OCEANAGOLD
Haile Operation

May 16, 2018

Ms. Patty Barnes
S.C. Dept. of Health and Environmental Control
NPDES Administration Section
2600 Bull Street
Columbia, SC 29201

RE: Haile Gold Mine – Renewal of NPDES Permit Number SC0040479

Dear Ms. Barnes:
Enclosed are the documents for renewal of Haile Gold Mine NPDES Permit Number SC0040479. We look forward to working with you to renew this permit.

Haile Gold Mine does not use or intake cooling water into the waste water treatment process.

In compliance with the regulations, please find enclosed:

a) Cooling Water Intake Disclosure Statement (above)
b) EPA Form 3510-2C (8-90)
c) Wastewater Treatment Plant Process Description
d) NPDES Effluent Limits for Outfall 003
e) EPA Form 3510-1 (8-90)
f) DHEC Bureau of Water Sludge Disposal Supplement
g) DHEC Bureau of Water Location Supplement Form
h) Mixing Zone Toxicity
i) PQL List

If you have any questions, please contact me at 803 475-1220 or scott.mcdaniel@oceanagold.com.

Sincerely,

Scott McDaniel
Health, Safety, & Environmental Manager

cc. Byron Amick (DHEC – IW) w/o enclosures
File

6911 Snowy Owl Road, P.O. Box 128, Kershaw, South Carolina 29067 USA
Telephone (803) 475-1220, Facsimile (803) 475-2317

Please print or type in the unshaded areas only.

EPA I.D. NUMBER (*copy from Item 1 of Form 1*): SC0040479

Form Approved.
OMB No. 2040-0086.
Approval expires 3-31-98.

FORM **2C** NPDES

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURE OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (*list*)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (*name*)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
003	34	35	08	80	32	43	Haile Gold Mine Creek

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (*e.g., for certain mining activities*), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (*list*)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (*list*)	b. AVERAGE FLOW (*include units*)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
003	Mill Zone Pit	60 gpm	Flows are routed to existing ponds and then	1-G	
	Snake Pit	38 gpm	pumped to 19 Pond for staging into Water	1-O	
	PAG Cell	187 gpm	Treatment Plant (WTP). WTP is a two-stage	1-Q	
	Rainfall into Ponds	<2 gpm	metals precipitation process with a Multiflo	2-C	
			clarifier and incline plate sludge accumulator.	2-K	
			Treated water is passed through multimedia	5-L	
			filter and pH adjustment. Water is passeed	5-U	
			through V-Notch Wier prior to discharge.		
			See attached Process Description.		

OFFICIAL USE ONLY (*effluent guidelines sub-categories*)

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☐ YES (*complete the following table*) ☑ NO (*go to Section III*)

1. OUTFALL NUMBER (*list*)	2. OPERATION(s) CONTRIBUTING FLOW (*list*)	3. FREQUENCY		4. FLOW				
		a. DAYS PER WEEK (*specify average*)	b. MONTHS PER YEAR (*specify average*)	a. FLOW RATE (*in mgd*)		B. TOTAL VOLUME (*specify with units*)		C. DURATION (*in days*)
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☑ YES (*complete Item III-B*) ☐ NO (*go to Section IV*)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (*or other measure of operation*)?

☐ YES (*complete Item III-C*) ☑ NO (*go to Section IV*)

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (*list outfall numbers*)
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (*specify*)	
N/A			

IV. IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operations of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ YES (*complete the following table*) ☑ NO (*go to Item IV-B*)

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. NO.	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED
N/A					

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (*or other environmental projects which may affect your discharges*) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)
SC0040479

CONTINUED FROM PAGE 2

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding – Complete one set of tables for each outfall – Annotate the outfall number in the space provided.
NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
N/A			

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES (*list all such pollutants below*) ☑ NO (*go to Item VI-B*)

N/A

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☑ YES (*identify the test(s) and describe their purposes below*) ☐ NO (*go to Section VIII*)

As part of the permit, a Whole Effluent Toxicity (WET) Test is required on all discharges. Under those conditions, the WET test results have PASSED. In 2017, there was one discharge in the month of May. See Attached the results.

VIII. CONTRACT ANALYSIS INFORMATION

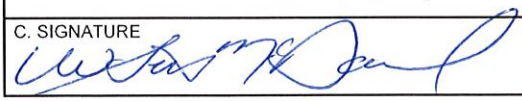
Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☑ YES (*list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below*) ☐ NO (*go to Section IX*)

A. NAME	B. ADDRESS	C. TELEPHONE (*area code & no.*)	D. POLLUTANTS ANALYZED (*list*)
Shealy Environmental Services, Inc.	106 Vantage Point Drive West Columbia, SC 29172	(803) 791-9700	See attached "Form 2C VIII Attachment"
Test America	5102 LaRoche Ave Savannah, GA 29067	(912) 354-7858	See attached "Form 2C VIII Attachment"

IX. CERTIFICATION

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 fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (*type or print*)	B. PHONE NO. (*area code & no.*)
W. Scott McDaniel Health, Safety & Environmental Manager	(803) 475-1220
C. SIGNATURE	D. DATE SIGNED
	05/16/2018

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (*use the same format*) instead of completing these pages.
SEE INSTRUCTIONS.

EPA I.D. NUMBER (*copy from Item 1 of Form 1*): SC0040479

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 003

PART A –You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (*if available*) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (*if available*) (2) MASS	c. LONG TERM AVRG. VALUE (*if available*) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (*if available*) (2) MASS	d. NO. OF ANALYSES	3. UNITS (*specify if blank*) a. CONCEN-TRATION	3. UNITS b. MASS	4. INTAKE (*optional*) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE b. NO. OF ANALYSES
a. Biochemical Oxygen Demand (*BOD*)	< 3.0						1	mg/l				
b. Chemical Oxygen Demand (*COD*)	< 6.3						1	mg/l				
c. Total Organic Carbon (*TOC*)	< 0.5						1	mg/l				
d. Total Suspended Solids (*TSS*)	30.0						1	mg/l				
e. Ammonia (*as N*)	< 0.30						1	mg/l				
f. Flow	VALUE 1.27		VALUE		VALUE		15	mgd		VALUE		
g. Temperature (*winter*)	VALUE N/A		VALUE		VALUE		1	°C		VALUE		
h. Temperature (*summer*)	VALUE 22.6		VALUE		VALUE		1	°C		VALUE		
i. pH	MINIMUM 6.97	MAXIMUM 7.53	MINIMUM	MAXIMUM			3	STANDARD UNITS				

PART B – Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (*if available*)	2. MARK "X" a. BELIEVED PRESENT	2. MARK "X" b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (*if available*) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (*if available*) (2) MASS	c. LONG TERM AVRG. VALUE (*if available*) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (*if available*) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCEN-TRATION	4. UNITS b. MASS	5. INTAKE (*optional*) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		<0.097						2	mg/l				
b. Chlorine, Total Residual		X	< 1.0						1	mg/l				
c. Color	X		15						1	pcu				
d. Fecal Coliform		X	< 1						1	cl/100ml				
e. Fluoride (16984-48-8)	X		0.52						2	mg/l				
f. Nitrate-Nitrite (*as N*)	X		0.1						2	mg/l				

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (*if available*)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (*as N*)		X							0					
h. Oil and Grease		X	< 1.4						1	mg/l				
i. Phosphorus (as P), Total (7723-14-0)	X		0.04						1	mg/l				
j. Radioactivity														
(1) Alpha, Total		X							0					
(2) Beta, Total		X							0					
(3) Radium, Total		X							0					
(4) Radium 226, Total		X							0					
k. Sulfate (*as SO_4*) (14808-79-8)	X		1700						1	mg/l				
l. Sulfide (*as S*)	X		1.2						1	mg/l				
m. Sulfite (*as SO_3*) (14265-45-3)		X	< 5.0						1	mg/l				
n. Surfactants		X	< 0.2						1	mg/l				
o. Aluminum, Total (7429-90-5)	X		140						1	ug/l				
p. Barium, Total (7440-39-3)	X		21						1	ug/l				
q. Boron, Total (7440-42-8)	X		28						1	ug/l				
r. Cobalt, Total (7440-48-4)		X	< 0.12						1	ug/l				
s. Iron, Total (7439-89-6)	X		630						2	ug/l				
t. Magnesium, Total (7439-95-4)	X		1900						2	ug/l				
u. Molybdenum, Total (7439-98-7)		X							0	ug/l				
v. Manganese, Total (7439-96-5)	X		3.4						1	ug/l				
w. Tin, Total (7440-31-5)		X	< 5.0						2	ug/l				
x. Titanium, Total (7440-32-6)		X	< 0.85						1	ug/l				

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)	OUTFALL NUMBER
SC0040479	003

CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (*secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions*), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (*all 7 pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)			X	< 2.0						1	ug/l				
2M. Arsenic, Total (7440-38-2)			X	< 1.3						1	ug/l				
3M. Beryllium, Total (7440-41-7)			X	< 0.15						1	ug/l				
4M. Cadmium, Total (7440-43-9)			X	< 0.10						1	ug/l				
5M. Chromium, Total (7440-47-3)			X	< 2.5						1	ug/l				
6M. Copper, Total (7440-50-8)			X	< 1.1						1	ug/l				
7M. Lead, Total (7439-92-1)			X	< 0.25						2	ug/l				
8M. Mercury, Total (7439-97-6)		X		74.5						1	ng/l				
9M. Nickel, Total (7440-02-0)			X	< 2.0						1	ug/l				
10M. Selenium, Total (7782-49-2)			X	< 2.5						1	ug/l				
11M. Silver, Total (7440-22-4)		X		0.62						1	ug/l				
12M. Thallium, Total (7440-28-0)			X	< 1.0						2	ug/l				
13M. Zinc, Total (7440-66-6)		X		24						2	ug/l				
14M. Cyanide, Total (57-12-5)			X	< 10						1	ug/l				
15M. Phenols, Total		X		0.018						2	mg/l				
DIOXIN															
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6)			X	DESCRIBE RESULTS ND											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Accrolein (107-02-8)			X	< 0.96						1	ug/l				
2V. Acrylonitrile (107-13-1)			X	< 1.2						1	ug/l				
3V. Benzene (71-43-2)			X	< 0.84						1	ug/l				
4V. Bis (*Chloromethyl*) Ether (542-88-1)			X	< 1.5						1	ug/l				
5V. Bromoform (75-25-2)			X	< 0.84						1	ug/l				
6V. Carbon Tetrachloride (56-23-5)			X	< 0.74						1	ug/l				
7V. Chlorobenzene (108-90-7)			X	< 0.61						1	ug/l				
8V. Chlorodibromomethane (124-48-1)			X	< 1.1						1	ug/l				
9V. Chloroethane (75-00-3)			X	< 1.6						1	ug/l				
10V. 2-Chloroethylvinyl Ether (110-75-8)			X	< 3.5						1	ug/l				
11V. Chloroform (67-66-3)			X	< 0.61						1	ug/l				
12V. Dichlorobromomethane (75-27-4)			X	< 0.59						1	ug/l				
13V. Dichlorodifluoromethane (75-71-8)			X	< 1.3						1	ug/l				
14V. 1,1-Dichloroethane (75-34-3)			X	< 0.45						1	ug/l				
15V. 1,2-Dichloroethane (107-06-2)			X	< 0.65						1	ug/l				
16V. 1,1-Dichloroethylene (75-35-4)			X	< 1.0						1	ug/l				
17V. 1,2-Dichloropropane (78-87-5)			X	< 0.82						1	ug/l				
18V. 1,3-Dichloropropylene (542-75-6)			X	< 0.74						1	ug/l				
19V. Ethylbenzene (100-41-4)			X	< 0.73						1	ug/l				
20V. Methyl Bromide (74-83-9)			X	< 0.99						1	ug/l				
21V. Methyl Chloride (74-87-3)			X	< 1.0						1	ug/l				

CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS (*continued*)															
22V. Methylene Chloride (75-09-2)			X	< 1.0						1	ug/l				
23V. 1,1,2,2-Tetrachloroethane (79-34-5)			X	< 0.77						1	ug/l				
24V. Tetrachloro-ethylene (127-18-4)			X	< 0.61						1	ug/l				
25V. Toluene (108-88-3)			X	< 0.60						1	ug/l				
26V. 1,2-Trans-Dichloroethylene (156-60-5)			X	< 0.61						1	ug/l				
27V. 1,1,1-Trichloro-ethane (71-55-6)			X	< 0.76						1	ug/l				
28V. 1,1,2-Trichloro-ethane (79-00-5)			X	< 1.0						1	ug/l				
29V Trichloro-ethylene (79-01-6)			X	< 0.73						1	ug/l				
30V. Trichloro-fluoromethane (75-69-4)			X	< 0.76						1	ug/l				
31V. Vinyl Chloride (75-01-4)			X	< 1.1						1	ug/l				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)			X	< 1.1						1	ug/l				
2A. 2,4-Dichloro-phenol (120-83-2)			X	< 1.4						1	ug/l				
3A. 2,4-Dimethyl-phenol (105-67-9)			X	< 1.8						1	ug/l				
4A. 4,6-Dinitro-O-Cresol (534-52-1)			X	< 5.4						1	ug/l				
5A. 2,4-Dinitro-phenol (51-28-5)			X	< 8.7						1	ug/l				
6A. 2-Nitrophenol (88-75-5)			X	< 1.3						1	ug/l				
7A. 4-Nitrophenol (100-02-7)			X	< 3.9						1	ug/l				
8A. P-Chloro-M-Cresol (59-50-7)			X	< 1.5						1	ug/l				
9A. Pentachloro-phenol (87-86-5)			X	< 8.0						1	ug/l				
10A. Phenol (108-95-2)			X	< 0.96						1	mg/l				
11A. 2,4,6-Trichloro-phenol (88-05-2)			X	< 1.2						1	ug/l				

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X	< 1.6						1	ug/l				
2B. Acenaphtylene (208-96-8)			X	< 1.6						1	ug/l				
3B. Anthracene (120-12-7)			X	< 1.5						1	ug/l				
4B. Benzidine (92-87-5)			X	< 11						1	ug/l				
5B. Benzo (*a*) Anthracene (56-55-3)			X	< 1.2						1	ug/l				
6B. Benzo (*a*) Pyrene (50-32-8)			X	< 1.3						1	ug/l				
7B. 3,4-Benzo-fluoranthene (205-99-2)			X	< 1.2						1	ug/l				
8B. Benzo (*ghi*) Perylene (191-24-2)			X	< 1.5						1	ug/l				
9B. Benzo (*k*) Fluoranthene (207-08-9)			X	< 1.5						1	ug/l				
10B. Bis (*2-Chloro-ethoxy*) Methane (111-91-1)			X	< 1.5						1	ug/l				
11B. Bis (*2-Chloro-ethyl*) Ether (111-44-4)			X	< 1.5						1	ug/l				
12B. Bis (*2-Chloroisopropyl*) Ether (102-80-1)			X	< 1.5						1	ug/l				
13B. Bis (*2-Ethyl-hexyl*) Phthalate (117-81-7)			X	< 1.2						1	ug/l				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)			X	< 1.5						1	ug/l				
15B. Butyl Benzyl Phthalate (85-68-7)			X	< 1.4						1	ug/l				
16B. 2-Chloro-naphthalene (91-58-7)			X	< 1.5						1	ug/l				
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X	< 1.4						1	ug/l				
18B. Chrysene (218-01-9)			X	< 1.4						1	ug/l				
19B. Dibenzo (*a,h*) Anthracene (53-70-3)			X	< 1.6						1	ug/l				
20B. 1,2-Dichloro-benzene (95-50-1)			X	< 1.3						1	ug/l				
21B. 1,3-Di-chloro-benzene (541-73-1)			X	< 1.4						1	ug/l				

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (*continued*)															
22B. 1,4-Dichlorobenzene (106-46-7)			X	<1.4						1	ug/l				
23B. 3,3-Dichlorobenzidine (91-94-1)			X	<1.4						1	ug/l				
24B. Diethyl Phthalate (84-66-2)			X	<1.4						1	ug/l				
25B. Dimethyl Phthalate (131 -11-3)			X	<1.2						1	ug/l				
26B. Di-N-Butyl Phthalate (84-74-2)			X	<1.3						1	ug/l				
27B. 2,4-Dinitrotoluene (121-14-2)			X	<1.6						1	ug/l				
28B. 2,6-Dinitrotoluene (606-20-2)			X	<1.4						1	ug/l				
29B. Di-N-Octyl Phthalate (117-84-0)			X	<1.7						1	ug/l				
30B. 1,2-Diphenylhydrazine (*as Azobenzene*) (122-66-7)			X	<1.5						1	ug/l				
31B. Fluoranthene (206-44-0)			X	<1.5						1	ug/l				
32B. Fluorene (86-73-7)			X	<1.7						1	ug/l				
33B. Hexachlorobenzene (118-74-1)			X	<1.4						1	ug/l				
34B. Hexachlorobutadiene (87-68-3)			X	<1.6						1	ug/l				
35B. Hexachlorocyclopentadiene (77-47-4)			X	<1.4						1	ug/l				
36B Hexachloroethane (67-72-1)			X	<1.3						1	ug/l				
37B. Indeno (*1,2,3-cd*) Pyrene (193-39-5)			X	<1.4						1	ug/l				
38B. Isophorone (78-59-1)			X	<1.6						1	ug/l				
39B. Naphthalene (91-20-3)			X	<1.5						1	ug/l				
40B. Nitrobenzene (98-95-3)			X	<1.4						1	ug/l				
41B. N-Nitrosodimethylamine (62-75-9)			X	<5.6						1	ug/l				
42B. N-Nitrosodi-N-Propylamine (621-64-7)			X	<1.7						1	ug/l				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (*continued*)															
43B. N-Nitrosodiphenylamine (86-30-6)			X	< 1.9						1	ug/l				
44B. Phenanthrene (85-01-8)			X	< 1.5						1	ug/l				
45B. Pyrene (129-00-0)			X	< 1.5						1	ug/l				
46B. 1,2,4-Trichlorobenzene (120-82-1)			X	< 1.5						1	ug/l				
GC/MS FRACTION – PESTICIDES															
1P. Aldrin (309-00-2)			X	< 0.014						1	ug/l				
2P. α-BHC (319-84-6)			X	< 0.011						1	ug/l				
3P. β-BHC (319-85-7)			X	< 0.015						1	ug/l				
4P. γ-BHC (58-89-9)			X	< 0.0093						1	ug/l				
5P. δ-BHC (319-86-8)			X	< 0.013						1	ug/l				
6P. Chlordane (57-74-9)			X	< 0.035						1	ug/l				
7P. 4,4'-DDT (50-29-3)			X	< 0.0075						1	ug/l				
8P. 4,4'-DDE (72-55-9)			X	< 0.0086						1	ug/l				
9P. 4,4'-DDD (72-54-8)			X	< 0.0088						1	ug/l				
10P. Dieldrin (60-57-1)			X	< 0.0074						1	ug/l				
11P. α-Enosulfan (115-29-7)			X	< 0.0050						1	ug/l				
12P. β-Endosulfan (115-29-7)			X	< 0.0061						1	ug/l				
13P. Endosulfan Sulfate (1031-07-8)			X	< 0.0085						1	ug/l				
14P. Endrin (72-20-8)			X	< 0.0085						1	ug/l				
15P. Endrin Aldehyde (7421-93-4)			X	< 0.0098						1	ug/l				
16P. Heptachlor (76-44-8)			X	< 0.013						1	ug/l				

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)	OUTFALL NUMBER
SC0040479	003

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICIDES (*continued*)															
17P. Heptachlor Epoxide (1024-57-3)			X	< 0.0084						1	ug/l				
18P. PCB-1242 (53469-21-9)			X	< 0.010						1	ug/l				
19P. PCB-1254 (11097-69-1)			X	< 0.099						1	ug/l				
20P. PCB-1221 (11104-28-2)			X	< 0.12						1	ug/l				
21P. PCB-1232 (11141-16-5)			X	< 0.062						1	ug/l				
22P. PCB-1248 (12672-29-6)			X	< 0.14						1	ug/l				
23P. PCB-1260 (11096-82-5)			X	< 0.085						1	ug/l				
24P. PCB-1016 (12674-11-2)			X	< 0.11						1	ug/l				
25P. Toxaphene (8001-35-2)			X	< 0.16						1	ug/l				

Introduction

Haile Gold Mine, Inc. (HGM) has initiated new mining infrastructure consisting of mine pits, access and haul roads, mine overburden storage facilities, ore processing facilities, a tailing storage facility, and wastewater management ponds. Waste Water Treatment Plant (WWTP) treats site contact water throughout the life of mine and through site reclamation as necessary to ensure compliance with the NPDES Permit.

Operation and Maintenance

The WWTP is sized for a design flow of 1,200 gallons per minute (GPM) or 1.728 million gallons per day (MGD) at 95% efficiency, with a peak capacity of 1,400 gpm or 2.016 MGD. Treated effluent is discharged through the NPDES permitted Outfall 003. The WWTP is operated on an as-required basis. If the contact water flow from the mine and potentially acid generation (PAG) ponds are low, the WWTP may be operated at rates as low as 400gpm and there may be days that the plant does not operate at all.

The flow can be increase to 1400 gallons per minute only in the event of high rainfall events where the water would have minimal contact time and would contain very low metals. With the lower metals, the amount of sludge would not increase above the predicted amount at 1200 gpm.

All equipment is on a defined preventive maintenance program. All pumps are redundant and the plant layout and design facilitate ease of maintenance.

Treatment Process

Contact water is pumped from the mine site to a 19 million gallon pond that is near the WWTP. When required, water is pumped from the pond to the WWTP. The WWTP utilizes a 2-stage metals precipitation process to remove insoluble metals from the water. The 1st stage brings the contact water to pH 7 using hydrated lime (CaO) as a coagulant. Additional coagulant and flocculant are also added to the water and vigorously mixed in a tank. The water then flows via gravity through a Mutiflo™ clarifier settle the metal hydroxide sludge from the water. A portion of the sludge from the clarifier underflow is re-circulated back to the 1st stage reactor tank to act as a seed for flocculation in the 1st stage clarifier. The remainder of the sludge from the clarifier is pumped to the sludge management system as described below.

The clarified water is pumped to the second stage reactor tank where lime is added to raise the pH to approximately 10 SU. A coagulant may be added to this step if needed. Additional clarifier reagents may be introduced just prior to the water entering the 2nd stage lamella clarifier. Metal hydroxide and sulfide compounds that become non-soluble at pH 10, settle out of the water. The metal hydroxide and sulfide sludge collects in the clarifier's bottom. A portion of this sludge is re-circulated back to the 2nd stage reactor tank to act as a seed for flocculation in the 2nd stage clarifier. The remainder of the 2nd stage sludge is pumped to the sludge management system described below.

The 2nd stage clarified water is pumped to multi-media filters for polishing, then to a reactor tank where sulfuric acid is added to lower the pH to discharge standards. Water passes over a V-Notch weir prior to being pumped to the permitted NPDES Outfall 003 for discharge.

Sludge Management

Contact water is routed to the WWTP from runoff water and drainage from Johnny's PAG overburden storage facility, stormwater from the crusher area, and from stormwater and groundwater entering mine pits during mining operations.

The solids in the metal sludge are settle able, and oil and grease is not present in measurable quantities. Sludge from the 1st stage clarifier underflow and the 2nd stage clarifier underflow, that is not recycled, is pumped to the Haile Gold Mine Process Plant to extract any residual gold and silver.

Limits on Effluent from Treatment System for Contact Waters: Metals & Cyanide

NPDES Permit No. SC0040479, dated July 10, 2013

Constituent	Monthly Average (µg/L)	Daily Maximum (µg/L)	Sample Frequency	Sample Type	Controlling Basis-Average	Controlling Basis-Maximum
Arsenic, total	10.0	14.6	1 / week	24-hr. Composite	Aquatic life	Aquatic life
Cadmium, total	2.4	28.7	1 / week	24-hr. Composite	Aquatic life	Aquatic life
Copper, total	94.9	160.8	1 / week	24-hr. Composite	Aquatic life	Aquatic life
Lead, total	49.9	600.0	1 / week	24-hr. Composite	Aquatic life	Aquatic life
Mercury, total	0.051	0.074	1 / week	Grab	Human Heath - Organism	Human Heath - Organism
Selenium, total	5.0	20.0	1 / week	24-hr. Composite	Aquatic life	Aquatic life
Thallium, total	0.47	0.69	1 / week	24-hr. Composite	Human Heath-Organism	Human Heath - Organism
Zinc, total	750	1500	1 / week	24-hr. Composite	Aquatic life	Aquatic life
Cyanide, total	140	204	1 / week	Grab	Aquatic life	Aquatic life
Cyanide, free	5.2	22.0	1 / week	Grab	Aquatic life	Aquatic life
Hydrogen Sulfide (H_2S)	2.0	4.0	1 / week	Calculation	Aquatic life	Aquatic life
pH	6.0 to 8.5	6.0 to 8.5	1 / week	Continuous	Aquatic life	Aquatic life
TSS (mg/l)	20	30	1 / week	24-hr. Composite	Aquatic life	Aquatic life
Whole Effluent Toxicity (WET)	25%	40%	1 / week	Grab	Aquatic life	Aquatic life

Assumptions:

- Average effluent flow of 1.728 MGD (1,200 gpm)
- Effluent hardness of 100 mg/L as $CaC0_3$ as a grab sample
- Average results calculated from four (4) samples/month

Reported To: Haile Gold Mine
Scott McDaniel
6911 Snowy Owl Road
Kershaw, SC 29067

48 HOUR ACUTE BIOASSAY WITH *CERIODAPHNIA DUBIA* PASS/FAIL
(EPA METHOD 2002.0 WITH SC MODIFICATIONS , with Non-compliance Modifications)

REPORTED BY: Laura A. Davis

Laura Shealy Davis - Principal Scientist - 803-582-7996

ISSUE DATE: 5/19/2017
SAMPLE LOCATION: Effluent
TEST CONCENTRATION: 100%

Test Start Date/Time: **5/13/2017 1721** ***Test End Date/Time:*** **5/15/2017 1633**

SAMPLE ID	COLLECTION DATE/TIME	DATE/TIME RECEIVED @ TOX LAB
G0664	5/12/2017 0630	5/13/2017 1034

SUMMARY OF SURVIVAL

TREATMENT (% EFFLUENT)	# ADULTS	# DEAD	TEST RESULTS PASS/FAIL
CONTROL	20	20	PASS
100.00	20	20	

FISHER'S STATISTIC (P value) = 1.0 (PASS at >= 0.05)

ALL ANALYSES FOR THIS TEST WERE CONDUCTED AT:

SHEALY CONSULTING, LLC
343 W. Columbia Avenue
Batesburg-Leesville, SC 29006
SC DHEC No. 32566
NELAC No. E87630

www.shealyconsulting.net

SHEALY CONSULTING, LLC
343 W. Columbia Avenue
Batesburg-Leesville, SC 29006

SC DHEC No. 32566 NELAC No. E87630

Case Narrative

Lot Number : G0664

This Report of Analysis contains the toxicity result(s) only for the sample(s) listed on the report cover sheet and this Case Narrative. The sample receipt date is documented on the report cover sheet as well as the sample usage dates.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Consulting, LLC ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified below.

The test method followed guidance provided in EPA 821-R-02-012, "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms". Dilution water consisted of moderately hard reconstituted water (MHRW) prepared as described in the method.

A *C. dubia* acute reference toxicant test was conducted 4/26/2017 using sodium chloride. The resulting LC50 of 2549.00mg/L was in-range with Shealy's control chart lower limit of 1710.00mg/L and upper limit of 3393.00mg/L.

If you have any questions regarding this report, please contact the Toxicity Technical Director listed on the cover page at (803) 582-7996 x 3, or at bthompson@shealyconsulting.net.

Qualifiers

This is a non-compliance test to be used as process control data only. One or more of the procedures required by the EPA toxicity test method were modified. This test may not be used to satisfy compliance monitoring requirements.

Ceriodaphnia 48-h Acute Survival Test — **Shealy Consulting, LLC**

Analysis ID:	04-0841-9989	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.8.7
Analyzed:	18 May-17 11:20	**Analysis:**	Single 2x2 Contingency Table	**Official Results:**	Yes
Batch ID:	09-0468-5412	**Test Type:**	Survival (48h)	**Analyst:**	
Start Date:	13 May-17 17:21	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	15 May-17 16:33	**Species:**	Ceriodaphnia dubia	**Brine:**	
Duration:	47h	**Source:**	In-House Culture	**Age:**	<24H

Data Transform	Zeta	Alt Hyp	Trials	Seed	Test Result
Untransformed		C > T	NA	NA	Passes 48h survival rate

Fisher Exact Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Dilution Water		100	1	1.0000	Exact	Non-Significant Effect

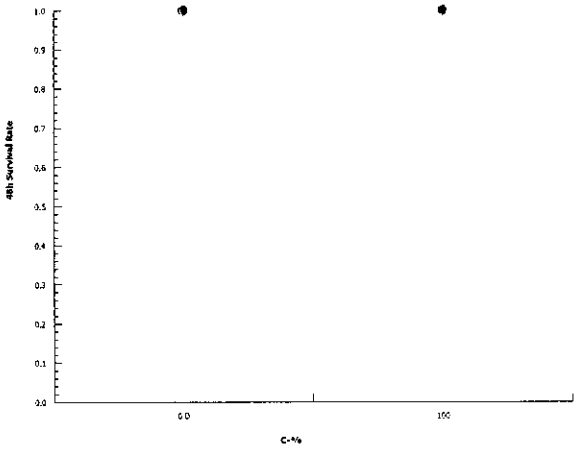
Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Dilution Water	20	0	20	1	0	0.0%
100		20	0	20	1	0	0.0%

48h Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	1
100		1	1	1	1

Graphics



SHEALY CONSULTING, LLC

CHAIN OF CUSTODY RECORD

343 W. Columbia Avenue • Batesburg-Leesville, SC 29006
Telephone No. (803) 808-3113
www.shealyconsulting.net

№ 3522

Page 1 of 1

Client: Kemble Gold Mine Inc
Address: 6511 Stanley Gold Rd
City: Kershaw | State: SC | Zip Code: 29067
Project Name: DUPREE
Sampler Name: Linda Keeney / Mike Kirby

Sample ID / Description (Containers for each sample may be combined on one line.)	Composite or Grab	Matrix	Sampler Start Date	Sampler Start Time	Sampler End Date	Sampler End Time	Requested Analysis: Bottle Size	Requested Analysis: # of Bottle	Requested Analysis: Preservative Codes	Shealy Lab ID
003 Outfall	C		5-11-17	2:30 PM	5-12-17	6:30 AM	G/P	1	1	G0664

Preservaive: 1. Unpres. 5. HCL; 2. NaOH/ZnA 6. Na. Thio.; 3. H2SO4 7. NaOH; 4. HNO3

PK 12:35 PM

	Date	Time		Date	Time
1. Relinquished by: Linda Keeney	5-12-17	1130	1. Received by	5-12-17	1235
2. Relinquished by	5-12-17	1831	2. Received by	5-12-17	1831
3. Relinquished by SCSA	5/13/17	1034	3. Received by TH	5/13/17	1034
4. Relinquished by	Date	Time	4. Received by	Date	Time

☐ Continuation of Custody on attached sheet

☐ Received on ice (Circle) Yes No Ice Pack SESI Receipt Temp ___ C SC Receipt Temp 3.5c

DISTRIBUTION: WHITE - Return to laboratory with Sample(s); CANARY - Field/Client Copy

Document Number: SCF-TS-248 Effective Date: 2/1/2016

Shealy Consulting, LLC

48 HOUR ACUTE BIOASSAY WITH *CERIODAPHNIA DUBIA* PASS/FAIL WITH SC MODIFICATIONS
EPA 821-R-02-012 (METHOD 2002.0)

Client	Haile Gold Mine	**Test Conc**	%
Sample location	Effluent		
Test start (date/time)	5/13/2017 17:21	**Test end (date/time)**	5/15/2017 16:33

Sample Information and Test Conditions

Sample ID	Collection Date/Time	When Used	Date/Time Received at Tox Lab	Test for Compliance Monitoring?
G0664	5/12/2017 06:30	5/13/2017, 5/14/2017, 5/15/2017	5/13/2017 10:34	True

Incubator # IC-2 • **MHRW #** HW-076 • **YCT #** YC-45 • **Algae #** LG-378
Date/time neonates released 5/13/2017 09:50 - 5/13/2017 15:10 **Test organism source** SC537

Were neonates fed at least 2 hours before testing with 0.1/0.1 mL of Algae/YCT? No
Feeding date & time

Day	Date / Time	Sample	Aerated (Y/N)? How long?	Analyst
start	5/13/2017 17:21	G0664	No	T.Brand
1	5/14/2017 17:08	G0664	No	T.Brand
2	5/15/2017 16:32	G0664	No	C. Long
3	5/19/2017 08:59		No	Sys

Test Solution Volume: >= 15 mL
Test Chamber Volumne: 30 mL
Test Organism Age: < 24 HRS

Data Validation

Level I Review	Check
Mortality <= 10%?	True
Data input requirements met?	True
All sample holding times met?	True
Sample information correct (see COC)?	True
Temperatures in range?	True
Level I Review completed by	A. Shealy

Symbol Key

✱ - missing, lost or damaged	♀ - dead	♂ - male	% - split brood	× - dead neonates	🗑 - do not count

Daily Results

CONTROL

Cup ID	1	2	3	4
Day	Replicates			
start	5	5	5	5
1	5	5	5	5
2	5	5	5	5
3	0	0	0	0

48h mortality: 0 % Total mortality: 100 %

TREATMENT 1: 100%

Cup ID	1	2	3	4
Day	Replicates			
start	5	5	5	5
1	5	5	5	5
2	5	5	5	5
3	0	0	0	0

48h mortality: 0 % Total mortality: 100 %

Water Chemistry Daily Results

CONTROL

Day	Temp (°C) new	D.O. (mg/l) old	D.O. (mg/l) new	pH (SU) old	pH (SU) new	Analyst
0	26	[illegible]	8.1	[illegible]	7.5	T.Brand
1	25.4	7.4	[illegible]	8	[illegible]	T.Brand
2	24.8	7.6	[illegible]	7.7	[illegible]	C. Long
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Sys

TREATMENT 1: 100%

Day	Temp (°C) new	D.O. (mg/l) old	D.O. (mg/l) new	pH (SU) old	pH (SU) new	Analyst
0	26	[illegible]	8.3	[illegible]	6.8	T.Brand
1	25.4	7.5	[illegible]	7.7	[illegible]	T.Brand
2	25.3	7.6	[illegible]	7.8	[illegible]	C. Long
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Sys

DO Meter # DO-06E1533 pH Meter # PH-120200067017, PH-132612567033 Thermometer # TH-05328

Please print or type in the unsha

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL — EPA

LABEL ITEMS

I. EPA I.D. NUMBER
III. FACILITY NAME
V. FACILITY MAILING ADDRESS
VI. FACILITY LOCATION

Scott McDaniel
HS&E Manager

OCEANAGOLD
HAILE OPERATION

OceanaGold (Haile Operation)
6911 Snowy Owl Road
Kershaw, SC 29067
T: +1 803 475 2943 M: +1 803 577 3380
E: scott.mcdaniel@oceanagold.com W: www.oceanagold.com

I. EPA I.D. NUMBER			
S		T/A	C
F	SC 0040479		D
1	2 — 13	14	15

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)		X	
	16	17	18		19	20	21
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	X			D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)	X		
	22	23	24		25	26	27
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)		X		F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)			
	28	29	30		31	32	33
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
	34	35	36		37	38	39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)	X		
	40	41	42		43	44	45

III. NAME OF FACILITY

C		
1	SKIP	Haile Gold Mine
15	16 – 29	30 — 69

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
C 2 — McDaniel, W. Scott	(803) 475-1220
15 — 16 — 45	46 — 48 — 49 — 51 — 52- — 55

V. FACILTY MAILING ADDRESS

A. STREET OR P.O. BOX	
C 3 — 6911 Snowy Owl Road	
15 — 16 — 45	

B. CITY OR TOWN	C. STATE	D. ZIP CODE
C 4 — Kershaw	SC	29067
15 — 16 — 40	41 — 42	47 — 51

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER	
C 5 — 6911 Snowy Owl Road	
15 — 16 — 45	

B. COUNTY NAME	
Lancaster	
46 — 70	

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
C 6 — Kershaw	SC	29067	
15 — 16 — 40	41 — 42	47 — 51	52 — 54

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST	B. SECOND
1041 *(specify)* Mining - Gold Bearing Ores	1044 *(specify)* Mining - Silver Bearing Ores
C. THIRD	**D. FOURTH**
(specify)	*(specify)*

VIII. OPERATOR INFORMATION

A. NAME: Haile Gold Mine

B. Is the name listed in Item VIII-A also the owner? ☑ YES ☐ NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

M — *(specify)* Traded on Toronto Stock Market (OGC)

D. PHONE *(area code & no.)*: A (803) 475-1220

E. STREET OR P.O. BOX: 6911 Snowy Owl Road

F. CITY OR TOWN: Kershaw

G. STATE: SC

H. ZIP CODE: 29067

IX. INDIAN LAND: Is the facility located on Indian lands? ☐ YES ☑ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*	D. PSD *(Air Emissions from Proposed Sources)*
N SC 0040479	P 1460-0070-CA
B. UIC *(Underground Injection of Fluids)*	**E. OTHER *(specify)***
U	I-000601 *(specify)* Mine Permit
C. RCRA *(Hazardous Wastes)*	**E. OTHER *(specify)***
R SCD987596806	SAC_1992_24122_4IA *(specify)* Army Corp of Engineers 404 Permit

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

Haile Gold Mine is an Open Pit Mining operation with a Crushing, Grinding, Flotation and CIL extraction Process Plant. Gold is extracted from eight open pits at a rate of approximately 70,000 tons a day from an ore body that has a grade of approximately 2.25 g/ton gold. The Process Plant processes the ore through a crishing, grinding operation and pours gold into dore bars that are shipped to an independent refiner.

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
W. Scott McDaniel		05/16/2018

COMMENTS FOR OFFICIAL USE ONLY

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

BUREAU OF WATER
SLUDGE DISPOSAL SUPPLEMENT FOR NPDES AND ND PERMIT APPLICATIONS

Facility Name: HAILE GOLD MINE

Permit Number: SC00 40479 (leave blank for a new facility)

or ND00_____

Please check your proposed or current sludge disposal procedure:

I. Existing Facilities:

___ Lagoon or other facility with no routine sludge disposal. Please attach a letter that addresses the approximate schedule for sludge removal and address the anticipated disposal method (note that the proposed sludge disposal method must be approved by the Department prior to initiation).

___ Sludge disposal at another wastewater treatment facility. Attached is a recent letter of acceptance dated_____. This letter must include the NPDES or ND number of the treatment facility accepting the sludge for disposal. If no previous SCDHEC approval has been granted on the disposal method, then please include a detailed report on the existing sludge disposal method. See the attached requirements for Sludge Disposal Report A. If a previous SCDHEC approval has been granted, then include a recent analysis that shows the non-hazardous nature of the sludge or a signed statement that the sludge characteristics have not changes since the last analysis.

___ Sludge disposal at a landfill. If the landfill is SWAIP (special waste) approved, an recent acceptance letter from the landfill is acceptable. If the landfill is not SWAIP approved, attached is SCDHEC Solid and Hazardous Waste approval dated _____, or other SCDHEC approval dated _____. If no previous approval has been granted on the disposal method, then please include a detailed report on the existing sludge disposal method. See the attached requirements for Sludge Disposal Report B.

✓ Sludge disposal by Beneficial Use of Sludge. Attached is SCDHEC approval letter or program approval dated Oct 7, 2013. If no previous approval has been granted on the disposal method, then please include a detailed report on the existing sludge disposal method. See the attached requirements for Sludge Disposal Report C.

05/10/2018

II. Proposed Facilities:

___ Lagoon or other facility with no routine sludge disposal. Please attach a letter that addresses the approximate schedule for sludge removal and address the anticipated disposal method (note that the proposed sludge disposal method must be approved by the Department prior to initiation).

___ Sludge disposal at another wastewater treatment facility. Please include a detailed report on the proposed sludge disposal method. See the attached requirements for Sludge Disposal Report A.

___ Sludge disposal at a landfill. Please include a detailed report on the proposed sludge disposal method. See the attached requirements for Sludge Disposal Report B.

___ Sludge disposal by Beneficial Use. Please include a detailed report on the proposed sludge disposal method. See the attached requirements for Sludge Disposal Report C.

Send this form and the appropriate disposal report (if applicable) with your NPDES or ND permit application.

ALSO SEE ATTACHED INSTRUCTIONS

D H E C
PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment

CERTIFIED MAIL/RETURN RECEIPT REQUESTED

91 7199 9991 7031 3716 7638

October 07, 2013

DAVID B THOMAS, VICE PRESIDENT AND GENERAL MANAGER
HAILE GOLD MINE INC
PO BOX 128
KERSHAW, SC 29067

Re: Department Decision
HAILE GOLD MINE
NPDES Permit # SC0040479
Lancaster County

Dear Mr. Thomas:

Enclosed is the National Pollutant Discharge Elimination system (NPDES) Permit for the above referenced facility.

In order that you understand your responsibilities included in the provisions of this permit, particular attention should be given to the following sections:

1. PART III: This section contains all listings of effluent characteristics, discharge limitations, and groundwater, soil and sludge monitoring.
2. PART II.L.4: This section contains your responsibilities for reporting monitoring results. Preprinted Discharge Monitoring Report (DMR) forms will be provided at a later date by DHEC for reporting monitoring results.
3. PART II.L.3: This section describes the specific requirements for this permit to be transferred to another party.
4. PART II.E: This section contains responsibilities for the proper operation and maintenance of your facility.
5. PART V: This section contains all the special requirements relative to your permit. Such items in this section include the certified operator required to operate your wastewater treatment plant, the day of the week on which monitoring shall occur, sludge disposal requirements, and whole effluent toxicity requirements.

Please note the effective date on the permit and see the enclosed South Carolina Board of Health and Environmental Control Guide to Board Review.

If you have any questions about the technical aspects of this permit, please contact Byron M Amick at 803-898-4236. Information pertaining to adjudicatory matters may be obtained by contacting the Legal Office, SCDHEC, 2600 Bull Street, Columbia, SC 29201, or by calling them at (803) 898-3350.

Sincerely,

Crystal D. Rippy, Manager
Industrial Wastewater Permitting Section

Enclosure

e-mail: EPA
Harry L Mathis, Lancaster EQC Office, MIDLANDS REGION BEHS LANCASTER
Marc McKenna, BOW/WPC Enforcement
Brian Wisnewski, BOW
Chuck Gorman, BOW
David Graves, BOW
CATAWBA EQC LAB
Byron M Amick, BOW

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
BUREAU OF WATER

LOCATION SUPPLEMENT FOR ND AND NPDES PERMIT APPLICATIONS

FACILITY: Haile Gold Mine - SC 0040479 DATE: 05/16/2018

ITEM 1: Please give a short description of the plant location, if the address is not a specific location. Example: Plant is located at the interchange of Interstate 26 and U.S. Highway #1.

Haile Gold Mine is located in Lancaster County, six mile north east of Kershaw, South Carolina. The Waste Water Treatment Plant is located within the Process Plant at 6911 Snowy Owl Road. The discharge point is Outfall 003, located within the Mine Permit Boundary above the north fork crossing of Haile Gold Mine Creek.

ITEM 2: Please give a description of the location of the discharge point into the receiving stream using some landmark as a reference point, i.e., bridge, stream, road junction, the plant itself, etc. Give the direction and the distance in feet from the reference point. Example: Discharge #001 is into Johnny Creek approximately 300 feet directly behind the plant. Discharge #002 is into Doris Creek 150 feet downstream from U.S. Highway #30 bridge.

Discharge effluent from Outfall 003 is into the north fork of Haile Gold Mine Creek, just below the lower pond on Property Parcel 135-00-016.00. This parcel is owned by Haile Gold Mine and Outfall 003 is 75 feet within the Haile Gold Mine Boundary.

ITEM 3: Please locate the discharge on a U.S. Geological Survey 7 1/2 minute quad sheet (or a 15 minute quad if a 7 1/2 quad is not available for the area). The entire quad sheet need not be submitted. An 8 1/2 by 11 inch photocopy of the applicable portion of the map is sufficient. The quad sheet name must be provided on the copy submitted to the Department. USGS Maps are available at the SC Dept. Of Natural Resources/Map Division, 2221 Devine Street, Suite 222, Columbia, SC 29205. Phone number is 734-9108.

RETURN TO: SCDHEC
Bureau of Water
NPDES Administration
2600 Bull Street
Columbia, SC 29201

KERSHAW QUADRANGLE
SOUTH CAROLINA
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

KERSHAW, S. C.
34080-E5-TF-024
1969
DMA 4953 II SE-SERIES V846

Mapped, edited, and published by the Geological Survey
Control by USGS, USC&GS, and South Carolina Geodetic Survey
Topography by photogrammetric methods from aerial photographs taken 1964. Field checked 1969
Polyconic projection. 10,000-foot grid ticks based on South Carolina coordinate system, north zone. 1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue. North American Datum. To place on the predicted North American Datum 1983 move the projection lines 11 meters south and 18 meters west as shown by dashed corner ticks
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information not field checked
Red tint indicates area in which only landmark buildings are shown

ROAD CLASSIFICATION
Primary highway, all weather, hard surface
Secondary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Unimproved road, fair or dry weather
U.S. Route
State Route

QUADRANGLE LOCATION

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, FEDERAL CENTER
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

NPDES APPLICATION SUPPLEMENT

Mixing Zone Request for Surface Water Discharges

NPDES #: SC 0040479

Facility Name: HAILE GOLD MINE OUTFALL 003

County: LANCASTER COUNTY

Are you requesting a mixing zone for whole effluent toxicity (WET) in accordance with the back of this form?

☑ **No**. No further information is needed. Submit this form. If WET testing is required, a chronic test at 100% will be required, unless the IWC is at least 80%. Proposed IWC _____%

☐ **Yes**. Check one of the boxes below and submit this form with the appropriate information.

☐ Check this block if you are proposing to perform or have performed a mixing zone demonstration to determine the appropriate zone of initial dilution (ZID) and/or mixing zone size. Complete the remainder of this form and submit a mixing zone demonstration plan as described on the back of this form. The Department recommends the demonstration plan be approved prior to implementation of any demonstration work.

☐ Check this block if you are requesting a mixing zone by providing limited information such as a mixing model like CORMIX to determine mixing in accordance with suggested zone of initial dilution (ZID) and/or mixing zone sizes. Complete the remainder of this form, as applicable, and submit the CORMIX Supplement and modeling results (or other model assumptions, inputs and results).

What is the proposed ZID size (in meters)? Length: _____m Width:_____m

What is the proposed acute WET test concentration? _____%

What is the proposed mixing zone size (in meters)? Length: _____m Width:_____m

What is the proposed chronic WET test concentration? _____%

Printed Name: W SCOTT MCDANIEL **Firm:** HAILE GOLD MINE

Signature: [signature] **Date:** 16 MAY 2018

2. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number **003**: mine drainage[3], stormwater falling on the treatment facility[4] and process water[5].

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Discharge Limitations				Monitoring Requirements	
	Mass		Concentration			
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Duration of Discharge[2]	--	MR[1], days	--	--	1/month	calculate
Flow, effluent	MR[1], MGD	MR[1], MGD	--	--	daily	continuous
pH[6]	Minimum[7] 6.0 su, Maximum[7] 8.5 su				daily	continuous
Total Suspended Solids (TSS)	--	--	20 mg/l	30 mg/l	1/week	24-hr composite[9]
Cyanide, total[10]	--	--	140 µg/l	204 µg/l	1/week	grab
Cyanide, free[8,10]	--	--	5.2 µg/l	22 µg/l	1/week	grab
Sulfide (as S)[8]	--	--	MR[1], mg/l	MR[1], mg/l	1/week	grab
Hydrogen Sulfide Un-Ionized (H_2S)	--	--	2.0 µg/l	4.0 µg/l	1/week	calculation
Hardness (as $CaCO_3$)	--	--	MR[1], mg/l	MR[1], mg/l	1/week	grab
Arsenic, total	--	--	10.0 µg/l	14.6 µg/l	1/week	24-hr composite[9]
Cadmium, total	--	--	2.4 µg/l	28.7 µg/l	1/week	24-hr composite[9]
Copper, total[8]	--	--	94.9 µg/l	160.8 µg/l	1/week	24-hr composite[9]
Lead, total	--	--	49.9 µg/l	600.0 µg/l	1/week	24-hr composite[9]
Thallium, total[8]	--	--	0.47 µg/l	0.69 µg/l	1/week	24-hr composite[9]
Zinc, total	--	--	750 µg/l	1500 µg/l	1/week	24-hr composite[9]
Selenium, total[8]	--	--	5.0 µg/l	20.0 µg/l	1/week	24-hr composite[9]
Mercury, total[8]	--	--	51.0 ng/l	74.5 ng/l	1/week	grab

[1]MR: Monitor and Report
[2]Report the number of days that discharge occurs each month.
[3]See Part I.X.
[4]See Part V.A.3.(a).
[5]See Part V.A.3.(b).
[6]See Part V.A.4.
[7]See Part I.U.
[8]See Part V.A.5.
[9]Composite samples shall be collected as specified in Part I. I. 1, 2, or 3.
[10]These parameters are only required to be monitored when a discharge described in Part V.A.3 (a) or (b) occurs.

a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after treatment at or near the discharge, but prior to mixing with the receiving waters.