

AQUILA BACK FORTY MINE Lake Township, Menominee County, Michigan Frequently Asked Questions (FAQs)

INTRODUCTION

This document provides answers to frequently asked questions regarding the following permit applications:

- [Oil, Gas and Minerals Division Mining Permit Amendment](#): The proposed decision on amendment application to Back Forty Mine Project Mining Permit MP 01 2016.
- [Air Quality Division Permit to Install](#): Proposed installation and operation of the open pit mine and associated ore processing facility known as the Back Forty Mine Project.
- [Water Resource Division Permit Application](#): The applicant proposes to construct a tailings management facility and a contact water basin in association with the Back Forty Mine Project.

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MINING QUESTIONS

1. Can counties or townships implement zoning restrictions on mining?

Many counties and townships have zoning requirements. However, local units of government do not have jurisdiction over mining or reclamation activities that are subject to Michigan's Nonferrous Mining Regulations [[Part 632 of the Natural Resources and Environmental Protection Act, Act 451 of 1994, as amended \(NREPA\)](#)], including construction, operation, closure, postclosure monitoring, and remediation activities. Part 632 specifies what a local unit of government may enact regarding mining operations:

NREPA, Sec. 324.63203 (4) A local unit of government may enact, maintain, and enforce ordinances, regulations, or resolutions affecting mining operations if the ordinances, regulations, or resolutions do not duplicate, contradict, or conflict with this part. In addition, a local unit of government may enact, maintain, and enforce ordinances, regulations, or resolutions regulating the hours at which mining operations may take place and routes used by vehicles in connection with mining operations. However, such ordinances, regulations, or resolutions shall be reasonable in accommodating customary nonferrous metallic mineral mining operations.

2. How do I find out if the area I live in is zoned for mining?

The township zoning office should be able to provide information regarding the types of activities for which your property is zoned.

What is a feasible and prudent alternative analysis? A feasible and prudent alternatives analysis is a required part of the environmental impact assessment for mining permit applications. The purpose of the analysis is to evaluate the technical and economic viability of alternatives for proposed mining activities that are consistent with reasonable requirements of the public health, safety, and welfare.

3. What are the types of mining?

The main types of mining methods are surface (open pit), underground, and in-situ (solution mining). The Back Forty Mine Project mining plan submitted in the Mining Permit Application Amendment (MPAA) only includes surface mining.

4. Why isn't the U.S. Environmental Protection Agency (U.S. EPA) or the Office of Surface Mining regulating this mine?

There are no similar national laws or regulations governing construction, operations, and reclamation of non-coal surface mining. Non-coal mining is primarily regulated by each state under the state's laws and regulations. Michigan laws under the NREPA that specifically regulate metallic mining are: Ferrous (Iron) Mineral Mining ([Part 631](#)); Nonferrous Metallic Mineral Mining ([Part 632](#)); and Small Native Copper Mines ([Part 634](#)). The Back Forty Mine Project is subject to Michigan's Nonferrous Metallic Mining Regulations.

Michigan has U.S. EPA delegated authority to adopt and enforce federal standards under the Clean Air Act and Clean Water Act for new sources. State laws under the NREPA that also apply to the Back Forty Mine Project are Air Pollution Control ([Part 55](#)), Water Resource Protection ([Part 31](#)), Inland Lakes and Streams ([Part 301](#)), Wetland Protection ([Part 303](#)), Dam Safety ([Part 315](#)), and Soil Erosion and Sedimentation Control ([Part 91](#)).

5. Will this mine affect my property values?

The Department of Environment, Great Lakes, and Energy (EGLE) does not conduct evaluations of property values, and Michigan's Nonferrous Metallic Mining Regulations do not include a requirement for the applicant to provide this type of evaluation. It is recommended that property owners contact property/real estate professionals or assessors with property value questions.

6. How do I know if I own my mineral rights?

In the United States, mineral ownership can be separated from surface ownership, known as "severed mineral rights." Landowners that are unsure if they own the minerals under their property can go to the county clerk's office and research the history of mineral ownership. The Michigan Department of Natural Resources manages the leasing of state-owned minerals. The mining plan in a mining permit application includes a map showing surface and mineral ownership of tracts of land in the mining area and within 1,320 feet of the boundary of the mining area.

7. If I don't own the mineral rights under my property, can a company mine under my property?

By law, a mineral owner has the reasonable right to access their minerals. However, the mineral owner must obtain a mining permit from the State of Michigan that demonstrates material damage to property not owned or controlled by the company will not occur before mining activities can begin.

8. What is ore?

Ore is a naturally occurring solid material from which a metal or valuable mineral can be profitably extracted. There are two types of ore encountered at the Back Forty Mine Project, which require two different methods of processing. In the Mining Permit Application Amendment (MPAA), they are characterized as flotation ore (Zinc/Copper) and oxide ore (Gold/Silver).

9. What is gold used for?

It is estimated that more than 75% of newly mined gold is used for jewelry. The remaining is used for electronics, finances, and investing. About 20% of the ore proposed to be mined at the Back Forty Mine Project would be processed for gold/silver content.

10. Will the Back Forty Mine use cyanide?

One of the reagents planned to be used at the Back Forty Mine Project for processing the gold/silver ore (designated as “oxide ore” in the MPAA) includes sodium cyanide. Cyanide is used in many industrial processes other than gold mining, such as manufacturing of paper, textiles, and plastics. While cyanide can be harmful to humans and wildlife, it has been used safely for decades with proper management. The mining permit requires a Cyanide Management Plan that complies with applicable local, state, and federal standards. Removal of residual sodium cyanide in the tailings is accomplished by a widely used and accepted cyanide destruction process that will be continuously monitored to maintain water discharge limits. The National Pollutant Discharge Elimination System (NPDES) permit requires monitoring of available cyanide in the surface water discharge effluent, and the mining permit requires compliance monitoring for cyanide in surface water and groundwater resources in the mining area.

11. Do all liners leak?

All materials are permeable to some extent, including synthetic liners. However, seepage rates through high-density polyethylene (HDPE) are very low to the point of being insignificant in terms of measurable impacts, and HDPE liners have been proven to be highly durable. Designers and regulators accept some minimal leakage of liners and incorporate an under-drain or leakage detection system for facilities. Studies show that approximately 24% of liner damage occurs during liner installation, and approximately 74% is done when the liner is covered by drainage or protective soil. Therefore, it is imperative that rigorous testing on the system be conducted prior to commissioning the facility. The mining permit for the Back Forty Mine Project requires the permittee to conduct a QA/QC program during the installation of the liner systems, leachate collection and cover systems in conformance with the Construction Quality Assurance (CQA) procedures under Michigan’s Solid Waste Management Rules, R 299.4916. Also, the permittee is required to provide all final design certifications of liners, covers, and leachate collection systems to EGLE, and shall not begin placement of ore, waste rock, overburden, or tailings in storage facilities until approved. Utilization of composite liner systems is a widely used and accepted practice for minimizing impacts on groundwater or surface water from waste materials and is in compliance with the requirements of the Nonferrous Metallic Mining Regulations.

12. What is the contingency plan for release of contaminants to groundwater and surface water?

Discharges to surface water are only authorized under the NPDES permit, which includes limits that meet water quality standards and are protective of human health and the environment. Monitoring and testing of the water treatment system are required to ensure compliance with the NPDES requirements for discharge. Surface water and groundwater compliance monitoring under the mining permit has been designed to assess the impact of mining activities on those resources. Protective measures to prevent adverse impacts is best practice and a fundamental objective of the mining regulations, including frequent facility and systems monitoring to detect and correct potential problems. However, if compliance monitoring indicates there is an impact that exceeds applicable water quality standards, a source investigation to determine the cause of the change in water quality is required to be conducted. If the change in water quality is determined by EGLE to be caused by a release associated with a mining activity, the permittee must implement a plan for response activity as approved by EGLE.

13. Is there a plan in place if there is an emergency at the mine?

A Contingency Plan submitted as part of the Mining Permit Application includes response measures for accidents or failures; procedures for notifying the general public, public authorities, and safety agencies in the event of an emergency; and a plan for testing the contingency plan to assure its effectiveness. A copy of the Contingency Plan is provided to the emergency management coordinator that has jurisdiction in the area of the mine. An update of the Contingency Plan is required to be included in an Annual Mining and Reclamation report, and also provided to the emergency management coordinator.

14. Should I have my well sampled before the mine starts?

Regardless if a mine is ever built, the U.S. EPA recommends having your drinking water well sampled annually.

15. Who is responsible if my well is impacted by the mine?

If it is determined that a mining operation has caused contamination to groundwater, the mining company is responsible for mitigating the impact.

16. How does EGLE determine financial assurance?

A detailed estimate of the cost to administer, and hire a third party to implement, reclamation activities applying to mining and reclamation operations subject to the mining permit is required to be included in the mine permit application. EGLE staff evaluate the estimate to confirm that reclamation and monitoring activities included in the estimate are consistent with the mining, reclamation, and environmental protection plan, and compare estimated costs to widely used engineering cost guidebooks and experience with these types of activities. Updated estimates are then required a minimum of every three years, or as determined to be necessary by EGLE.

17. Why was the upstream tailings basin design chosen?

The upstream design was primarily chosen to accommodate the limited footprint available for the operation. The Tailings Management Facility (TMF) was specifically designed to mitigate the known risks of traditional upstream raised tailings facilities. For example, the perimeter wall will not be constructed of tailings, rather it will be constructed of a continuous zone of waste rock, which is stronger, free draining, non-liquefiable, and erosion resistant. The closure plan under the mining permit requires standing water to be removed from the TMF, the application of a multi-layered cover system over the entire TMF to reduce infiltration into the tailings after closure, a drainage system to be constructed to safely convey surface runoff water from the TMF into an external sedimentation pond, and a vegetation cover to be established over the closure cover system to prevent erosion and promote a self-sustaining plant community. The TMF also requires a Dam Safety Permit prior to construction.

18. Why can't the permanent waste facility be located further from the river?

The mining area defined in the MPAA is limited to lands controlled by Aquila Resources for location of surface facilities. Due to high operating costs to transport tailings off-site, it was determined that locating the Tailings Management Facility to another location would not be prudent for this mine.

19. Will the Back Forty Mine conduct acid mining or heap leaching?

Part 632, Nonferrous Metallic Mining Regulations do not allow for percolation leaching, which is defined as "the process for the primary purpose of the recovery of metals in an outdoor environment from a stockpile of crushed or excavated ore by percolating water or a solution through the ore and collecting the leachate, and

included the processes known as 'heap leaching' and 'dump leaching'." As such, this type of activity is not being proposed, nor would be allowed to be conducted, at the Back Forty Mine Project. In-situ mining, or solution mining, is also not being proposed for this project.

20. What is acid mine drainage (AMD)?

Acid mine drainage can be formed if mining activities expose rock containing iron sulfide minerals and they react to air, water, and bacteria (oxidize or "rust") to form sulfuric acid and dissolved iron in storm water runoff. If not managed properly the runoff from these materials can further dissolve heavy metals such as copper, lead, or mercury into ground or surface water. Acid rock drainage (ARD) is formed naturally by the same chemical process as AMD.

21. Can AMD be controlled?

State-of-the-art widely used and accepted best practices and technology have been developed in the past few decades to prevent and mitigate risks associated with sulfide mineral oxidation. Methods available to limit and control AMD include reducing the amount of water and/or oxygen that comes in contact with sulfide-bearing minerals, controlling bacteria and biogeochemical processes, neutralize the acid after it forms, and collect runoff and treat it prior to discharge. In recent years, modern mining laws, including Michigan's Nonferrous Metallic Mining Regulations, have been implemented requiring much greater control over the management of mine waste and runoff to prevent the release of AMD.

22. How long is the Back Forty Mine going to last?

Aquila presented seven years of mine operations in their Mine Permit Application Amendment, which is based on the amount of ore proposed to be mined and anticipated rate of processing. Construction is projected to take about two years prior to beginning operations. Closure is projected to take about three years after mining operations cease. Any significant changes to the mine plan will require an amendment to the permit and will be subject to the same review as this application.

Air Quality Questions

23. What is Aquila proposing to do under the permit to install (PTI) application?

Aquila is proposing to build an open pit mine and ore processing facility on River Road, about 10 miles west of Stephenson in Menominee County. The facility, known as the "Back Forty Project," would mine ore that contains copper, lead, zinc, and precious metals. The ore would be processed to make copper, lead, and zinc concentrates and bars of mixed gold and silver, called doré bars. The concentrates and bars would be shipped from the facility by truck. Waste rock from the mine would be put back in the pit after mining. Tailings, the leftover portion from processing the ore, would be managed at the site.

24. Who decides if the permit to install gets issued? When does this happen?

The Air Quality Division (AQD) Director is the decision-maker. The AQD Director will review the evaluation completed by AQD staff, consider all public comments received during the comment period and hearing, and decide if further evaluation is necessary before making a final decision on the proposed permit. This process may take days or weeks after the end of the public comment period, depending on the complexity of the issues raised.

- 25. How will the air emissions affect the health of people, wildlife, and the environment in the area?**
No adverse impacts are anticipated. Using computer dispersion modeling, staff evaluated the ambient air impacts of the proposed emissions from the facility and compared them to the state and federal standards. These standards are designed to protect public health, including sensitive subgroups such as children and the elderly, and the environment. Impacts of the emissions will comply with the health protective standards.
- 26. What involvement will the AQD have with the facility if the permit is issued?**
Staff will conduct periodic inspections of the facility to determine compliance with the permit, in accordance with federal inspection commitments and as allowed by staff resources. In addition, staff will respond to citizen complaints about air emissions from the facility.
- 27. Should I be concerned about fugitive dust from the mining operations?**
No, you should not be concerned about the fugitive dust from the facility. The computer dispersion modeling mentioned above included fugitive emissions. The AQD found that the impacts of the emissions, including fugitive emissions, meet the state and federal health-based standards. Additionally, the draft permit has visible emission limits for the fugitive dust sources and a fugitive dust control plan that outlines how Aquila will minimize fugitive dust.
- 28. What about those people with specific respiratory diseases who spend time near the proposed facility?**
The AQD used the computer dispersion model to look specifically at the expected impacts of particulate emissions to see if existing respiratory conditions may worsen. The modeled information was reviewed by AQD toxicologists who determined the proposed particulate emissions are not expected to make existing respiratory conditions worse. The facility emissions plus the existing background concentrations are less than the National Ambient Air Quality Standards (NAAQS), which are designed to protect sensitive individuals, even those with existing respiratory conditions.
- In addition, based on two studies provided to the AQD, the increases in fine particulate matter (PM10 and PM2.5) concentrations due to the proposed facility are low compared to increases that are associated with adverse effects in patients with cystic fibrosis, a specific respiratory disease.

WATER RESOURCE QUESTIONS

- 29. What is a dam?**
[Part 315, Dam Safety](#) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), defines a dam as an artificial barrier that is at least six feet high and impounds (holds back) at least five acres of water or liquid.
- 30. Why does the Back Forty Mine Project need a Dam Safety permit?**
Two of the proposed structures, the Tailings Management Facility (TMF) and Contact Water Basin (CWB) will, upon construction, meet the definition of dam under Part 315, requiring a Dam Safety permit to be issued.

31. Hasn't the EGLE Water Resources Division (WRD) already issued a permit for the Back Forty Mine?

Yes; on June 4, 2018, WRD issued a joint permit under Part 301, Inland Lakes and Streams; Part 303, Wetlands Protection; and the Floodplain Authority found in Part 31, Water Resources Protection, of the NREPA. That permit authorized impacts to regulated waterbodies, wetlands, and floodplains associated with the Back Forty Mine Project but did not authorize the construction the TMF and CWB as regulated dams. A separate Dam Safety permit application for this purpose was submitted in December 2018 and is currently under review by WRD staff.

32. Has the WRD made a decision on the Dam Safety permit application?

No, unlike the mining and air quality portions of the consolidated hearing, the WRD is seeking public comment on the permit application rather than a proposed decision by the department. WRD has not completed its review of the Dam Safety permit application and will consider all information received, including public comments, when making a permit decision.

Michigan's Environmental Justice Policy promotes the fair, non-discriminatory treatment and meaningful involvement of Michigan's residents regarding the development, implementation, and enforcement of environmental laws, regulations, and policies by this state. Fair, non-discriminatory treatment intends that no group of people, including racial, ethnic, or low-income populations, will bear a disproportionately greater burden resulting from environmental laws, regulations, policies, and decision-making.

Meaningful involvement of residents ensures an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health.