** means free of extraneous sources of water which could feasibly be prevented from mixing with effluent streams prior to their discharge at their designated final discharge point(s), and not having water added for the purposes 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 37/2016, or any future amendments thereto, or a Licence pursuant to The Environment Act; and

**"WHMIS"** means Workplace Hazardous Materials Information System.

## **GENERAL TERMS AND CONDITIONS**

**Note:** Notwithstanding this Environment Act Licence, this Development is also subject to the federal Metal Mining Effluent Regulations. 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 the federal Metal Mining Effluent Regulations, 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 and/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 or ambient quality, aquatic toxicity, leachate characteristics and discharge or emission rates, 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;
  - c) conduct specific investigations in response to the data gathered during environmental monitoring programs; or
  - d) 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.
  
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, compost, 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 written and electronic format, in such form (including number of copies) and of such content as may be required 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 the 24-hour environmental accident reporting line at 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.

#### **Approvals and Permits**

7. 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 construction.

#### **Safety and Security**

8. 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 SDS sheets available to an Environment Officer upon request.
9. 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.
10. The Licencee shall implement and continually maintain in current status, an Environmental Management System (EMS) for the Development which is acceptable to the Director.

**Environmental Coordinator**

11. The Licencee shall designate an employee, within 60 days of the date of issuance of this Licence, as the Licencee's Environmental Coordinator, whose job description will include assisting the Licencee in complying with the limits, terms and conditions in this Licence and assisting Senior Management of the Licencee to manage environmental issues at the Development. The name of the Environmental Coordinator shall be submitted in writing to the Director within 14 days of appointment and any subsequent appointment.

**SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS**

**Respecting Construction**

12. The Licencee shall notify the designated Environment Officer not less than two weeks prior to beginning of each stage of construction at the Development. The notification shall include the intended starting date of construction and the name of the contractor responsible for the construction.
13. The Licencee shall submit to the Director:
  - a) updated construction plans for the appropriate stage of construction at the Development not less than one month prior to the beginning of construction of that stage; and
  - b) progress reports during construction on a quarterly basis or as otherwise approved by the Director.
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 dispose of non-reusable construction debris and solid waste from the Development at a waste disposal ground operating under the authority of a permit issued pursuant to Manitoba Regulation 37/2016 respecting Waste Management, or any future amendment thereof; or a Licence issued pursuant to The Environment Act.
16. The Licencee shall, during construction of the Development, operate, maintain and store all materials and equipment in a manner that prevents any deleterious substances (fuel, oil, grease, hydraulic fluids, coolant, paint, uncured concrete and concrete wash water, etc.) from entering watercourses, and have an emergency spill kit for in-water use available on site during construction.
17. 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.

18. The Licencee shall, during construction and maintenance of the Development, prevent the introduction and spread of foreign aquatic and terrestrial biota by cleaning equipment prior to its delivery to the site of the Development in accordance with the requirements of Manitoba Regulation 173/2015 respecting Aquatic Invasive Species, or any future amendment thereof.

**Respecting Operation - Tailings**

19. The Licencee shall transport tailings from the Stall Lake Concentrator via pipeline to the Development in such a way as to prevent spills and/or leaks of the material to the environment to the satisfaction of an Environment Officer.
20. The Licencee shall discharge the tailings via pipeline to the Development in accordance with a deposition plan developed by geotechnical professionals with expertise in tailings dam integrity and tailings operation.
21. The Licencee shall:
- a) distribute and deposit all tailings underwater such that there is no contact between the tailings and the atmosphere at any time including during wave action or seasonal low-water conditions; and
  - b) maintain all tailings submerged beneath a minimum of 1.5 metres of water cover upon closure.

**Respecting Operation - General**

22. The Licencee shall maintain in good working condition the existing Anderson pump house for the purposes of recycling water to the Stall Lake Concentrator and/or other Developments owned by the Licencee.
23. The Licencee shall not locate any petroleum storage tank within 100 metres of the shoreline of any waterway or water body.
24. 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 tailings impoundment area, where such seepage losses and their quality are determined by the Director to be unacceptable.
25. The Licencee shall reclaim and recycle as much effluent from the tailings impoundment area as possible, within a minimum range of 70% to 80% or better, to supply the process water demands of the Stall Lake Concentrator and/or other Developments owned by the Licencee.
26. The Licencee shall limit the maximum operating water level of the Development as follows:
- a) 278.90 metres following the completion of Stage A;
  - b) 279.50 metres following the completion of Stage B; and
  - c) 281.25 metres following the completion of Stage C.

**Respecting Effluent Discharge**

27. The Licencee shall notify the designated Environment Officer not less than two weeks prior to each period of discharge from the Development.
28. The Licencee shall not discharge, or cause or allow the release of, any effluent from the Development into the environment:
- a) other than through the final discharge point of the tailings impoundment area, as identified through the provisions of the MMER;
  - b) if the effluent is acutely lethal, as defined in the MMER;
  - c) if the quality of effluent is in non-compliance with the values listed in Appendix A of this Licence, the Manitoba Surface Water Quality Standards, Objectives and Guidelines Tier I standards and/or the water quality criteria set out in Schedule 4 of the MMER;
  - d) if the effluent quality is resulting in, or is likely to directly or cumulatively result in, a downstream degradation of the water quality immediately beyond a maximum 10% mixing zone (by volume) within Anderson Bay of Wekusko Lake, relative to the Manitoba Water Quality Standards, Objectives and Guidelines Regulation under The Water Protection Act and/or nutrient control strategies and regulations developed by the Manitoba Department of Sustainable Development; or
  - e) when such a discharge would cause or contribute to flooding in or along the effluent drainage route.

**Respecting Effluent Sampling**

29. 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 B:
    - i) collect sufficient undiluted composite or grab samples, as the case may be, of effluent being released at the final discharge point of the Development and have the samples analyzed for pH and each deleterious substance and characteristic as laid out in Appendix B 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 Development 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 C.
30. The Licencee shall monitor the effluent quality and measure the rate of discharge at the final discharge point of the TIA over the course of each discharge campaign such that:
- a) within 24 hours of the commencement of discharge, the first grab or composite effluent sample is collected;
  - b) an additional grab or composite effluent sample is collected at the final discharge every seven days for the duration of the discharge;

- c) each collected effluent sample is analyzed for those parameters listed in Appendix A of this Licence and tested for acute lethality to rainbow trout and to *Daphnia magna* by means of tests carried out in accordance with requirements of the federal Metal Mining Effluent Regulations; and
- d) the maximum rate of effluent discharge (cubic metres per second), the daily volume of effluent discharged on each day on which an effluent sample was collected, and the total volume of effluent discharged over the duration of the each discharge campaign, are measured and recorded.

### **Respecting Downstream Water Sampling**

31. The Licencee shall:
- a) collect water samples from Anderson Bay of Wekusko Lake at a point adjacent to the cottage or residence nearest to the Anderson Creek outfall 30 days prior to any effluent discharge from the Development, once every 30 days during the discharge period and 30 days after the conclusion of each effluent discharge; and
  - b) analyze the effluent samples for the parameters listed in Appendix C of this Licence.

### **Respecting Air Emissions**

32. 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.
33. 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 specify to eliminate or mitigate a noise nuisance.

## **MONITORING AND REPORTING**

34. The Licencee shall:
- a) determine the total water balance for the Development, including the flow rates and total volumes of all operations discharging directly or indirectly into the Development and the total volume and total percentage of effluent reclaimed and recycled from the Development; and
  - b) prepare and submit an annual report, on or before the first day of February of each year, demonstrating all of the water balance results for the Development.
35. The Licencee shall, once every three years, prepare and submit a detailed contour map of the tailings surface in relation to the minimum water elevation maintained by the Anderson dam.

36. The Licencee shall:

- a) during each discharge campaign, submit to the Director, in writing and in electronic format satisfactory to the Director, the analytical data and information determined in accordance with Clauses 29, 30 and 31 of this Licence once a month as the data becomes available; and
- b) notwithstanding sub-clause a) above, if the results of effluent analysis during the discharge campaign exceed the discharge criteria specified in this Licence, report the results to the Director within 48 hours of receipt of the results.

**Environmental Effect Monitoring**

37. The Licencee shall carry out the environmental effects monitoring program, as required by the federal Metal Mining Effluent Regulations, in consultation with the Water Science and Management Branch of Manitoba Sustainable Development, and incorporate such additional monitoring requirements as may be requested in writing by the Director.

38. The Licencee shall submit to the Director, by March 31<sup>st</sup> of each year, an annual environmental monitoring report which summarizes all environmental effects monitoring data collected during the previous calendar year consistent with the MMER and including an interpretative report on the environmental impact of the tailings impoundment area 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 29 and Clause 31 of this Licence.

**Respecting Closure**

39. 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.

#### **Record Drawings**

40. The Licencee shall:

- a) prepare "record drawings" for the Development and shall label the drawings "Record Drawings"; and
- b) provide to the Director, within one year from the completion of each stage of the expansion, two electronic copies of the "record drawings".

#### **REVIEW AND REVOCATION**

- A. This Licence replaces Environment Act Licence No. 766, which is hereby rescinded.
- B. 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.
- C. 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.



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**Tracey Braun, M.Sc.**  
**Director**  
**Environment Act**

**Client File No.: 1644.10**

**Appendix A of Environment Act Licence No. 3263**

**Maximum Discharge Limits Pursuant to Clause 28**

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 (TSS)	15.00 mg/L	22.50 mg/L	25.00 mg/L
Radium 226	0.37 Bq/L	0.74 Bq/L	1.11 Bq/L
Cadmium	0.20 mg/L	0.30 mg/L	0.3 mg/L
Cyanide (free)	0.10 mg/L	0.15 mg/L	0.15 mg/L
Mercury	0.0002 mg/L	0.0003 mg/L	0.0003 mg/L
Fecal Coliforms (as indicated by the MPN Index)	20 per 100 mL of sample	20 per 100 mL of sample	20 per 100 mL of sample
pH	6.0 to 9.5 units		
Total phosphorus	1.00 mg/L		
Acute toxicity testing	Non lethal	Non lethal	Non lethal

**These parameters are subject to change by the Director**

**Appendix B of Environment Act Licence No. 3263**

**Weekly Sampling Variables Pursuant to Clause 29**

Copper
Lead
Nickel
Zinc
Total Suspended Solids
Manganese
Iron
Cadmium
pH
Total Phosphorus

**\*all concentrations are total values**

**These parameters are subject to change by the Director**

**Appendix C of Environment Act Licence No. 3263**

**Monthly Sampling Variables Pursuant to Clauses 29 and 31**

<b>Parameter</b>	<b>Detection Limit</b>	<b>Units</b>
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 <sub>3</sub> )
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 <sub>2</sub> )	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**