



Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

October 30, 2014

David B Thomas
HAILE GOLD MINE INC
PO BOX 128
KERSHAW, SC 29067

Re: Construction Permit No. 19830-IW
HAILE GOLD MINE INC
MINE DRAINAGE AND CONTACT WATER TREATMENT PLANT
Lancaster County

Dear Mr. Thomas:

Enclosed is a SC Wastewater Construction Permit for the above referenced project. Construction is to be performed in accordance with this permit and supporting engineering report, plans, and specifications approved by this Office.

This system cannot be placed into operation until final approval is granted by the appropriate Bureau of Environmental Health Services (BEHS) Regional Office. Your Regional contact is Kristen L Jones, in the MIDLANDS REGION BEHS LANCASTER. This regional office should be notified when construction begins at the following address and phone number: 2475 DHEC RD, LANCASTER SC 29720, 803-285-7461.

Upon completion of any construction, a letter must be submitted to the BEHS Regional Office from the registered engineer certifying that the construction has been completed in accordance with the approved plans and specifications. The registered engineer must review and approve all minor changes prior to certification. These shall be documented in the submittal letter to the BEHS. An inspection may then be scheduled. The BEHS Regional Office will approve the system for operation upon successful completion of this project.

Sincerely,

Byron M Amick
Industrial Wastewater Permitting Section
Water Facilities Permitting Division

cc: Kristen L Jones, MIDLANDS REGION BEHS LANCASTER
Joshua Snider, M3 Engineering, 2051 W Sunset Rd, Ste 101, Tucson, AZ 85704
Johnny Pappas, Haile Gold Mince, Inc.
Scott McDaniel, Haile Gold Mine, Inc.
Chuck Gorman, Water Monitoring Assessment and Protection Division
Bruce Crawford, Water Monitoring Assessment and Protection Division
Marianna DePratter, Mining & Solid Waste Management
Board of Certification

Wastewater Construction Permit Bureau of Water



**PROJECT NAME: HAILE GOLD MINE INC
MINE DRAINAGE AND CONTACT WATER TREATMENT PLANT**

COUNTY: LANCASTER

**PERMISSION IS HEREBY GRANTED TO: HAILE GOLD MINE INC
7283 Haile Gold Mine Rd
Kershaw SC 29067**

for the construction of a new wastewater treatment plant in accordance with the construction plans, specifications, engineering report and the Construction Permit Application signed by Joshua Snider, Registered Professional Engineer, S.C. Registration Number: 30439.

PROJECT DESCRIPTION: The construction of a water collection and treatment system for the various mine drainage sources and contact waters to support the active mining of gold ore. For a complete description of the construction see Pages 2 - 4.

The effluent will be discharged to the North Fork of Haile Gold Mine Branch at a daily average rate of 1,728,000 gallons per day.


The effluent concentrations of those constituents the wastewater treatment system is designed to remove or reduce are contained in NPDES Permit #SC0040479.

TREATMENT PLANT CLASSIFICATION: Group III-Physical/Chemical

CONDITIONS: See Page 5.

In accepting this permit, the owner agrees to the admission of properly authorized persons at all reasonable hours for the purpose of sampling and inspection. This is a permit for construction only and does not constitute DHEC approval, temporary or otherwise, to place the system in operation. An Approval to Place in Operation is required and can be obtained following the completion of construction by contacting the LANCASTER EQC OFFICE at 803-285-7461. Additional permits may be required prior to construction (e.g., Stormwater).

PERMIT NUMBER:	19830-IW
ISSUANCE DATE:	October 30, 2014
EXPIRATION DATES:	October 29, 2016 (to begin construction) October 30, 2019 (to obtain Approval to Place in Operation)


Jeffrey P. deBessonnet, P.E., Director
Water Facilities Permitting Division

PROJECT DESCRIPTION

The wastewater collection and treatment system will consist of the following:

Source Water Collection:

- 1) Mine Sediment Ponds:
 - a. **Mill Zone Pond** will be constructed at the start of mining operations. This pond will have an operating capacity of approximately 407,000-gallons with a maximum capacity of approximately 570,000-gallons and will have two bays. The first bay (sediment bay) will have a 10^{-6} low permeable soil liner. The second bay (collection pond) will be designed for a 100-year, 24-hour storm event and will have a single 60-mil HDPE liner. One transfer pump designed for 3,000-gpm at 145-ft TDH, and approximately 9,600 LF of 16-inch HDPE pipe to transfer water to 19 Pond. A temporary sludge pump for occasional removal of build-up in the sediment fore-bay. An emergency overflow pipe will return water to the Mill Zone Pit.
 - b. **Snake Pond** will be constructed at the end of Mine Year 1 with the development of Snake Pit. This pond will an operating capacity of approximately 407,000-gallons with a maximum capacity of approximately 570,000-gallons and will have two bays. The first bay (sediment bay) will have a 10^{-6} low permeable soil liner. The second bay (collection pond) will be designed for a 100-year, 24-hour storm event and will have a single 60-mil HDPE liner. One transfer pump designed for 3,000-gpm at 145-ft TDH, and approximately 7,300 LF of 16-inch HDPE to transfer water to 19 Pond. A temporary sludge pump for occasional removal of build-up in the sediment fore-bay. An emergency overflow pipe will return water to the Snake Pit.
- 2) **Coarse Ore Stockpile Pond** will have an operating capacity of approximately 1,400,000-gallons with a maximum capacity of 1,760,000-gallons and will be constructed with a single 60-mil HDPE liner. One transfer pump designed for 150-gpm at 160-ft TDH, and approximately 1,800 LF of 4-inch HDPE pipe to transfer water to 19 Pond.
- 3) Johnny's PAG Collection Ponds:
 - a. **465 Pond** will be constructed at the start of mining in conjunction with Johnny's PAG Phase 1 (northern-phase) construction. This pond will have an operating capacity of approximately 20.3 million gallons with a maximum capacity of approximately 20.4 million gallons and will be constructed with a Leachate Collection and Removal System (LCRS) between a double 60-mil HDPE liner with leak detection. The LCRS is a gravel and pump collection system sandwiched between 60-mil HDPE primary and secondary liners. Two transfer pumps designed for 5,000-gpm at 158-ft TDH, and approximately 3,400 LF of 18-inch HDPE pipe to transfer water to 19 Pond.
 - b. **469 Pond** will be constructed along with Johnny's PAG Phase 2 (southern-phase) construction. It is anticipated to be constructed by 2019. This pond will have an operating capacity of approximately 12.3 million gallons with a maximum capacity of approximately 14.9 million gallon and will be constructed with a Leachate Collection and Removal System (LCRS) between a double 60-mil HDPE liner with leak detection. Two transfer pumps designed for 3,500-gpm at 165-ft TDH, and approximately 7,200 LF of 18-inch HDPE pipe to transfer water to 19 Pond.
- 4) All associated piping and appurtenances required to route the current Outfall 002 system sources to 19 Pond. The existing sources are T1 Pond, T2 Pond, Storm Pond, Hi-Preg Pond, Haile Pit, 188 drainage, Hilltop I Pit and the SRBR cells (the SRBR cells receives water from Chase Pad, Chase Pit and South Pad). Those sources not eliminated will be redirected to 19 Pond. Outfall 002 will be eliminated in Mining Year 1.

- 5) **19 Pond** will be constructed with a center septum to equally divide the pond into two operating cells with each cell having an operating capacity of approximately 9.9 million gallons with a maximum capacity of approximately 11.6 million gallons. This pond will be constructed with a Leachate Collection and Removal System (LCRS) between a double 60-mil HDPE liners with leak detection. Two transfer pumps designed for 1,200-gpm at 95-ft TDH, and approximately 250 LF of 16-inch HDPE pipe to transfer water to either the Mill or to the 1st Stage Reaction Tank at the head of the Treatment System.

Treatment System:

- 1) **1st Stage Reaction Tank:** an open top cylindrical 36,000-gallon FRP tank equipped with a 7.5-HP agitator and lime addition from the Lime Reaction Tanks (See item #2).
- 2) **Lime Reaction Tank:** an open top dished bottom 1,940-gallon FRP tank equipped with a 3-HP agitator and lime addition from the lime feed loop (See item #3).
- 3) **Lime Feed Loop:** Vendor Supplied Hydrated Lime is sent to the Lime Reaction Tank (See item #2) and the 2nd Stage Reaction Tank (See item #7) by two lime feed pumps designed for 250-gpm at 92-ft TDH.
- 4) **Multiflo Clarifier:** a package plant designed for a flow rate between of 400-gpm and 1,200-gpm with six mixing chambers and a clarification chamber and will be equipped with seven agitators (three with 1.5-HP motors, two with 1.0-HP motors, one with 0.5-HP motor and one with a 7.5-HP motor), a coagulant feed system with two coagulant distribution pumps designed for 2.9-gph at 101 psig, a flocculant feed system with a flocculant pump designed for 3.54-gph at 25 psig and a sludge handling system which can recycle the sludge back to the Lime Reaction Tank or send it to the Sludge Transfer Pump Box.
- 5) **1st Stage Clearwell Tank:** an open top, flat bottom cylindrical 6,000-gallon FRP tank.
- 6) **1st Stage Clearwell Transfer Station:** a pump skid with two transfer pumps designed for 1,140-gpm at 100-ft TDH
- 7) **2nd Stage Reaction Tank:** an open top cylindrical 36,000-gallon FRP tank equipped with a 3-HP agitator, lime addition from the lime feed loop (See item #3), a coagulant feed system with two coagulant distribution pumps designed for 3.2-gph at 58 psig and a metal precipitant feed system with two metal precipitant distribution pumps designed for 4.5-gph at 50 psig.
- 8) **Lamella Clarifier:** a Lamella clarifier unit designed for maximum flow rate of 1,200-gpm, with a 220-gallon flashmix chamber equipped with a 0.5-HP agitator, a 1,280-gallon flocculation chamber equipped with a 0.5-HP agitator and a flocculant feed system with a flocculant pump designed for 0.71-gph at 100 psi.
- 9) **Lamella Sludge Transfer Pumps:** a pump skid with two sludge transfer pumps designed for 50-gpm at 50-ft TDH which will send the sludge back to the 2nd Stage Reaction Tank or to the Sludge Transfer Pump Box.
- 10) **2nd Stage Clearwell Tank:** an open top, flat bottom cylindrical 6,000-gallon FRP tank.
- 11) **2nd Stage Clearwell Transfer Station:** a pump skid with two transfer pumps designed for 1,140-gpm at 100-ft TDH which will send the water to the Multimedia Filters.
- 12) **Multimedia Filters:** five units connected in a parallel free-standing arrangement, each unit uses multiple layers of granular media and has a design flow rate of 240-gpm.
- 13) **Multimedia Filter Backwash Tank:** an open top, flat bottom cylindrical 36,000-gallon FRP tank.
- 14) **Multimedia Filter Backwash Pumps:** a pump skid with two transfer pumps designed for 1,140-gpm at 100-ft TDH which will send the water to the Multimedia Filters.

- 15) **pH Neutralizations Tank:** an open top cylindrical 36,000-gallon FRP tank equipped with a 2.0-HP agitator and sulfuric acid feed system with two sulfuric acid distribution pumps designed for 1.9-gph at 145 psig.
- 16) **Treated Water Discharge Pump Box:** an open top rectangular 12,400-gallon carbon steel tank.
- 17) **Treated Water Discharge Pumps:** a pump skid with two transfer pumps designed for 1,200-gpm at 150-ft TDH, the water from these pumps will either be sent to the 1st Stage Reaction Tank at the head of the Treatment System, to 19 Pond, to the Mill Facility, or to discharge through Outfall 003.

Sludge Handling:

- 1) **Sludge Transfer Pump Box:** an open top cylindrical 565-gallon carbon steel tank with sloped bottom.
- 2) **Sludge Transfer Pumps:** a pump skid with two transfer pumps designed for 50-gpm at 92-ft TDH, the sludge will be pumped to either the Process Events Pond during preproduction or to the cyanide recovery thickener during production.
- 3) **Process Event Pond** is designed to hold approximately 1,500,000 gallons and will be constructed with a single 60-mil HDPE liner. During the preproduction period, until the TSF is constructed and Mill activities start, sludge generated in the treatment system described by this permit will be stored in the Process Events Pond. After the TSF is constructed, brine and sludge will be pumped through the Mill, rehydrated and then pumped to the TSF. The Process Event Pond will then be converted to its intended purpose in the Mill area. Once the conversion to the ponds intended purpose is complete this unit will no longer be part of the Water Treatment Plant, and will be solely covered by permitting under the Mine Operating Permit.

CONDITIONS

1. All waste oil and solid and hazardous waste shall be properly disposed of in accordance with the rules and regulations of the Bureau of Land and Waste Management of SCDHEC.
2. The permittee shall develop, implement, and maintain a Best Management Practice (BMP) Plan to identify and control the discharge of significant amounts of oils and the hazardous and toxic substances listed in 40 CFR, Part 117 and Tables II and III of Appendix D to 40 CFR, Part 122. The plan shall include a listing of all potential sources of spills or leaks of these materials, a method of containment, a description of training, inspection and security procedures, and emergency response measures to be taken in the event of a discharge to surface waters or plans and/or procedures which constitute an equivalent BMP. Sources of such discharges may include materials storage areas; in-plant transfer, process and materials handling areas; loading and unloading operations; plant site runoff; and sludge and disposal areas. The BMP plan shall be updated in accordance with good engineering practices, shall be documented in narrative form, and shall include any necessary plot plans, drawings, or maps. The BMP plan shall be maintained at the plant site and shall be available for inspection by Department personnel.
3. The operator shall monitor the Leak Collection and Recovery System (LCRS) in the 19 Pond, 465 Pond, and 469 Pond. The monitoring shall be conducted at least once per month for the following parameters: Total Volume, Field pH, Field Conductivity, Total Dissolved Solids (TDS), Aluminum, Copper, Iron, and Sulfate (SO₄). If there is insufficient volume available to test, this shall be noted in the report. LCRS results shall be reported in an annual report to the Department on or before January 28th of the following year. One original and one copy of the LCRS Report shall be submitted to:

SC Department of Health and Environmental Control
Bureau of Water / Water Pollution Control Division
Data and Records Management Section
2600 Bull Street
Columbia, South Carolina, 29201

The operator shall report monthly accumulated volume. The operator shall investigate and report instances where volume has exceeded the 12 month rolling average accumulation over 50 gallons per day; or the 3-month rolling average accumulation over 150 gallons per day. The report shall be in writing and submitted within seven (7) days of the event. Details of the investigation and any corrective actions shall be included in the annual LCRS report.

4. The operator will, with each routing change to Outfall 002 sources, provide the Water Facilities Permitting Division with the proposed routing changes for review and approval. Once the written approval is issued, the routing changes become part of this construction permit and the operator may proceed with the activities.
5. In accordance with Regulation 61-67, Standards for Wastewater Facility Construction, all wastewater treatment facilities shall be closed out within one hundred eighty (180) days when the facility is closed or the effluent disposal permit is inactivated, terminated or revoked, unless otherwise determined by the Department. Closure of wastewater treatment facilities necessitates the submittal of a closure plan and approval of the plan by the Department in accordance with R.61-82 prior to closure of any wastewater treatment unit(s).