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Ministry of the Environment, Conservation and Parks  
Ministère de l'Environnement, de la Protection de la nature et des Parcs

**AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER 1643-B6GTWB

Issue Date: January 23, 2019

10393444 Canada Inc. operating as McEwen Ontario  
2839 Highway 101 East,  
Post Office Box No. 605  
Black River - Matheson  
P0K 1N0

**Site Location:** Black Fox Mine

[Open Pit & Underground Working]  
Highway 101 East, 10 kilometre East of Matheson  
Geographic Township of Hislop  
Lot 6, Concession 6  
Township of Black River-Matheson  
District of Cochrane  
P0K 1N0

*You have applied under section 20.2 of Part II.1 of the Environmental Protection Act ,  
R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:*

existing sewage works for the collection, transmission, treatment and disposal of mine water from underground mine, open pit workings and runoff from the Potentially Metal Leaching (PML) waste rock stockpile, located in the Hislop and Beatty Townships, District of Cochrane, for an ore production rate of approximately **2,500 tonnes per day** , discharging to Pike River located approximately 3.7 kilometres to the south of the mine at its closest point, and eventually discharging to the Black River 2.5 kilometres upstream of the Salve Creek confluence, as described in associated design and as-built documentation consisting of the following:

**Potentially Metal Leaching (PML) Waste Rock Stockpile Southeast Pond Collection System**

- the **Southeast Pond** is located in the southeast corner of the PML waste rock stockpile, excavated south of the adjacent overburden stockpile. Its dimensions are 150 metres in length by 66 metres in width, with an excavation depth of 2.5 metres. The Southeast Pond collects drainage from the east and southeast portions of the PML waste rock stockpile, over a surface area of approximately 28 hectares. Two (2) collection ditches direct drainage by gravity to the pond, one collection ditch along the east side of the PML waste rock stockpile, drains from north to south whereas the other, along the south side of the PML waste rock stockpile, drains from west to east. An additional collection ditch is located to the south of the southern boundary of the PML waste rock stockpile. This ditch moves water from west to east to a collection

pond, from which it is pumped to the Southeast Pond. The Southeast Pond design incorporates live storage of 10,000 cubic metres. Water is pumped from the Southeast Pond system to the Holding Pond, as needed.

#### Potentially Metal Leaching Waste Rock Stockpile Southwest Pond Collection System

- the **Southwest Pond** is located in the southwest corner of the PML waste rock stockpile. The Southwest Pond collects drainage from the west and southwest portions of the PML waste rock stockpile, over a surface area of approximately 30 hectares. There is ditching along the southern boundary of the PML waste rock stockpile that directs water from the east and north into the pond. There is also ditching to the north of the pond that directs water to the south along the western boundary of the PML waste rock stockpile into the pond. The Southwest Pond design incorporates live storage of 10,000 cubic metres. Water is pumped from the Southwest Pond system to the Holding Pond, as needed.

#### Holding Pond

- the Mine Water **Holding Pond** is located east from the open pit. It is designed as a low permeability containment pond for balancing the receiving flows from the PML waste rock stockpile collection systems and the mine water inputs from the open pit and underground workings. The Holding Pond measures approximately 305 metres by 120 metres at its base and has a total storage capacity of 104,000 cubic metres. The Holding Pond has an emergency spillway that is located at the northeast corner of the pond and has been designed to pass the 1:100 year storm event flow. Water is pumped from the Holding Pond to the Settling Pond.

#### Settling Pond

- the **Settling Pond** is located east from the open pit and south of the Holding Pond. The Settling Pond measures approximately 50 metres by 42 metres and has a capacity of 2,900 cubic metres. Water from the settling pond flows by gravity to the Polishing Pond via a pipeline.

#### Polishing Pond

- the **Polishing Pond** is located east from the open pit, adjacent to the east side of the Settling Pond. The Polishing Pond measures 104 metres by 91 metres and has a capacity of 27,400 cubic metres. The polishing pond includes an emergency spillway. Water from the Polishing Pond is discharged via a pumping station located at the northeast side of the pond to the environment (Pike River). Two (2) **pipelines** convey water from the Polishing Pond to the Pike River, a 2,400 metres long 200 millimetre

diameter HDPE buried pipeline and a 2,370 metres long 254 millimetre PVC above-ground pipeline that primarily manages larger volumes during the spring snowmelt and high precipitation events. The final outfall structure at the Pike River consists of riprap overlaying geotextile and is 16 metres long and 6 metres to 8 metres wide, with 2H: 1V side slopes.

## Water Treatment System

- chemical treatment of the mine site water occurs at the Holding Pond where a 40 foot Sea Container is used to house treatment chemicals and automated dosing control equipment provided with human override capacity for manual operation. Treatment involves sulphuric acid addition to lower pH, and ferric sulphate dosing to precipitate arsenic. A coagulant (e.g., poly-aluminum chloride) may also be used to enhance the settling of suspended solids in the pond, if required.

## Sanitary Subsurface Disposal System

- the domestic sewage disposal system (including a swale system around the system) is comprised of the following:

### *Office Complex Sanitary Subsurface Disposal System*

- a **class 4 subsurface sewage disposal system** with a design capacity of 13,500 litres per day; approximately 70 metres long 150 millimetre diameter sanitary sewer and three (3) 1200 millimetre diameter sanitary manholes; a 40,915 litres capacity septic tank; a 4,500 litres capacity pump chamber with duplex submersible effluent pumps and controls; approximately 36 metres long 50 millimetre diameter forcemain, two distribution boxes, and distribution piping; 234 metres of Infiltrator Equalizer 36 Chambers in two banks with each bank consisting of 6 runs of 19.5 metres length; and a raised leaching bed with an approximate contact area of 2,840 square metres.

### *Truck Maintenance Shop Sanitary Subsurface Disposal System*

- a **class 4 subsurface sewage disposal system** with a design capacity of 1,200 litres per day; approximately 70 metres long 150 millimetre diameter sanitary sewer; a 3,600 litre capacity septic tank; one distribution box and distribution piping; 60

metres of Infiltrator Equalizer 36 Chambers in one bank consisting of 6 runs of 10 metres length; and a raised leaching bed with an approximate contact area of 363 square metres.

#### *Administration Building Holding Tank*

- a **class 5 sewage disposal system** comprising a holding tank with a capacity of 3,785 litres and equipped with an audible and visual high-water alarm system.

#### *Holding Tanks*

- five (5) **class 5 sewage disposal systems** comprising a holding tanks, each with a capacity of 3,785 litres and equipped with an audible and visual high-water alarm system.

#### Clean Waste Rock Test Cell

- a bermed and lined test cell on the west side of the open pit, east of Froome Lake and south Highway 101, for collection of runoff from representative construction (clean) waste rock, applying criteria used in prediction of drainage chemistry provided in the Mine Environment Neutral Drainage Program (MEND) Report 1.20.1 (December 2009).

including all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage Works.

all in accordance with supporting documents listed in Schedule 'A'.

*For the purpose of this environmental compliance approval, the following definitions apply:*

"Approval" means this entire document and any Schedules attached to it, and the application.

"Daily Concentration" means the concentration of a contaminant in the effluent discharged over any single day, as measured by a composite or grab sample, whichever is required.

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA.

"Dirty Waste Rock" means waste rock that is expected to have the potential to leach arsenic and other contaminants, such that collection and treatment of the runoff from the rock pile will be required prior to discharge to the environment.

"District Manager" means the District Manager of the Timmins District Office of the Ministry.

"Effluent from the Sewage Works" means the effluent flowing to Pike River, approximately 200 metres downstream of the Tamarack Road bridge crossing.

"EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19, as amended.

"Equivalent Equipment" means a substituted equipment, or like-for-like equipment that meets the required quality and performance standards of a named equipment.

"Existing Works" means those portions of the sewage works previously constructed and approved under a Certificate of Approval or an Approval.

"Limited Operational Flexibility" (LOF) means the modifications that the Owner is permitted to make to the Works under this Approval.

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf.

"Monthly Average Concentration" means the arithmetic mean of all Daily Concentration of a contaminant in the effluent sampled or measured, or both, during a calendar month.

"Notice of Modifications" means the form entitled "Notice of Modifications to Sewage Works".

"Owner" means 10393444 Canada Inc. operating as McEwen Ontario, and includes its successors and assignees.

"OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended.

"Proposed Works" means the sewage works described in the Owner's application, and this Approval, to the extent approved by this Approval.

"Regional Director" means the Regional Director of the Northern Region of the Ministry.

"Works" means the sewage works described in the Owner's application, and this Approval, and includes Proposed Works, Existing Works, and modifications made under Limited Operational Flexibility.

*You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:*

## **TERMS AND CONDITIONS**

### **1. GENERAL PROVISIONS**

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Except as otherwise provided by these conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.

(3) Where there is a conflict between a provision of any document in the Schedule referred to in this Approval and the conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the documents in the Schedule, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the documents listed in the Schedule and the application, the application shall take precedence unless it is clear that the purpose of a document was to amend the application.

(5) The conditions of this Approval are severable. If any Condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

(6) The issuance of, and compliance with the conditions of, this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or

(b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

## **2. EXPIRY OF APPROVAL**

(1) This Approval will cease to apply to those parts of the Works which have not been constructed within **five (5) years** of the date of this Approval.

## **2. CHANGE OF OWNER**

(1) The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within **thirty (30) business days** of the change occurring:

(a) change of Owner;

(b) change of address of the Owner;

(c) change of partners where the Owner or operating authority is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17*; and

(d) change of name of the corporation where the Owner or operator is or at any time becomes a corporation, and a copy of the "Initial Return" or "Notice of Change" filed under the *Corporations Information Act, R.S.O. 1990, c. C.39*, shall be included in the notification to the District Manager.

(2) In the event of any change in ownership of the works, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager and the Director.

(3) The Owner shall ensure that all communications made pursuant to this condition will refer to this Approval's number.

## **4. CHANGES IN PROCESSES OR PROCESS MATERIALS**

(1) The Owner shall give written notice to the District Manager of any plans to change the processes or process materials in the Owner's enterprise serviced by the Works where the change may significantly alter the quantity or quality of the influent to or effluent from the Works, and no such change(s) shall be made unless with the written concurrence or approval of the District Manager.

## 5. EFFLUENT LIMITS

(1) The sewage Works effluent quality requirements are governed by Ontario Regulation 560/94 (Effluent Monitoring and Effluent Limits - Metal Mining Sector) under the Environmental Protection Act, as amended.

(2) In addition to O.Reg. 560/94, the Owner shall design, construct and operate the Works such that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the Works.

Table 1 - Effluent Limits		
Effluent Parameter	Daily Concentration Limit (milligrams per litre)	Monthly Concentration Limit (milligrams per litre)
Column 1	Column 2	Column 3
Total Suspended Solids (TSS)	30	15
Un-ionized Ammonia	0.2	-
Total Iron (Fe)	2.0	1.0
Total Copper (Cu)	0.6	0.3
Total Lead (Pb)	0.4	0.2
Total Zinc (Zn)	1	0.5
Total Nickel (Ni)	1	0.5
Total Arsenic (As)	1	0.5
pH of the effluent maintained between 6.0 to 9.5, inclusive, at all times.		

(3) The Owner shall control the quality of the effluent from the Works to ensure that each Rainbow trout acute lethality test and each *Daphnia magna* acute lethality test performed on any grab sample of effluent results in mortality for no more than 50 percent of the test organisms in 100 percent effluent.

(4) For the purposes of determining compliance with and enforcing condition 5.(1), 5.(2) and 5.(3):



(a) non-compliance with respect to the Monthly Average Concentration limit is deemed to have occurred when the arithmetic mean concentration of all samples of the final Effluent from the Sewage Works taken in a month is greater than the corresponding Monthly Average Concentration limit set out in condition 5.(1) and 5.(2).

(b) non-compliance with respect to the Daily Concentration limit is deemed to have occurred when the maximum concentration of any single sample of the final Effluent from the Sewage Works is greater than the corresponding Daily Concentration limit set out in condition 5.(1) and 5.(2).

(c) non-compliance with respect to the pH values is deemed to have occurred when any single pH measurement of the final Effluent from the Sewage Works, made pursuant to Ontario Regulation 560/94 under the Environmental Protection Act, is outside the said range.

(d) non-compliance with respect to acute lethality to *Daphnia magna* or Rainbow trout is deemed to have occurred when acute lethality test performed on any grab sample of effluent results in mortality of more than 50 percent of the test organism in 100 percent effluent.

(5) The District Manager may upon receipt of a written request from the Owner, after **twelve (12) months** of monitoring of the Pike River, upstream from the discharge point, as per condition 9, amend the concentration for Iron as presented in Table 1.

## **6. EFFLUENT - VISUAL OBSERVATIONS**

(1) Notwithstanding any other condition in this Approval, the Owner shall ensure that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen or foam on the receiving waters.

## **7. EFFLUENT DISCHARGE RATE LIMIT**

(1) The rate of discharge of Cobalt (Co) from the sewage Works final effluent shall not exceed:

From November to March:  $F_E = F_R * 0.05$

From April to October:  $F_E = F_R * 0.11$

Where:

$F_E$  = maximum flow of effluent permitted, cubic metre per day (m<sup>3</sup>/day)

$F_R$  = flow of Pike River, m<sup>3</sup>/day. During ice-free period, arithmetic average of most recent three daily average flow measurements. During periods of ice cover, calculated according to flow monitoring plan outlined in condition 8.(6) and approved by District Manager.

## 8. EFFLUENT MONITORING AND RECORDING

The Owner shall, upon commencement of operation of the sewage Works, carry out the following monitoring program:

- (1) All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream or receiving water body over the time period being monitored.
- (2) Monitoring of the Effluent from the Sewage Works shall be performed in accordance with the monitoring and reporting requirements of Ontario Regulation 560/94 under the Environmental Protection Act, with the following additional monitoring requirements:

- (a) The effluent streams named below shall be sampled at the sampling points named below, in accordance with the measurement frequency and sample type specified for each parameter named below, unless otherwise required in writing by the District Manager:

Table 2 - Effluent Monitoring		
(Sample Point: Effluent discharge point to Pike River)		
Effluent Parameter	Frequency	Sample Type

pH	Three (3) times weekly	Grab
TSS	Three (3) times weekly	Grab
ICP metals scan (*) (**)	Once weekly	Grab
Total ammonia	Once weekly	Grab
Temperature	Once weekly	Grab
Dissolved Oxygen (DO)	Once weekly	Grab
Dissolved Organic Carbon (DOC)	Once weekly	Grab
Sulphate	Once weekly	Grab
Hardness	Once weekly	Grab
Conductivity	Once weekly	Grab
Alkalinity	Once weekly	Grab
Chloride	Once weekly	Grab
Cations (Ca, Na, Mg, K)	Once weekly	Grab
Acute Lethality (Rainbow trout)	Quarterly (four times per year)	Grab
Acute Lethality ( <i>Daphnia magna</i> )	Quarterly (four times per year)	Grab

(\*) ICP metal scan shall include: aluminium, arsenic, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, molybdenum, nickel, phosphorus, and zinc.

(\*\*) Metals analysis shall be total metals. Once per month include also antimony, mercury and selenium.

(b) Notwithstanding conditions 5 and 7, in the event of effluent overflow from the Holding Pond or the Settling Pond or the Dirty Waste Rock pile runoff collection ponds due to major run-off from rainfall and/or snow melt event(s), the Owner shall take daily grab samples of the overflow, and analyze for all of the parameters designated for final effluent, until the overflow has ceased. Samples of the overflow for acute toxicity testing are to be collected on the first and second day of overflow, then every four days until overflow ceases. The test organisms to be used shall be *Daphnia magna* and Rainbow Trout.

(3) The methods and protocols for sampling, analysis, toxicity testing, and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended from time to time by more recently published editions;

(b) the publication "Standard Methods for the Examination of Water and Wastewater" (22nd edition), as amended from time to time by more recently published editions;

(c) the Environment Canada publications "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" (July 1990) and "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna*" (July 1990), as amended from time to time; and,

(d) in respect of any parameters not mentioned in (a) - (c), the written approval of the District Manager, which approval shall be obtained prior to sampling.

(e) for all receiving water samples, the analytical method detection limit shall be equal to or less than the Provincial Water Quality Objective for the parameter analyzed.

(4) The temperature and pH of the effluent from the Works shall be determined in the field at the time of sampling for total ammonia. The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended, for ammonia (un-ionized).

(5) A continuous flow measuring device(s) shall be installed and maintained to measure the flow rate of the Effluent from the Sewage Works, with an accuracy to within plus or minus 15 percent (+/- 15%) of the actual flow rate for the entire design range of the flow measuring device and the Owner shall measure, record and calculate the flow rate for each effluent stream on each day of sampling.

(6) The Owner shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

(7) The parameters and measurement frequencies thereof specified in Condition 8.(2)

are minimum requirements which may, after **twelve (12) months** of monitoring in accordance with this condition, be modified by the Director in writing from time to time.

## 9. RECEIVER WATER QUALITY MONITORING

(1) The Owner shall establish sampling stations at locations satisfactory to the District Manager and samples shall be collected from each station at the indicated minimum monitoring frequency and analyzed for the parameters listed below, unless otherwise specified in writing by the District Manager.

(2) The detection limit for analyses required pursuant to conditions 9.(1) and 9.(3) shall be below the Provincial Water Quality Objective for each parameter analyzed.

(3) Samples shall be collected and analyzed at the following sampling point(s), at the sampling frequencies and using the sample type specified for each parameter listed.

**Table 3 - Receiver Monitoring**

Sample Points:

- (1) South Pond;
- (2) Salve Creek tributary north of Holding Pond/Open Pit at Hwy 101;
- (3) Pike River upstream of discharge point; and
- (4) Pike River downstream of discharge point after full mixing of effluent.

<b>Frequency</b>	Once per month.  At Salve Creek tributary once per month when sufficient water present for sample collection
<b>Sample Type</b>	Grab
<b>Parameters</b>	Location at pipe outlet beside Pike River:  Effluent temperature.  All other locations (1 through 4):

	<p>pH, TSS, ICP metals scan, total ammonia, <i>in situ</i> water temperature and dissolved oxygen, sulphate, hardness, DOC, conductivity, alkalinity, chloride, cations (Ca, Na, Mg, K).</p> <p>Metals analysis shall be total metals.</p> <p>ICP metals scan shall include: aluminium, antimony, arsenic, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, mercury, molybdenum, nickel, phosphorus, selenium, and zinc.</p>
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**Table 4 - Receiver Monitoring**

Sample Points (surface and bottom water samples):

- (1) Froome Lake East Basin;
- (2) Froome Lake West Basin;
- (3) Lawlar Lake;
- (4) Leach Lake;
- (5) North Pond; and
- (6) Middle Pond.

<b>Frequency</b>	<p>Four times per year:</p> <p>Winter (December 21 through March 19);</p> <p>Spring (March 20 through June 20);</p> <p>Summer (June 21 through September 21); and</p> <p>Fall (September 22 through December 20);</p>
<b>Sample Type</b>	Grab
<b>Parameters</b>	pH, TSS, ICP metals scan, total ammonia, <i>in situ</i> water temperature and dissolved oxygen, sulphate, hardness, DOC, conductivity, alkalinity, chloride, cations (Ca, Na, Mg, K).

	<p>Metals analysis shall be total metals.</p> <p>ICP metals scan shall include: aluminium, antimony, arsenic, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, mercury, molybdenum, nickel, phosphorus, selenium, and zinc.</p>
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(4) The parameters and measurement frequencies thereof specified in Condition 9.3 are minimum requirements which may, after **two (2) years** of monitoring in accordance with this Condition, be modified by the District Manager in writing from time to time.

#### Receiver Flow Monitoring

(5) The *Owner* shall undertake flow monitoring of Pike River upstream of the effluent discharge. The flow monitoring program shall consist of both in-situ level sensors and periodic manual measurements. The accuracy of the sensor measurements during ice-free conditions and manual measurements under all conditions will be within plus or minus 15 percent (+/- 15%) of the actual flow rate for the entire design range of the flow measuring device, which must be operable under winter conditions. The measurement program and techniques will be consistent with the approved plan as outlined in Condition 9.6 below;

(6) The Owner shall submit, for written approval by the District Manager, within **50 days** of the issuance of this Approval, a plan to ensure data management and accuracy of the flow monitoring. The flow monitoring location as set out in Condition 9.1 may be changed or abandoned and new locations may be added if, in the reasonable opinion of the District Manager, it is necessary to do so to ensure representative and accurate flow measurement.

#### Biological Monitoring

(7) The Owner shall undertake a long term study to evaluate the impact of effluent from the Black Fox Project on the fish and benthic invertebrate assemblages in Pike River and, if monitoring indicates they receive effluent or contaminated runoff from the property, other surface waters adjacent to the Project. The studies can be harmonized with, but are not limited to, requirements of the Federal Environmental Effects Monitoring Program. The Owner shall submit, for written approval by the District Manager, a Terms of Reference for the study within 90 days of the issuance of this Approval.

## Waste Rock Segregation Monitoring

(8) The Owner shall undertake a long term characterization of the construction (clean) waste rock leachate monitoring program. The program shall consist of the construction of a new bermed and lined test cell on the west side of the open pit, east of Froome Lake and south Highway 101, applying criteria used in prediction of drainage chemistry provided in the Mine Environment Neutral Drainage Program (MEND) Report 1.20.1 (December 2009). The program shall consist of drainage sample collection during the open water season (i.e. late Spring through late Fall) and to coincide with appropriate rainfall events, with a minimum of two samples per year collected.

### 10. GROUNDWATER MONITORING

(1) The Owner shall establish sampling stations at locations satisfactory to the District Manager and samples shall be collected from each station at the indicated minimum monitoring frequency and analyzed for the parameters listed below, unless otherwise specified in writing by the District Manager.

(2) Samples shall be collected and analyzed at the following sampling point(s), at the sampling frequencies and using the sample type specified for each parameter listed:

<b>Table 5 - Groundwater Monitoring</b>	
Sample Points:	
(1) wells A040830 and MW10-05 located west of the PML stockpile;	
(2) South of the PML waste rock stockpile (immediately north of the side road); and	
(3) East of the proposed new waste rock runoff collection pond (East Pond).	
<b>Frequency</b>	Four times per year with each event at least sixty (60) days apart and with the intention that one sample is taken in each of the four seasons.
<b>Sample Type</b>	Grab
<b>Parameters</b>	pH, total ammonia, sulphate, hardness, conductivity, alkalinity, chloride, cations (Ca, Na, Mg, K).  Metals analysis shall be total metals:  ICP metals scan shall include: aluminium, antimony, arsenic, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, mercury,



	molybdenum, nickel, phosphorus, selenium, and zinc.
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## **11. OPERATIONS MANUAL**

(1) The Owner shall prepare an operations manual prior to the commencement of operation of the sewage Works, that includes, but not necessarily limited to, the following information:

- (a) operating procedures for routine operation of the Works.
- (b) inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary.
- (c) repair and maintenance programs, including the frequency of repair and maintenance for the Works.
- (d) procedures for dealing with potential spill, bypasses and any other abnormal situations and for notifying the District Manager.
- (e) complaint procedures for receiving and responding to public complaints.

(2) The Owner shall maintain the operations manual up to date through revisions undertaken from time to time and retain a copy at the location of the sewage Works. Upon request, the Owner shall make the manual available for inspection and copying by Ministry personnel.

## **12. CONTINGENCY AND POLLUTION PREVENTION PLAN**

(1) The Owner shall prepare a Contingency and Pollution Prevention Plan prior to the commencement of operation of the sewage Works, that includes, but not necessarily limited to, the following information:

- (a) the name, job title and location (address) of the Owner, person in charge, management or control of the facility.
- (b) the name, job title and 24-hour telephone number of the person(s) responsible for activating the Contingency Plan.

(c) a site plan drawn to scale showing the facility, nearby buildings, streets, maintenance access & sewage Works (including direction(s) of flow in storm events) and any features which need to be taken into account in terms of potential impacts on access and response (including physical obstructions and location of response and clean-up equipment).

(d) steps to be taken to implement additional treatment measures -short term and long term- in the event that the effluent water quality approaches effluent limits.

(e) a listing of telephone numbers for: local clean-up company(ies) who may be called upon to assist in responding to spills; local emergency responders including health institution(s); and MOE Spills Action Centre 1-800-268-6060.

(f) Materials Safety Data Sheets (MSDS) for each hazardous material which may be transported or stored within the area serviced by the Works.

(g) the written procedures by which the Contingency and Pollution Prevention Plan is activated.

(h) a description of the spill response and pollution prevention training provided to employees assigned to work in the area serviced by the Works, the date(s) on which the training was provided and to whom.

(i) the date on which the Contingency and Pollution Prevention Plan was prepared and subsequently, amended.

(2) The Contingency and Pollution Prevention Plan shall be kept in a conspicuous place inside the office building. Upon request, the Owner shall make the manual available for inspection and copying by Ministry personnel.

(3) The Contingency and Pollution Prevention Plan will be amended from time to time as needed by changes in the operation of the facility.

### **13. REMOVAL OF ACCUMULATED SLUDGE**

(1) The Owner shall, by means of an appropriate dredging program for the removal of settled sludges, ensure that a minimum depth of 1.2 metres of water within the settling pond and polishing pond is maintained.

(2) The Owner shall ensure that all sludges removed from the settling ponds, and all oil removed from the sewage Works are handled in accordance to the requirements of Ontario Regulation 347 under the EPA, as amended.

(3) The Owner shall receive the District Manager's written approval of each location for the disposal of sludges removed from the settling ponds, and, if required, the necessary approval(s) under the EPA and the OWRA.

#### **14. LIMITED OPERATIONAL FLEXIBILITY**

(1) The Owner may make modifications to the Works in accordance with the terms and conditions of this Approval subject to the Ministry's "Limited Operational Flexibility Criteria for Modifications to Sewage Works ", included under Schedule B of this Approval, as amended.

(2) Sewage works under Limited Operational Flexibility shall adhere to the design guidelines contained within the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended.

(3) The Owner shall ensure at all times, the Works and related equipment and appurtenances which are installed or used to achieve compliance are operated in accordance with all terms and conditions of this Approval.

(4) For greater certainty, the following are not permitted as part of Limited Operational Flexibility:

(a) Modifications to the Works that result in an increase of the Rated Capacity of the Works;

(b) Modifications to the Works that may adversely affect the approved effluent quality criteria or the location of the discharge/outfall;

(c) Modifications to the treatment process technology of the Works, or modifications that involve construction of new reactors (tanks) or alter the treatment train process design;

(d) Modifications to the Works approved under s.9 of the EPA,  
and

(e) Modifications to the Works pursuant to an order issued by  
the Ministry.

(5) Implementation of Limited Operational Flexibility is not intended to be used for piecemeal measures that result in major alterations or expansions.

(6) If the implementation of Limited Operational Flexibility requires changes to be made to the Emergency Response, Spill Reporting and Contingency Plan, the Owner shall, as deemed necessary in consultation with the District Manager, provide a copy of the revised plan for approval to the local fire services authority prior to implementing Limited Operational Flexibility.

(7) For greater certainty, any alteration made under the Limited Operational Flexibility may only be carried out after other legal obligations have been complied with including those arising from the Environmental Protection Act, Lakes and Rivers Improvement Act and the Mining Act.

(8) At least thirty (30) days prior to implementing Limited Operational Flexibility, the Owner shall complete a Notice of Modifications describing any proposed modifications to the Works and submit it to the District Manager.

(9) The Owner shall not proceed with implementation of Limited Operational Flexibility until the District Manager has provided written acceptance of the Notice of Modifications or a minimum of thirty (30) days have passed since the day the District Manager acknowledged the receipt of the Notice of Modifications.

## **15. AS-BUILT CONSTRUCTION DRAWINGS**

(1) The Owner shall submit to the District Manager a copy of the as-built construction drawings of all the sewage Works, including the final configuration of the "dirty" waste rock stockpile area runoff containment berms and collection ponds.

## **16. REPORTING**

(1) **One week** prior to the start up of the operation of the Proposed Works, the Owner shall notify the District Manager (in writing) of the pending start up date.

(2) The Owner shall report to the District Manager or designate, any exceedance of any parameter specified in conditions 5, 6 and 7 orally, as soon as reasonably possible, and in writing within **ten (10) days** of the exceedance.

(3) In addition to the obligations under Part X of the EPA, the Owner shall, within **10 working days** of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

(4) The Owner shall prepare and submit a performance report to the District Manager on an annual basis by **March 31 of each year**. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in conditions 5, 6 and 7, including an overview of the success and adequacy of the sewage Works.

(b) a description of any operating problems encountered and corrective actions taken.

(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the sewage Works.

(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period.

(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment.

(f) the quantity (estimated volume and weight) of sludge removed from the settling ponds (if any) during the reporting period, the destination of each of these sludges, and the remaining volumetric capacity (expressed in cubic metres and

percent) that is not occupied by sludge, in the settling pond and polishing pond.

(g) a list summarizing any implementation programs affiliated with the approved sewage Works that are planned, being implemented and completed, as well as the completion or scheduled completion date of each program.

(h) a summary of the flow rates of mine water to the settling pond, and an evaluation of the need to alter the sewage Works to accommodate flows exceeding the design basis of the Works.

(i) a summary and interpretation of all monitoring data and prediction model results as per requirements under Condition 9.8 - Waste Rock Segregation Monitoring.

(j) an evaluation of the mixing zone through a modelled size (maximum and mean) of the effluent mixing zone in the Pike River with model inputs based on measured data.

## **17. REPORTING - SURFACE WATER**

The Owner shall submit an annual receiver water report by **March 31 of each year**, in both digital and hard copy formats. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The report shall include the following minimum information.

(1) Tabulation and interpretation of current and historical receiver surface water monitoring data and a comparison to Provincial Water Quality Objectives (PWQO).

(2) Graphs illustrating current and historical trends with time of key water quality parameters.

(3) Hydrographs, with sampling dates current and historical, for the Pike River upstream of the point of effluent discharge.

(4) Graphs illustrating the ratio of effluent discharge to Pike River flow.

(5) Description and evaluation of any and all aquatic environmental effects associated

with the mining operations.

(6) A site plan or plans of the entire site illustrating significant features such as lakes, streams, ponds, seeps, ditches, collection and treatment facilities and roadways, as well as all of the sampling locations.

(7) Universal Transverse Mercator (UTM) coordinates for all sampling sites, North American Datum (NAD83).

### **SCHEDULE 'A'**

1. Environmental Compliance Approval Application for Industrial Sewage Works submitted by Brian Fraser, of EcoMetrix Incorporated, and signed by Mr Harri Ollila, Environmental Superintendent, 10393444 Canada Inc. operating as McEwen Ontario, dated October 4<sup>th</sup>, 2018, and all supporting documentation and information.

### **Schedule B**

#### **Limited Operational Flexibility Criteria for Modifications to Industrial Sewage Works**

1. The modifications to sewage works approved under an Environmental Compliance Approval (Approval) that are permitted under the Limited Operational Flexibility (LOF), are outlined below and are subject to the LOF conditions in the Approval, and require the submission of the Notice of Modifications. If there is a conflict between the sewage works listed below and the Terms and Conditions in the Approval, the Terms and Conditions in the Approval shall take precedence.

#### **1.1 Sewage Pumping Stations**

a. Alter pumping capacity by adding or replacing equipment where new equipment is located within an existing sewage treatment plant site or an existing sewage pumping station site, provided that the modifications do not result in an increase of the sewage treatment plant Rated Capacity and the existing flow process and/or treatment train are maintained, as applicable.

b. Forcemain relining and replacement with similar pipe size where the nominal diameter is not greater than 1,200 millimetres.

#### **1.2 Sewage Treatment Process**

- a. Installing additional chemical dosage equipment including replacing with alternative chemicals for pH adjustment or coagulants (non-toxic polymers) provided that there are no modifications of treatment processes or other modifications that may alter the intent of operations and may have negative impacts on the effluent quantity and quality.
- b. Expanding the buffer zone between a sanitary sewage lagoon facility or land treatment area and adjacent uses provided that the buffer zone is entirely on the proponent's land.
- c. Optimizing existing sanitary sewage lagoons with the purpose to increase efficiency of treatment operations provided that existing sewage treatment plant rated capacity is not exceeded and where no land acquisition is required.
- d. Optimizing existing sewage treatment plant equipment with the purpose to increase the efficiency of the existing treatment operations, provided that there are no modifications to the works that result in an increase of the approved rated capacity, and may have adverse effects to the effluent quality or location of the discharge.
- e. Replacement, refurbishment of previously approved equipment in whole or in part with Equivalent Equipment, like-for-like of different make and model, provided that the firm capacity, reliability, performance standard, level of quality and redundancy of the group of equipment is kept the same or exceeded. For clarity purposes, the following equipment can be considered under this provision: pumps, screens, grit separators, blowers, aeration equipment, sludge thickeners, dewatering equipment, UV systems, chlorine contact equipment, bio-disks, and sludge digester systems.

### 1.3 Sewage Treatment Plant Outfall

- a. Replacement of discharge pipe with similar pipe size or diffusers provided that the outfall location is not changed.

### 1.4 Sanitary Sewers



- a. Pipe relining and replacement with similar pipe size within the Sewage Treatment Plant site, where the nominal diameter is not greater than 1,200 mm.

## 1.5 Pilot Systems

- a. Installation of pilot systems for new or existing technologies provided that:

- i. any effluent from the pilot system is discharged to the inlet of the sewage treatment plant or hauled off-site for proper disposal,
- ii. any effluent from the pilot system discharged to the inlet of the sewage treatment plant or sewage conveyance system does not significantly alter the composition/concentration of the influent sewage to be treated in the downstream process; and that it does not add any inhibiting substances to the downstream process, and
- iii. the pilot system's duration does not exceed a maximum of two years; and a report with results is submitted to the Director and District Manager three months after completion of the pilot project.

## 1.6 Tailings Management Facilities

- a. Routine dam raises and dam extensions to allow continued management of tailings and storage of mineral materials and sewage, provided that:

i. Routine dam raises and extensions are in adherence with a tailings management plan prepared by a Professional Engineer licensed under the *Professional Engineers Act* in Ontario.

ii Routine dam raises and extensions are sealed by a Professional Engineer licensed under the *Professional Engineers Act* in Ontario.

iii Routine dam raises and extensions have an associated Erosion and Sediment Control Plan applying best management practices that is to be implemented during construction.

b. New dams are not eligible under LOF, unless described in an Amended Environmental Compliance Approval.

c. Pipe replacement or extension with similar pipe size within the Tailings Management area, where the nominal diameter is not greater than 1,200 mm.

2. Sewage works that are exempt from section 53 of the OWRA by O. Reg. 525/98 continue to be exempt and are not required to follow the notification process under this Limited Operational Flexibility.

3. Normal or emergency operational modifications, such as repairs, reconstructions, or other improvements that are part of maintenance activities, including cleaning, renovations to existing approved sewage works equipment, provided that the modification is made with Equivalent Equipment, are considered pre-approved.

4. The modifications noted in section (3) above are not required to follow the notification protocols under Limited Operational Flexibility, provided that the number of pieces and description of the equipment as described in the Approval does not change.

## Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

### Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)
ECA Owner		Municipality

### Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

Description shall include:

1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

### Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:

1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)	PEO License Number
Signature	Date (mm/dd/yy)
Name of Employer	

### Part 4 – Declaration by Owner

I hereby declare that:

1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.

4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)
Owner Representative's Signature	Date (mm/dd/yy)

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of conditions in this Approval and the practice that this Approval is based on the most current document, if several conflicting documents are submitted for review. Condition 1.(6) is included to emphasize that the issuance of this Approval does not diminish any other statutory and regulatory obligations to which the Owner is subject in the construction, maintenance and operation of the Works. The condition specifically highlights the need to obtain any necessary conservation authority approvals. The condition also emphasizes the fact

that this Approval doesn't limit the authority of the Ministry to require further information.

2. Condition 2 is included to ensure that the Works are constructed in a timely manner so that standards applicable at the time of approval of the Works are still applicable at the time of construction, to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved works and to ensure that subsequent owners of the works are made aware of the Approval and continue to operate the works in compliance with it.

4. Condition 4 is included to ensure that the Works is operated in accordance with the information submitted by the Owner relating to the process and materials which are served by the Works, and to ensure that any contemplated changes in them which could potentially affect the characteristics of effluent from the Works will be properly reviewed and approved.

5. Conditions 5, 6 and 7 are imposed to ensure that the effluent discharged from the Works to the Pike River meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver.

6. Conditions 8, 9 and 10 are included to require the Owner to demonstrate on a continual basis that the quality and quantity of the effluent from the approved Works is consistent with the (design objectives and) effluent limits specified in this Approval and that the approved Works does not cause any impairment to the receiving watercourse and natural waterbodies in the area.

7. Conditions 11 and 12 are included to ensure that a comprehensive operations manual and a contingency plan governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner and made available to the Ministry. Such a manual and plan are an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. These documentation will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

8. Conditions 13 is included to ensure that sludges are removed from the sewage Works on an ongoing basis, and, a comprehensive operations manual is prepared, implemented and kept up to date so that the Owner has proper guidance in the operation and maintenance of the sewage Works and in handling the occurrence of abnormal situations.

9. Condition 14 is included to ensure that the Works are operated in accordance with

the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider. These Conditions are also included to ensure that a Professional Engineer has reviewed the proposed modifications and attests that the modifications are in line with that of Limited Operational Flexibility, and provide assurance that the proposed modifications comply with the Ministry's requirements stipulated in the Terms and Conditions of this Approval, Ministry policies, guidelines, and industry engineering standards and best management practices.

10. Condition 15 is included to ensure that appropriate Stormwater management practices cover the entire project site and that groundwater is not contaminated, so that the Ministry can work with the Owner in resolving the problems in a timely manner.

11. Conditions 16 and 17 are included to provide a performance record for future references and to ensure that the Ministry is made aware of problems as they arise, so that the Ministry can work with the Owner in resolving the problems in a timely manner.

*The reasons for the imposition of these terms and conditions are as follows:*

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 0328-8XVPXT issued on September 11, 2012.**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;

5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5

AND

The Director appointed for the purposes of Part  
II.1 of the Environmental Protection Act  
Ministry of the Environment, Conservation and  
Parks  
135 St. Clair Avenue West, 1st Floor  
Toronto, Ontario  
M4V 1P5

**\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)**

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 23rd day of  
January, 2019

Fariha Pannu, P.Eng.  
Director  
appointed for the purposes of Part  
II.1 of the *Environmental Protection  
Act*

AA/  
c: District Manager, MECP Timmins District Office  
Brian Fraser, EcoMetrix Incorporated