

Michigan Department of Environment, Great Lakes, and Energy
Oil, Gas, and Minerals Division
Aquila Resources Back Forty Mining Permit Amendment Application
MP 01 2016
Proposed Decision
May 20, 2019

Basis for Proposed Decision

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has made a proposed decision to grant, with revised and additional conditions, a request submitted by Aquila Resources Inc. to amend Mining Permit MP 01 2016, issued under the provisions of Section 63205 (MCL 324 63205) of Part 632, Nonferrous Metallic Mineral Mining, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended (Part 632). The Mining Permit governs mining activities at the Back Forty Project located in Lake Township, Menominee County, including construction, operation, closure, postclosure monitoring, reclamation, and any necessary remediation of the mining and affected area. However, the Mining Permit shall not supersede or contravene any provisions in other applicable Parts of the NREPA.

In general, the Back Forty Project consists of the following basic operations: open pit mine with installation of a cutoff wall between the pit and the Menominee River, beneficiation of ore, tailings and waste rock disposal, and water treatment. Surface facilities consist of milling facilities; temporary storage for ore; water storage, treatment and discharge; temporary storage of overburden; and tailings and waste rock temporary storage and final disposal. The amendment application includes updates to the mining plan, treatment and containment plan, environmental monitoring plan, contingency plan, reclamation plan, financial assurance, and environmental impact assessment for the Back Forty Project as applicable to the following proposed changes to the project:

- Pit size reduction from 33.6 hectares (83 acres) to 31.3 hectares (77 acres), resulting in less ore, waste rock and tailings production.
- Change from separate storage areas for tailings disposal co-disposed with waste rock, to all thickened tailings managed in a double-lined Tailings Management Facility (TMF); waste rock temporarily stored in two separate lined facilities; TMF capped at closure; waste rock facilities removed, and areas reclaimed at closure.
- Overall facilities footprint has increased from 350 hectares (865 acres) to 440 hectares (1087 acres), primarily due to separating storage of waste rock and tailings.

- Update of the cut-off wall design and Menominee River bank stability assessment, including an increase in length of the cut-off wall from 400 meters (1312 feet) to 427 m (1401 feet).
- Change from hauling ore to an ore blending area with two stockpiles, to excavated ore hauled to one of seven lined storage piles or directly to the process plant.
- Change from seven years of mining to the pit excavated in six years with milling to continue for an additional year from the storage pile inventory.
- Contact Water Basin (CWB) increased capacity to account for larger contact area footprint; will be removed and area reclaimed at closure.
- Proposed an option to access the mining area from the east via proposed Eastern Corridor. Access from the west via the River Road remains an option from original mining plan.
- The refining was proposed as a propane unit but will now be operated as an electric arc furnace.
- Differences in the material handling and feed management for flotation and oxide circuit; the proposed change is to provide each circuit with an independent feed and crushing line as opposed to the common system in original plan.
- Change from no plans to store explosives on-site to on site storage of explosives
- Slight change in processing rates anticipated: flotation plant processing 800 tonnes per day (tpd) from 647 tpd; oxide plant processing 4,000 tpd from 4236 tpd.
- The new design of TMF and CWB now requires a Part 315 Dam Safety Permit.

In accordance with Rule 425.201(5) under Part 632, the department may impose terms and conditions in a mining permit, in addition to those specified in the application, that are necessary to implement the rules and statute. Based on the information available, the EGLE proposes that the following Special Permit Conditions be added to Mining Permit MP 01 2016 to meet the requirements for approval under Part 632 for the proposed changes:

- SPC K27A: Wetland monitoring as approved in accordance with Part 301/303 Inland Lakes and Streams and Wetlands Protection Permit WRP011785 shall continue during all phases of the project including operations, project closure, and post-closure. A copy of the approved wetland monitoring plan shall be provided to the Oil, Gas, and Minerals Division (OGMD).
- SPC L22A: The permittee shall provide for back up pumping capacity for LLCS3 and LLCS4 to mitigate the risk of overtopping the sumps.

- SPC O18A: Infrastructure constructed in the mining area as part of the power supply for the mine shall be removed once it is no longer necessary, unless the permittee enters into an agreement with another party in which a property end use is established that includes beneficial use of the electrical service.
- SPC K4(g)A: Sampling location AQ1 specified in Table 4-1 and Figure 4-2 of the MPAA/EMP shall be relocated downstream of the White Rapids Dam some distance to be out of the direct effects of a dam discharge, but upstream of the proposed mining activities.

The following are proposed amendments to existing General (GPC) and Special Permit Conditions (SPC):

- The following references in the Mining Permit shall be revised to the following:
 - a. Department of Environmental Quality (DEQ) to Department of Environment, Great Lakes, and Energy (EGLE)
 - b. Office of Oil, Gas, and Minerals (OOGM) to Oil, Gas, and Minerals Division (OGMD)
 - c. Tailings Waste Rock Management Facility (TWRMF) to Tailings Management Facility (TMF)
- SPC B1A: The permittee shall operate the Back Forty Project in conformance with all applicable NREPA permits: Michigan Air Use Permit – Permit to Install, National Pollutant Discharge Elimination System (NPDES) Permit, Wetland Permit, Dam Safety Permit, Notice of Coverage for storm water management during construction activities, Notice of Intent for storm water management during operations.
- SPC E3A: Ore Storage Areas shall meet the requirements for containment under R425.409(a). Concentrate storage shall be maintained to prevent leachate generation.
- SPC E11A: The backfilled pit shall be amended with limestone as specified in the Response, June 2016. Limestone amendment to waste rock shall be applied in the development of the TMF to maintain circumneutral pH on the liner. The department may approve modifications to the limestone amendment plan, including an alternative buffering material other than limestone, provided that the permittee demonstrates

that pore water in the backfilled pit and leachate from the TMF will be maintained at circumneutral pH. Modifications to the limestone amendment plan may be necessary as determined by facility water quality monitoring and/or data collected per Special Permit Condition E12.

- SPC F1 through F9 shall apply to the TMF, the South Waste Rock Facility (SWRF) and the North Waste Rock Facility (NWRF).
- SPC H7A: Prior to operations, the permittee shall develop a harassment/hazing plan to reduce the use of the CWB's by aquatic birds, and this plan shall be implemented throughout operations. This plan shall also be implemented as necessary to the central decant area of the TMF.
- SPC K2A: The permittee shall monitor groundwater quality and elevations at leachate and compliance monitoring well locations that meet the requirements of R425.406(5), and as identified in the May 2019 revised Figure 1-2. Alternative groundwater monitoring locations require written approval from OGMD. Well boring logs and final surveyed locations for monitoring wells installed during construction shall be submitted to OGMD.
- SPC K3A: The permittee shall monitor surface water quality quarterly at locations specified in the amended MPAA/EMP Figure 2-1. Alternative surface water monitoring locations require written approval from OGMD.
- SPC K4(e)A: Measurement of flow shall be reported during ambient water sampling events.
- SPC K6A: The permittee shall collect and analyze water samples as specified in Tables 1-4 and 2-2 of the MPAA/EMP. Quantification levels for surface water sample analysis shall be consistent with those required by the NPDES permit. Modification of sampling collection and analysis shall require OGMD written approval.
- SPC K8A: The permittee shall collect and analyze operations water quarterly from the mine pit, TMF, NWRF, SWRF, and CWB for the parameters listed in Table 5-1 of the MPAA/EMP, with addition of Barium, Beryllium, Boron, Total Chromium, Hexavalent Chromium, Total Cobalt, Lithium, Molybdenum, Strontium, Thallium, and Vanadium to the parameter list for consistency with wastewater discharge effluent monitoring required by the NPDES permit. Quantification levels for operations water sample analysis shall be consistent with those required by the NPDES permit. Modifications of sampling collection and analysis shall require OGMD written approval.

- SPC K16A: The permittee shall conduct facilities monitoring as specified in Module 6 of the MPAA/EMP. Modifications of facilities monitoring shall require OGMD written approval.
- SPC K25A: Postclosure environmental monitoring of groundwater and surface water shall continue to be conducted quarterly until a request to modify the postclosure plan is approved by OGMD. Postclosure monitoring of flora, fauna, fish, and wildlife habitat shall continue to be conducted until a request to modify the postclosure monitoring plan is approved by OGMD. A written request to terminate the postclosure monitoring shall be provided to OGMD not less than 18 months before the proposed termination date, including technical data and information demonstrating the basis for termination, as required by R425.407.
- SPC L18A: If mining operations are suspended, or are expected to be suspended, for a continuous period exceeding 90 days, a cover shall be employed to isolate materials determined to be reactive as defined by R425.103(j) from precipitation and air as soon as practicable, as required by R425.404(i)(F).
- SPC M2 shall also apply to NWRF, SWRF, and CWB.
- SPC O11A: A multi-layer composite cover system shall be constructed over the disposed tailings in the Final Closure TMF with a grade that will provide adequate surface water drainage as specified in the amended Treatment and Containment Plan in the MPAA. A registered professional engineer or other qualified individual shall certify the proper design, construction, and testing of the cover system as required by R425.409 (a) (i)(G).

In addition, new and amended permit conditions enacted through a final decision to grant the amendment request will require the financial assurance amount to be reevaluated to include the required reclamation and monitoring cost estimates. Financial assurance is required to be updated at a minimum of every three years during operations, or as determined to be necessary. Based on the information available to date, the following shall be added to the direct cost estimates for the total financial assurance amount:

- Indirect Costs: 12% of Cost Estimates (mobilization/demobilization; Engineering, Design, and Construction; FA instrument fees)
- Contingency: 10% of Cost Estimates plus Indirect Costs
- Administrative: 10% of Cost Estimates, Indirect Costs, plus Contingency (long term administrative management and oversight)

Application Amendment Review Process

EGLE has reviewed and considered the following in making this proposed decision:

- Mining Permit Application Amendment (MPAA), Volume I and II, November 2018, and supplemental documents amending, clarifying, or revising the initial submittal of the MPAA.
- Mining Permit MP 01 2016, including terms and conditions set forth in the Permit Application submitted by Aquila Resources for the Back Forty Project, and supplemental documents amending, clarifying, or revising the initial submittal of the Permit Application, General Permit Conditions, and Special Permit Conditions.
- Public comments received during the public meeting on January 9, 2019 through the comment period extended to February 15, 2019.
- Part 632 Nonferrous Metallic Mineral Mining statute and rules.
- The extent to which other permit determinations afford protection to natural resources, including Michigan Air Use Permit – Permit to Install, National Pollutant Discharge Elimination System (NPDES) Permit, Wetland Permit, Dam Safety Permit, Notice of Coverage for storm water management during construction activities, Notice of Intent for storm water management during operations.

OGMD confirmed receipt of an application from Aquila Resources Inc. on November 5, 2018 to amend Mining Permit MP 01 2016. Application documents were made available on the EGLE website on November 9, 2018. OGMD informed Aquila Resources on December 5, 2018 that the request for amendment was determined to constitute a significant change from the conditions of the approved mining permit. The application was considered administratively complete on December 19, 2018 per Section 63205(4) of Part 632.

A public meeting was held on January 9, 2019 at which oral comments were taken from the public. After the public meeting, a 28-day written comment period was posted that was scheduled to expire on February 6, 2019 [Section 63205 (7)]. Due to reported technical issues that caused difficulty with accessing the documents on the website and subsequent requests from the public to extend the public comment period, EGLE extended the comment period to

February 15, 2019. Public comments received during the public meeting and comment period were reviewed and considered in the proposed decision.

In consideration of the proposed changes and updates to the original plans, staff with applicable expertise from EGLE and DNR agreed to review respective aspects of the application. Upon completion of initial review of the amendment application, OGMD sent a letter requesting additional information on February 15, 2019. Partial response to the request was received by EGLE on March 4, 2019. Follow up questions, comments, and responses to the request for additional information that were communicated via email between March 6 and May 3 have also become part of the review and record.

On May 3, 2019, a final decision and order was issued by the Michigan Office of Administrative Hearings and Rules upholding the issuance of MP-01-2016 with five modifications to the permit. OGMD has determined that the modifications do not affect the changes proposed in the MPAA or this proposed decision.

Section 63205(11) of Part 632 directs EGLE to issue a mining permit if the permit application meets the requirements of the law and the proposed mining operation will not pollute, impair, or destroy the air, water, or other natural resources or the public trust in those resources, in accordance with Part 17, Michigan Environmental Protection Act, of the NREPA. Based on the information available to date, the EGLE has determined that the proposed amendment to MP 01 2016 meets the requirements of Part 632 with additional and revised conditions.

A consolidated public hearing has been scheduled to take place June 25, 2019 at the Stephenson High School gymnasium to hear comments regarding the proposed decision to amend Nonferrous Metallic Mining Permit MP 01 2016, the Michigan Air Use Permit to Install draft decision, and the Dam Safety Permit Application for the Back Forty Project. Written comments will be accepted for 28 days following the public hearing on the proposed decision to amend the Mining Permit and will be considered in the final decision.