

WHAT YOU SHOULD KNOW ABOUT AQUILA RESOURCES' BACK FORTY PROJECT

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Aquila's Back Forty project is not accurately described in the Mine Permit Application (MPA) and Environmental Impact Assessment (EIA)

Aquila Resources wants to develop a large open pit (2000 ft. wide, 2500 ft. long and 750 ft. deep) massive gold-zinc sulfide mine, 150 feet from the Menominee River, encroaching upon the floodplain. Underground mining plans have not been disclosed to the Michigan Department of Environmental Quality (DEQ), but could include mining under the Menominee River. Aquila's permit application says the Life of Mine (LOM) operation is planned to be APPROXIMATELY SEVEN YEARS, but the Back Forty is actually described as a 16-YEAR MINE in every press release published by Aquila Resources.

Aquila's mine permit application asserts that mining facilities are sealed to accommodate the life of the mine, i.e. THEIR FACILITY IS DESIGNED FOR A 7-YEAR MINE. By minimizing LOM, the company can misrepresent all of the mine's impacts—including tailings capacity, size of waste rock storage areas, total limestone needed for neutralizing total waste rock, total need for importing and storing cyanide and other chemicals used in the processing of ore, total crushing and processing throughput, milling equipment capacity, water treatment plant capacity, de-watering and drawdown estimates, air pollution quantities, noise, pit backfilling estimates, remediation planning, post-closure timelines, and more.

The track record of sulfide mining across the United States is terrible.

There are no examples of metallic sulfide mines which have not polluted both surface and groundwater. Metallic sulfide mines will pollute up to 27 billion gallons of fresh water per year. (see Lisa Sumi and Bonnie Gestring, 2013, *Polluting the Future: How Mining Companies Are Contaminating Our Nation's Waters in Perpetuity*. Washington, D.C: Earthworks). The main reason is acid mine drainage (AMD), which occurs when mineral deposits containing sulfides are exposed to air and water during excavation.

Acid mine drainage is a perpetual pollution machine.

According to the Great Lakes Indian Fish & Wildlife Commission (GLIFWC), "Mining can significantly accelerate the acidification process, because mining raises the sulfide minerals to the surface and crushes them, thereby exposing more surface area to water and oxygen. A mine can generate AMD for hundreds--or even thousands--of years, until all of the sulfur in its tailings (the by-products of processing left over after a mine removes the valuable ores), waste rock stockpiles, and exposed mine pits has been consumed in the acid generation process. AMD can kill fish and other aquatic life and severely contaminate surface and groundwater. (*Metallic Mineral Mining: The Process & the Price*. Odanah, Wisconsin 2016, pp. 28-29).

"In addition to acidifying ground and surface water, AMD accelerates the dissolution of metals such as copper, lead and mercury into groundwater and surface water. Uncontrolled acid generation from AMD results in an ecosystem with high levels of metals, dissolved solids, sulfates and acidity. A mine draining acid water can devastate rivers, streams, and aquatic life for many years." (p. 29, *Metallic Mineral Mining*). The U.S. Environmental Protection Agency estimates that the headwaters of more than 40% of the streams in the western United States are contaminated by acid mine drainage.

"A substantial and unquantifiable risk to water quality and fisheries"

A recent literature review for the U.S. Fish and Wildlife Service concludes that "NO HARD ROCK SURFACE MINES EXIST TODAY THAT CAN DEMONSTRATE THAT AMD CAN BE STOPPED, ONCE IT OCCURS ON A LARGE SCALE. Evidence from literature and field observations suggests that permitting large scale surface mining in sulfide-hosted rock with the expectation that no degradation of surface water will result due to acid generation imparts A SUBSTANTIAL AND UNQUANTIFIABLE RISK TO WATER QUALITY AND FISHERIES" ("Acid Mine Drainage and Effects on Fish and Ecology: A Review," Reclamation Research Group, Bozeman, Montana, June 2008; http://www.pebblescience.org/pdfs/Final_Lit_Review_AMD.pdf)

The federal government has invested more than \$41 million to clean up the lower part of the Menominee River.

The Menominee River is the largest river system in the Upper Peninsula, with a 4,000 square mile area that drains into Lake Michigan. Together with the other Great Lakes, Lake Michigan contains 21% of the world's fresh water. More than 40 million people depend on the Great Lakes for drinking water, jobs, and their way of life.

Both Michigan and Wisconsin DNR have worked over the past decades to again make the Menominee River a viable habitat for sturgeon. Fish biologists believe that almost half of all adult Lake Michigan Sturgeon exclusively use the Menominee River for spawning. In April 2017 the conservation group, American Rivers, listed the Menominee River as ONE OF AMERICA'S 10 MOST ENDANGERED RIVERS, DUE TO THE THREAT FROM SULFIDE MINING.

Aquila's plan to keep water from the Menominee River out of the pit, particularly during flooding events, is not convincing, according to Chuck Brumleve, a geologist working for the Keweenaw Bay Indian Community. "The top of bedrock where the cut-off wall will be keyed in, is weathered, fractured, and permeable. Climate has become more unpredictable, with multiple major rain events recorded sequentially in the upper Midwest." (Comments on Aquila's MPA, February 16, 2016).

Metallic sulfide mines are a major taxpayer liability.

Copper sulfide mines are the largest source of taxpayer liability under the EPA's Superfund cleanup program (*Nationwide Identification of Hardrock Mining Sites*, Report 2004-P-00005, EPA Office of Inspector General, March 31, 2004). A recent report from the Center for Western Priorities found that cleaning up mines in Western states could cost taxpayers up to \$21 billion and has already left communities with widespread water pollution (*The Mining Burden Why State Land Seizures Could Cost Billions*, December 2015; westernpriorities.org/miningburden).

Sulfide-bearing waste rock is the major product of the Back Forty project.

Because the high grades of gold, copper and zinc have already been mined out, only the lower grade ores containing trace amounts of metals are found in large rock deposits. In order to extract these lower grade ores, enormous amounts of sulfate-containing waste rock have to be blasted, crushed and pulverized to extract the gold and zinc. Over 97% of the rock excavated ends up as sulfide-bearing waste rock that is stored in tailings and waste rock dams, or is backfilled into the abandoned pit. All of the 11.8 million tons of tailings and 75% of the 54 million tons of waste rock are expected to generate acid (Dr. David Chambers, Center for Science in Public Participation report, February 24, 2016).

Tailings dams pose significant environment risk.

Tailings are the wastes left over from the crushing, grinding and chemical processing (INCLUDING CYANIDE) of mineral ores. Tailings containing sulfur have the consistency of talcum powder and can be a source of AMD.

Tailings often contain residual minerals-- including lead, mercury, arsenic, cadmium and selenium, which can be toxic if released to the environment.

According to the Great Lakes Indian Fish and Wildlife Commission, " A mine's tailings, basins, caps and liners, and stockpiles must be designed to withstand a number of challenges--including temperature changes, heavy rain and snow, freezing and thawing soils, as well as future climate change effects that are not yet fully understood...ALMOST ANY TYPE OF FACILITY FOR STORING THESE MINE WASTES EVENTUALLY WILL LEAK CONTAMINANTS INTO WATER." (P. 9, P. 35)

Poorly regulated tailings frequently discharge wastes into the environment, as in the January 2000 spill of 100 tons of cyanide-contaminated water which destroyed fishing along the Tisza River in Hungary.

The largest mining disaster in Canadian history occurred at the Mount Pulley Mine in British Columbia, Canada, when 6.3 billion gallons of contaminated process water and tailings spilled into the lakes of the Fraser River watershed, and beyond, in August 2014. A local state of emergency was called, and a ban was put on using surface and groundwater in the area. The mine was a state of the art, modern copper mine that had been touted as an example of how sulfide mining can co-exist with clean water. Scientists say it is "virtually impossible to clean up" the mess left behind this spill.

A new study reveals that catastrophic mine failures are increasing in frequency, severity and costs, all around the world. Nearly half of all recorded serious failures happened in modern times, between 1990 and 2010 (Lindsay Newland Bowker and David M. Chambers, *The Risk, Public Liability & Economics of Tailings Storage Facility Failures*. Washington, D. C: Earthworks, 2015).

AQUILA DOES NOT HAVE A CONTINGENCY PLAN IN THE EVENT OF A MAJOR SPILL, AND DISMISSES THE POTENTIAL IMPACTS OF SPILLS AS "MINIMAL." AQUILA PROVIDES ALMOST NO INFORMATION ON THE IMPACTS OF A SPILL, HOW LONG THE IMPACTS WOULD LAST, AND WHETHER THE IMPACTS COULD BE REVERSED.

Who pays for mining accidents, spills and disasters?

On day one, when Scott Pruitt took over as director of the U.S. EPA, he directed his new staff to delay an initiative that would require mining companies to prove they can clean up after themselves.

If there is a catastrophic release of toxic waste from the 65 million tons of mine waste at the headwaters of the Menominee River, the taxpayers of Wisconsin will be responsible for the cleanup costs in the billions of dollars. Even then, it may be virtually impossible to clean up the mess left behind after such a spill.

De-watering the mine pit can lower groundwater levels around the mine.

Because the proposed pen pit is constructed below the water table, the operator must pump water out of the mine before the ore can be mined. By continuously removing groundwater, it can lower the water table for miles around the mine, causing what is known as a CONE OF

DEPRESSION. This can harm the Shakey Lakes Savanna, a 1,520-acre Natural Area, part of the Escanaba State Forest.

Air quality impacts

"When rock is excavated, crushed, and transported to the surface, it can release contaminants into the air," according to GLIFWC. "Dust generated by mining contains particulates that may affect human and animal health, if inhaled, and contain pollutants which can contaminate soil, water and vegetation. Gaseous air pollutants may contain sulfur dioxide, which irritates the lungs and can damage or kill plants, especially evergreens. (p. 19, Metallic Mineral Mining: The Process & the Price, 2016)

Exploratory activity at the Back Forty site has already disturbed soils containing a deadly fungus (Blastomycosis) that has taken the life of Cliff Nelson, Jr., Aquila's Vice President of U.S. Operations.

AQUILA'S MINE PLAN COMPLETELY FAILS TO ANALYZE ANY RISKS TO ON-SITE WORKERS. Nor does the plan include a Health Risk Assessment of the effects of mercury, manganese, lead, arsenic, and other pollutants on people living downstream.

Aquila's mine plan is based upon a misrepresentation of the Flambeau Open Pit Sulfide Mine in Ladysmith, Wisconsin, as a successfully reclaimed mine.

"Flambeau was a very successful mining operation, and the two sites are very similar, so we've been able to use the engineering work done on Flambeau as a template for the Back Forty mine."

Steve Donohue, Vice President of Mining at Foth Infrastructure & Environment, a consultant on the Flambeau mine and the Back Forty project.

The two sites are each open pit sulfide mines close to nearly rivers--the Flambeau and the Menominee. The similarity ends there.

The Flambeau was 220 feet deep; the Back Forty pit is 750 feet deep. The Flambeau open pit was 32 acres. The Back Forty is 83 acres, or 3 times the size of Flambeau.

The Flambeau mine produced 1.9 million tons of ore and 9 million tons of waste rock. The Back Forty is estimated to produce 12.5 million tons of ore, 54 million tons of waste rock and 11.8 million tons of tailings. THERE WAS NO ON-SITE PROCESSING AT FLAMBEAU, AND THUS NO TAILINGS STORAGE ON SITE, AND NO WASTE ROCK ON THE SURFACE POST-CLOSURE.

In contrast, according to Dr. David Chambers, "retaining acid-generating material on site at Aquila will likely require diligent water management of the tailings and waste rock management facilities (TWRMF) leachate in perpetuity and may require in-perpetuity water treatment." (Center for Science in Public Participation, p. 3) WHO WILL PAY FOR IN-PERPETUITY WATER TREATMENT?

Flambeau's environmental footprint was 181 acres, compared to 865 acres at the Back Forty—or 4.5 times the size of Flambeau.

Despite the advantage of being a much smaller mine than the Back Forty project, and not processing the ore on site, the Flambeau Mining Company (FMC) has been far from a model operator; it is a proven polluter that has failed multiple attempts at cleanup at the site. In 2012 FMC was found guilty by U.S. District Judge Barbra Crabb, of eleven counts of violating the

Clean Water Act by polluting Stream C, a tributary of the Flambeau River (Wisconsin Resources Protection Council, Center for Biological Diversity and Laura Gauger [plaintiffs] v. Flambeau Mining Company [Defendant]; United States Court for the Western District of Wisconsin, Case No. 11-cv-45, Document 256 [Decision], filed July 24, 2012).

Subsequently, the Wisconsin DNR completed an investigation of water quality at the Flambeau Mine site and placed Stream C on its list of impaired waters for "acute aquatic toxicity" caused by copper and zinc contamination. The U.S. EPA agreed and listed the stream as impaired in 2014. A 2009 review of groundwater monitoring wells between the mine pit and the Flambeau River showed metals exceeding predictions used to obtain permits. FMC itself issued a report in 2015, documenting 33 violations of drinking water standards in various wells at the mine site, and the contamination persists to this day. NO CITATIONS HAVE BEEN ISSUED, BECAUSE WISCONSIN LAW IS CRAFTED TO ALLOW MINING COMPANIES SIGNIFICANT GROUNDWATER SACRIFICE ZONES AT MINE SITES WHERE DRINKING WATER STANDARDS ARE NOT ENFORCED BY THE DNR, EVEN IF THE WATER IS HIGHLY CONTAMINATED.

While a federal court of appeals overturned Judge Crabb's decision, the court did not dispute the fact of pollution in a tributary of the Flambeau River. Instead, the court decided that it would be unfair to hold FMC to the legal standards, because the Wisconsin DNR told the company it did not need a permit for its discharge.

If Flambeau's mine contractor, Foth Infrastructure & Environment, couldn't protect the water at the much smaller Flambeau mine—where there were no tailings dams to worry about—there is no reason to expect that the clean waters of the Menominee River watershed will be protected from acid mine drainage and catastrophic mine failures.

The Back Forty project lacks a "social license to operate."

The Michigan DEQ has issued three of the four permits for Aquila's proposed mine. These are regulatory licenses. However, the mining industry has come to recognize that there is a SOCIAL LICENSE TO OPERATE THAT IS INTANGIBLE AND UNWRITTEN AND CANNOT BE GRANTED BY THE DEQ OR ANY OTHER STATE AGENCY OR LEGAL AUTHORITY.

A social license is essentially a set of demands and expectations, held by local stakeholders--like citizens, environmental groups, and Indian Nations--for how a business should operate. Not having a social license was once seen as a threat to the economic value of a project because it delayed cash flows. Now it is seen as a potential project destroyer, according to industry risk analysts.

According to Ernst & Young, an industry risk analysis consultant, the fourth greatest risk to mining investors comes from "ignoring community voices and their environmental and public health concerns. Mining projects that generate protests and civil unrest are bad for business." (*Top 10 Business Risks Facing Mining and Metals, 2016-2017*, p. 4).

"The mining world has changed dramatically," wrote Wayne Dunne in a special report to *The Northern Miner*, a Canadian mining industry newspaper. "Projects can be stopped dead by local people and communities, dashing shareholder's hopes and often destroying executives' careers. Project management has become exponentially more complex, as social issues no longer take a distant back seat to technical issues." (90:28, 9/3/04, p. 6)

The list of resolutions opposing the Back Forty project includes county, city, town and tribal governments, intertribal organizations as well as environmental, sport fishing and faith organizations. A complete list is attached. This project lacks a social license to operate.

LISTS:

Local Units of Government

- Marinette County, Wisconsin
- Menominee County, Wisconsin
- Brown County, Wisconsin
- City of Peshtigo, Wisconsin
- Town of Wagner, Wisconsin
- Town of Porterfield, Wisconsin
- Menominee Indian Tribe of Wisconsin
- Oneida Nation of Wisconsin
- Bad River Band of Ojibwe, Wisconsin
- Stockbridge Munsee Band of Mohican Indians of Wisconsin
- Lac du Flambeau Band of Ojibwe, Wisconsin
- Keweenaw Bay Indian Community of Michigan
- Pokagon Band of Potawatomi Indians, Michigan
- Saginaw Chippewa Indian Tribe, Michigan

Intertribal Organizations

- Great Lakes Inter-Tribal Council Inc. (GLITC)
- National Congress of American Indians
- National Indian Education Association
- National Indian Gaming Association
- Midwest Alliance of Sovereign Tribes (MAST)
- United Tribes of Michigan
- Wisconsin Indian Education Association

Letters of Support from Tribal, Environmental, Sportfishing, Faith Organizations

- Chippewa Ottawa Resource Authority of Michigan
- Red Cliff Band of Ojibwe, Wisconsin
- American Rivers
- Clean Water Action Council, Green Bay
- Save the Wild U.P. (SWUP)
- River Alliance of Wisconsin
- Wisconsin Resources Protection Council
- International Federation of Fly Fishers
- Wisconsin Smallmouth Alliance, Ltd.
- Northern Illinois Fly Tyers
- Badger Fly Fishers
- Dupage Rivers Fly Tyers
- M&M Great Lakes Sport Fisherman
- Dominican Sisters of Sinsinawa, Wisconsin