

KINROSS

Kettle River – Buckhorn

Echo Bay Minerals Company
A Kinross company

363 Fish Hatchery Road
Republic, WA, USA 99166

Certified Mail number: 7017 0190 0001 0076 5015

phone: (509) 775-3157
fax: (509) 775-3447

September 9, 2019

Mr. Pat Hallinan
Department of Ecology
Eastern Regional Office
4601 North Monroe Street, Suite 202
Spokane, WA 99205-1295

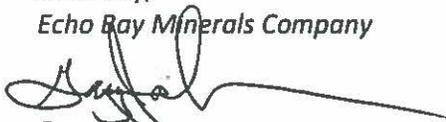
Re: State Waste Discharge Permit ST0008033 Supplemental Information for the Renewal Application

Dear Mr. Hallinan,

As requested, attached are the first 13 pages of the renewal application for the State Waste Discharge Permit ST0008033. This is to provide supplemental information to the April 30 submittal.

Please contact me at 509-775-8530 if you have any questions or require additional information.

Sincerely,
Echo Bay Minerals Company



Gary Johnson
Environmental Superintendent



Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to Ground Water by Land Treatment or Application

This application is for a state waste discharge permit as required by Chapter 90.48 RCW and Chapter 173-216 WAC. Permit applications provide Ecology with information on pollutants in the waste stream, materials that may enter the waste stream, the flow characteristics of the discharge, and the site characteristics at the point of discharge.

Ecology may request additional information to clarify the conditions of this discharge. The applicant should reference information previously submitted to Ecology that applies to this application in the appropriate section.

SECTION A. GENERAL INFORMATION

1. Applicant name: Echo Bay Minerals Company

2. Facility name: Kettle River Operations
(if different from applicant)

3. Applicant mail address: 363 Fish Hatchery Road
Street

Republic, Washington 99166
City/State Zip

4. Facility location address: Same
(if different from above) Street

5. UBI No. 6010500 58 58
City/State Zip

Sometimes called a registration, tax, "C," or resale number, the Unified Business Identifier (UBI) number is a nine-digit number used to identify persons engaging in business activities. The number is assigned when a person completes a [Master Business Application](#) to register with or obtain a license from state agencies. The Departments of Revenue, Licensing, Employment Security, Labor and Industries, and the Corporations Division of the Secretary of State are among the state agencies participating in the UBI program.

6. Latitude/longitude of the processing facility as decimal degrees (NAD83/WGS84):
See Attachment G1 / _____

FOR ECOLOGY USE ONLY	Check One	New/Renewal <input type="checkbox"/>	Modification <input type="checkbox"/>
Date application received		Application/Permit no.	
Date application accepted		Date fee paid	

7. Person to contact who is familiar with the information contained in this application:

Gary R. Johnson
Name

Environmental Superintendent
Title

509-775-8530
Telephone number

(509) 775-3447
Fax number

8. Check One:

Permit renewal (including renewal of temporary permits authorized by RCW 90.48.200)

Does this application request a greater amount of wastewater discharge, a greater amount of pollutant discharge, or a discharge of different pollutants than specified in the last permit application for this facility? YES NO

For permit renewals, the current permit is an attachment, by reference, to this application.

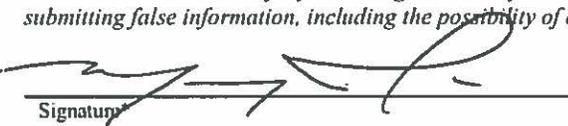
Permit modification

Existing unpermitted discharge

Proposed discharge

Anticipated date of discharge: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and/or imprisonment for knowing violations.


Signature

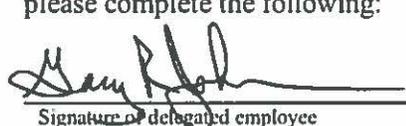
9/9/19
Date

Vice President & General Manager
Title

Mark Ioli
Printed name

*Applications must be signed as follows: Corporations, by a principal executive officer of at least the level of vice-president; partnership, by a general partner; sole proprietorship, by the proprietor. If these titles do not apply to your organization, the person who makes budget decisions for this facility must sign the application.

The application signatory may delegate signature authority for submittals required by the permit, such as monthly reports, to a suitable employee. You can delegate this authority to a qualified individual or to a position, which you expect to fill with a qualified individual. If you wish to delegate signature authority, please complete the following:


Signature of delegated employee

9-9-19
Date

Environmental Superintendent
Title or function at the facility

Gary Johnson
Printed name

SECTION B. PRODUCT INFORMATION

1. Briefly describe all manufacturing processes and products, and/or commercial activities at this facility. Provide the applicable Standard Industrial Category (SIC) and the North American Industry Classification System (NAICS) Code(s) for each activity (see *North American Industrial Classification System*, 2007 ed.). You can find the 1997 NAICS codes and the corresponding 1987 Standard Industry Category (SIC) codes at (<http://www.census.gov/epcd/naics/frames3.htm>).

Description:

The ST0008033 permit renewal application for the Kettle River Operations (KRO) is for discharge of water from the Key Mill facility. A water bio-treatment plant is currently operating at the Key Mill site and is authorized under this permit for discharge of treated water to infiltration galleries.

The Key Mill is a precious metals ore processing facility. Ore is trucked for processing from operating mine sites in the United States and Canada. In the milling process, the ore is crushed, then mixed with water and pulverized to form a slurry. Cyanide is then added to the slurry and pumped through a series of tanks containing activated carbon. The gold is leached from the ore and adsorbed onto the carbon. Gold and silver are then stripped from the carbon using a hot caustic solution and recovered on stainless steel cathodes within electrowinning cells. Sludge from the electrowinning cells is refined on-site into doré bars. The spent slurry remaining from the process is treated to reduce the cyanide levels and is sent to the lined tailings pond. The mill is currently in temporary shut-down, however, the quantities are provided for operational conditions.

In addition to managing the mill tailings, the lined tailings pond also manages reverse osmosis (RO) concentrate. This water is brought to the tailings pond from the K2 water treatment plant and the Buckhorn water treatment plant. The operations of these two plants are approved under other permits. The concentrate production volumes for these two locations are summarized below. These represent year 2018, but may vary based on site conditions:

Description	Permit Number	Highest Daily Discharge (gal)	Highest Average Monthly Discharge (gal)	RO Operating hours per day (hrs)	RO Operating days per week	Operating weeks per year
Buckhorn RO Concentrate	WA0052434	24,500	20,000	24	7	52
K2 WTP RO Concentrate	ST 8033	40,000	16,600	24	7	52

2. List raw materials and products:

Type	RAW MATERIALS	Quantity
Gold Ore		803,000 tons per year
Type	PRODUCTS	Quantity
Doré		150,000 ounces per year

SECTION C. PLANT OPERATIONAL CHARACTERISTICS

1. For each process listed in B.1 that generates wastewater, list the process, assign the waste stream a name and ID #, and describe whether it is a batch or continuous flow.

Process	Waste Stream Name	Waste Stream ID#	Batch (B) or Continuous (C) Process
Water Treatment	Underdrain Bio-treatment System	1	Continuous

2. On a separate sheet, produce a schematic drawing showing production processes and water flow through the facility and wastewater treatment devices (*label as attachment C2*). The drawing should indicate the source of intake water and the operations contributing wastewater to the effluent and should label the treatment units. Construct the water balance by showing average flows between intakes, operations, treatment units, and points of discharge to land. If a water balance cannot be determined (*e.g., for certain mining activities*), provide a description of the nature and amount of any sources of water and any collection or treatment measures.

3. What is the highest daily discharge flow from the processing facility:
 (Specify the time period for the value given) 1) 14401.3 avg (monthly) gallons per day (2018)
- What is the highest daily discharge flow to the sprayfields/infiltration basin:
 (Specify the time period for the value given) NA inches/acre/month OR
- What is the highest average monthly discharge flow (daily flows averaged over a month) from the processing facility:
 (Specify the time period for the value given) 1) 14,401.3 avg gallons per day (2018)
- What is the highest average monthly discharge flow to the sprayfields:
 (Specify the time period for the value given) NA inches/acre/month OR

4. Describe any planned wastewater treatment or sprayfield/infiltration improvements and the schedule for the improvements or changes. (*Use additional sheets, if necessary and label as attachment C4.*)

NA

5. If production processes are subject to seasonal variations, provide the following information. List discharge for each wastestream in gallons or million gallons per month. The combined value for each month should equal the estimated total monthly flow. Please indicate the proper unit by checking one of the following boxes:

gallons per day gallons per month million gallons per month

Waste Stream ID#	MONTHS											
	J	F	M	A	M	J	J	A	S	O	N	D
NA - Continuous Flow in Underdrain Water Treatment Plant												
Estimated total gallons												

6. If this is a discharge from the processing facility to a storage or evaporative lagoon, what is the size of the lagoon (give square footage for the bottom of the lagoon and the total volume of the lagoon at full operating depth). 10,000 square feet; 10 million gallons (Example)

#1. NA

7. Check the applicable box. If this is a discharge to a sprayfield or an infiltration bed ? Provide the average gallons per acre per day proposed for each month in the following table.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept.	Oct	Nov	Dec
Estimated gallons per acre per day	14400gpd total discharge											

8. How many hours a day does this facility typically operate? 1.24 hrs
 How many days a week does this facility typically operate? 1.7 days
 How many weeks per year does this facility typically operate? 1.52 wks

9. List all incidental materials such as oil, paint, grease, solvents, and cleaners that are used or stored on site (list only those with quantities greater than 10 gallons for liquids and 50 pound quantities for solids). For solvents and solvent-based cleaners, include a copy of the material safety data sheet for each material and estimate the quantity used. *Use additional sheets, if necessary and label as attachment C.7.)*

Attached as C.7

Materials/Quantity Stored: See Attachment C.7

- | | Yes | No |
|---|-------------------------------------|-------------------------------------|
| 10. Some types of facilities are required to have spill or waste control plans. Does this facility have: | | |
| a. A spill prevention, control, and countermeasure plan (40 CFR 112)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. An Oil Spill Contingency Plan (chapter 173-182 WAC)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c. An emergency response plan (per WAC 173-303-350)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. A runoff, spillage, or leak control plan (per WAC 173-216-110(f))? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e. Any spill or pollution prevention plan required by local, state or federal authorities? If yes specify: <u>SWPPP</u> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| f. A solid waste control plan? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

SECTION D. WATER CONSUMPTION AND WATER LOSS

1. Potable water source(s):

- Public system (Specify name) System ID#: AA 8586
 Private well Surface water (Specify name of water body) _____

a. Water right permit number: G3-28479C

b. Legal description of water source:

SE ¼S, SW ¼S, 26, Section, 37 TWN, 33 R

2. Potable water use

a. Indicate total water use: Gallons per day (average) 61,582gal

Gallons per day (maximum) 86,256gal

b. Is water metered? YES NO

3. Supplemental Irrigation water source(s):

- Public system or Irrigation District (Specify name) _____
 Private well Surface water (Specify name of water body) _____

a. Water right permit number: _____

b. Legal description of water source:

_____ ¼S, _____ ¼S, _____, Section, _____ TWN, _____ R

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SECTION E. WASTEWATER INFORMATION

1. How are the water intake and effluent flows measured?

Intake: Flow meters

Effluent Intake flowmeter provides effluent flow value

2. Describe the collection method for the samples analyzed below. (*i.e.*, grab, 24-hour composite). Applicants must collect grab samples (not composites) for analysis of pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, fecal coliform (including *E. coli*), and Enterococci (previously known as fecal streptococcus at § 122.26 (d)(2)(iii)(A)(3)), or volatile organics.

Grab samples are collected at the Water Treatment Plant's effluent sample point. Samples are then submitted to a Washington State accredited environmental laboratory for analysis

3. Has the effluent been analyzed for any other parameters than those identified in question E.4.? YES NO
If yes, attach results and label as attachment E.4. This data must clearly show the date, method and location of sampling. (*Note: Ecology may require additional testing.*)
4. Provide measurements or range of measurements for treated wastewater prior to discharge to the POTW for the parameters with an "X" in the left column. If you obtain the application from the internet, contact Ecology's regional office to see if testing for a subset of these parameters is permissible. All analyses (except pH) must be conducted by a laboratory registered or accredited by Ecology (WAC 173-216-125). If this is an application for permit renewal, provide data for the last year for those parameters that are routinely measured. For parameters measured only for this application, place the values under "Maximum." Report the values with units as specified in the parameter name or in the detection level.

The Permittee must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table unless Ecology approves an alternate method or the method used produces measurable results in the sample and EPA has listed it as an EPA approved method in 40 CFR Part 136. If the Permittee uses an alternative method as allowed above, it must report the test method, DL, and QL on the discharge monitoring report or in the required report. **Data is provided below for 2018.**

X	Parameter	Measurement Values			Number of Analyses	Analytical Method Std. Methods 19 th , 20 th edition or EPA	Detection Limit/Quantitation Level
		Minimum	Maximum	Average			
	BOD (5 day)					SM 5210 B	/2 mg/l
	COD					SM 5220 D	/10 mg/l
	Total suspended solids					SM 2540 D	/5 mg/l
	Fixed Dissolved Solids					SM 2540 E	
X	Total dissolved solids	395	488	434.3	13	SM 2540 C	
	Conductivity (micromhos/cm)					SM 2510 B	
	Ammonia-N as N					SM 4500-NH ₃ C	/0.3 mg/L
X	pH	6.5	7.7	7.0	83	SM 4500-H	0.1 standard units
	Fecal coliform (organisms/100 mL)					SM 9221 E or 9222 D	
	Total coliform (organisms/100 mL)					SM 9221 B or 9222 B	
	Dissolved oxygen					SM 4500-O C/G	
X	Nitrate + nitrite-N as N	<100	2880	179	58	SM 4500-NO ₃ E	100 µg/L
	Total kjeldahl N as N					SM 4500-N _{org} C/E/FG	300 µg/l
	Ortho-phosphate-P as P					SM 4500-P E/F	10 µg/l
	Total-phosphorous-P as P					SM 4500-P E/P/F	10 µg/l
	Total Oil & grease					EPA 1664A	1.4/5 mg/l
	NWTPH - Dx					Ecology NWTPH Dx	250/250 µg/l
	NWTPH - Gx					Ecology NWTPH Gx	250/250 µg/l
	Calcium					EPA 200.7	10 µg/l
	Chloride					SM 4500-Cl C	0.15 µg/l
	Fluoride					SM 4500-F E	.025/0.1 mg/l
	Magnesium					EPA 200.7	10/50 µg/l
	Potassium					EPA 200.7	700/ µg/l

X	Parameter	Measurement Values			Number of Analyses	Analytical Method Std. Methods 19 th ,20 th edition or EPA	Detection Limit/Quantitation Level
		Minimum	Maximum	Average			
	Sodium					EPA 200.7	29/ µg/l
X	Sulfate	27,100	203,000	82,270	58	SM 4500-SO ₄ C/D	/200 µg/l
	Alkalinity as CaCO ₃					SM 2320 B	/5 mg/L as CaCO ₃
	Arsenic(total)					EPA 200.8	0.1/0.5 µg/l
	Barium (total)					EPA 200.8	0.5/2 µg/l
	Cadmium (total)					EPA 200.8	.05/.25 µg/l
	Chromium (total)					EPA 200.8	0.2/1 µg/l
	Copper (total)					EPA 200.8	0.4/2 µg/l
X	Iron (total)	<50	<50	<50	11	EPA 200.7	12.5/50 µg/l
	Lead (total)					EPA 200.8	0.1/.5 µg/l
X	Manganese (total)	2.12	20.8	11.2	11	EPA 200.8	0.1/0.5 µg/l
	Mercury (total) pg/L					EPA 1631E	0.2/0.5 pg/l
	Molybdenum(total)					EPA 200.8	0.1/0.5 µg/l
	Nickel(total)					EPA 200.8	0.1/0.5 µg/l
	Selenium (total)					EPA 200.8	1/1 µg/l
	Silver (total)					EPA 200.8	.04/.2 µg/l
	Zinc (total)					EPA 200.8	0.5/2.5 µg/l

Detection level (DL) or detection limit means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure given in 40 CFR part 136, Appendix B.

Quantitation Level (QL) also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1, 2, or 5) x 10ⁿ, where n is an integer. (64 FR 30417).

ALSO GIVEN AS:

The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

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