

A Briefing Paper on Why Wisconsin's Mining Moratorium Law Should Be Preserved produced by the Sierra Club and the Wisconsin Resources Protection Council.

The reason for Wisconsin's landmark "Prove it First" law for mining in metallic sulfides is simple and remains true to this day: there has never been an example of a metallic sulfide mine that has safely operated and closed without polluting the environment. The Flambeau Mine and other examples cited by the mining industry so far do not qualify to meet the Law. Wisconsin should not repeal this important safeguard simply because the mining industry can't or won't meet the law.

"I know of no metal-sulfide mines anywhere in the world that have met the criteria of Wisconsin's 1998 moratorium on issuance of permits for mining of sulfide ore bodies without degrading the original water quality, long term." Robert Moran, Ph.D. is a Geochemist and Hydrogeologist with 45 years of domestic and international experience with mining and water quality issues in both the public and private sectors.

Acid Mine Drainage from Mining in Metallic Sulfides

The production of Acid Mine Drainage (AMD) and associated contaminants is widely considered mining's largest environmental problem in the U.S.¹ AMD is sulfuric acid and metal pollution produced when sulfide minerals in mines and mining wastes are exposed to air and water. AMD is toxic to fish and wildlife due to dissolved metals and contaminants such as mercury, lead, arsenic, cadmium, zinc, copper and many others that damage surface water and groundwater resources. The U.S. Forest Service considers these contaminants a greater concern than the acidity.²

In Wisconsin, ore deposits such as at Flambeau, Crandon, and throughout our northern counties are found as massive sulfide ores. Mining these ores requires separating the metals from the sulfide waste materials, primarily mill tailings and waste rock. Sulfide mine wastes and abandoned mines are the source of AMD. Once the chemical and microbial reactions leading to sulfuric acid production in mines and mine wastes begin, it is extremely difficult and costly to halt the resulting degradation from dissolved toxic metals in water. Adding agents like lime and limestone can buffer acidity (low pH) but can also cause artificially high pH environments that also mobilize metals and other contaminants just as in an acid environment.

Wisconsin's "Prove It First" Law

Before the Moratorium Law was approved, the mining industry was challenged to give one example of a mine in metallic sulfides that had been safely operated and closed without polluting the environment. **To this day, the mining industry has not documented a single proven example.** Similarly, state regulators were tasked by the Natural Resources Board to search for examples and were unable to document successful metallic sulfide operations. Wisconsin DNR staff issued a report in 1995 that stated: ***"There are no ideal metallic mineral mining sites which can be pointed to as the model approach in preventing acidic drainage industry-wide."***³ This conclusion by the state confirmed the industry's failed environmental track record of mining metallic sulfide ores and informed the legislature.

¹ US EPA, Acid Mine Drainage Prediction, Technical Document, 1994

² USDA Forest Service. *Acid Mine Drainage From Mines on the National Forests, A Management Challenge*, 1993

³ *An Overview of Mining Waste Management Issues in Wisconsin*, Report to the Natural Resources Board by Wisconsin Department of Natural Resources Bureau of Solid and Hazardous Waste Management, July 1995, Updated October, 1997

The mining industry itself commissioned a study of data from hundreds of mine sites in the U.S. and Canada in 1997 in an attempt to influence Wisconsin's legislature during the debate over the law⁴. Dr. Robert Moran commented on this study: ***"A careful reading of the details in this paper shows that the authors were unable to locate any sites that totally complied with the criteria at the time the paper was published."***⁵

The law was approved by the state legislature by overwhelmingly bi-partisan margins (29-3 in the Senate and 91-6 in the Assembly) and signed into law by Governor Thompson as 1997 Act 171. See the list of current and former legislators which voted for the law on p. 4. It was strongly supported by Wisconsin residents with support from more than sixty organizations statewide along with petitions signed by more than forty thousand citizens.

The fact that the law is a moratorium in name only is well understood by regulators and the public. It is simply a permit condition that must be met before final permits are granted. Note that the law is already a compromise due to the DNR's determination that two different mines could meet each 10-year requirement for operations and closure without causing pollution; this despite the clear intention of the law to require a single mine as an example. Nonetheless, it is a concrete, unambiguous requirement limited to the language specified in state statutes⁶.

There is nothing in the law to stop a company from applying for permits today unless the industry is unable or unwilling to demonstrate an example mine. In fact, a recent survey of metallic sulfide regulation in the Great Lakes region by the National Wildlife Federation called Wisconsin's Mining Moratorium an exemplary law⁷.

Despite these facts, lobbyists for Aquila Resources, have called the Moratorium an "unnecessary roadblock"⁸. Aquila owns the extremely controversial Back Forty metallic sulfide mine proposal adjacent to the Menominee River that forms the border between Wisconsin and Michigan and flows into Green Bay. The proposal threatens cultural resources within the mine site sacred to the Menominee Indian Tribe of Wisconsin and threatens to destroy wetlands and pollute the Menominee River. Aquila also owns or controls two metallic sulfide deposits in Wisconsin: the Bend gold, copper, and silver deposit in Taylor County and the Reef gold deposit in Marathon County.

Flambeau Mine

Mining proponents are misleading the legislature and the public by citing Kennecott's Flambeau Mine as an example for future mining in Wisconsin. Flambeau Mining Company (FMC) has been far from a model mine operator; it is a proven polluter that has failed multiple attempts at cleanup at the site. Ironically, the fact that the Flambeau Mine received permits to mine under the current state mining regulations proves the industry's claims that mining can't be permitted in Wisconsin are baseless.

⁴ Todd, J.W. and D.W. Struhsacker, 1997, *Environmentally Responsible Mining: Results and Thoughts Regarding a Survey of North American Metallic Mineral Mines*: Society for Mining Metallurgy, and Exploration Preprint 97-204, Littleton, Colorado.

⁵ Moran, R.E., *The Quellaveco Mine: Free Water for Mining in Peru's Driest Desert? An Environmental Impact Assessment*, March 2002.

⁶ See *Legislative Reference Bureau Brief 98-1* for general permit requirements for metallic mining or *Special Report 13, An Overview of Metallic Mineral Regulation*, Wisconsin Geological and Natural History Survey for detailed permit requirements.

⁷ *Sulfide Mining Regulation In The Great Lakes Region, A Comparative Analysis of Sulfide Mining Regulation in Michigan, Minnesota, Wisconsin and Ontario*, March 2012, National Wildlife Federation

⁸ *Lobbyists push for repeal of mining "moratorium"*, Ron Seely, Wisconsin State Journal, November 18, 2012

The Flambeau Mine operated for four years and closed in 1997 after accelerating its production rates to shave a full year off the already limited benefits to the local and state economy. Reclamation began in 1998 and is still unfinished in 2017. In 2007, FMC applied for a Certificate of Completion for reclamation of the mine. Monitoring of the site demonstrated that the reclamation was not only incomplete **but that the site had been polluting nearby Stream C, a tributary of the Flambeau River, for many years.** A number of state organizations challenged FMC's application and it was partially rejected by the DNR due to the incomplete reclamation and pollution of Stream C. Notably, the organizations worked with FMC and the state to avoid a formal and costly contested case hearing and reach a negotiated agreement which resulted in additional monitoring ordered by the state of Wisconsin⁹.

FMC's efforts since have failed to successfully address pollution at the site. That failure and the subsequent refusal by the state of Wisconsin to cite the company for violations resulted in a federal lawsuit proving that the mine continued to pollute. FMC was found guilty by U.S. District Judge Barbara Crabb of eleven counts of violating the Clean Water Act in 2012 by polluting Stream C¹⁰. Note that each Clean Water Act violation reflects a single monitoring or sample event in time, meaning that additional unrecorded violations are likely to have occurred.

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 contamination¹¹. The US EPA concurred and listed the stream as impaired in 2014¹².

Predictions of groundwater quality were made during permitting in order to demonstrate compliance with state law and obtain permits to mine. A 2009 review of groundwater monitoring wells between the mine pit and the Flambeau River showed metals exceeding predictions used to obtain permits¹³. FMC itself issued a report in 2015 documenting 33 violations of drinking water standards in various wells at the mine site¹⁴, and the contamination persists to this day¹⁵. **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.**



Flambeau River flooding in 1994 within 20 feet of the Flambeau Mine pit.

Photo Credit: Bob Olsgard

⁹ State of Wisconsin Division of Hearings and Appeals, Stipulation and Order, Case IH-07-05, May 31, 2007

¹⁰ Wisconsin Resources Protection Council, Center for Biological Diversity and Laura Gauger (Plaintiffs) v. Flambeau Mining Company (Defendant); United States District Court for the Western District of Wisconsin, Case No. 11-cv-45, Document 256 (Decision), filed July 24, 2012.

¹¹ Surface Water Quality Assessment of the Flambeau Mine Site, Wisconsin Department of Natural Resources, April 2012.

¹² Decision Document for the Approval of Wisconsin's 2012 list of impaired waters with respect to Section 303(d) of the Clean Water Act, United States Environmental Protection Agency, June 25, 2014.

¹³ *Report on Groundwater and Surface Water Contamination at the Flambeau Mine*, David M Chambers, Ph.D. and Kendra Zamzow, Ph.D., Center for Science in Public Participation, June 5, 2009

¹⁴ Environmental Monitoring Report, 4th Quarter 2015, Flambeau Mining Company, December 2015.

¹⁵ Annual Report, Appendix B, Flambeau Mining Company, Jan 2017.

A new study by Dr. Moran of the limited groundwater monitoring data available from Flambeau Mining Company has uncovered important details demonstrating that groundwater at the mine site is polluted by contaminants that significantly exceed baseline data and relevant water quality standards and aquatic life criteria¹⁶. Waste rocks that were producing acid and releasing contaminated leachate while stockpiled on land were later mixed with other mining wastes and returned to the mine pit for disposal. Groundwater flowing through the mine pit is contaminated and leaving the mine site. FMC never defined flow paths for groundwater exiting the pit and was never required to monitor groundwater on the opposite side of the Flambeau River. It is not certain where contaminated groundwater is flowing off-site due to inadequate monitoring of the river and across the river.

The new study also shows that buffering agents added to the acidic wastes to neutralize the production of acid will cease to be effective in the future and concentrations of contaminants in groundwater will increase. The wastes from the Flambeau Mine will remain onsite forever yet the existing sampling program is inadequate to provide quantitatively useful data on the contaminant concentrations in groundwater. Ultimately the contaminated groundwater at the Flambeau mine site would require expensive treatment to be made useful for other uses – treatment that is often borne by taxpayers.

There is no dispute that the facts show FMC caused pollution at the Ladysmith mine site. Judge Crabb’s use of the word “exemplary” in her July 2012 ruling to describe attempts made by Flambeau Mining Company to curtail pollution ignores the fact that *those actions ultimately failed*. As described above, Judge Crabb still found the company to be in violation of the Clean Water Act on eleven counts. The EPA added Stream C to its official list of “impaired waters” and groundwater at the site is compromised as well.

Under the terms of the Moratorium Law, the Flambeau Mine is disqualified as an example mine to meet the law. Nearly 20 years after closing in 1997, FMC is now working on its sixth attempt to remediate contamination at the mine site. FMC has created artificial wetlands and infiltration basins to direct runoff and contaminants to groundwater instead of Stream C, taking full advantage of Wisconsin’s less restrictive groundwater laws for mining.

Conclusion

Wisconsin’s mining laws are carefully crafted and comprehensive and already contain numerous compromises in the form of exemptions and exceptions from environmental law for mining. The Moratorium Law was passed by strong bi-partisan margins and signed into law by GOP Governor Thompson in 1998 (see list of legislators which voted for the law on p 5). These exemptions and exceptions in current law came from the mining industry itself and now it is asking the legislature for yet more favors by repealing the landmark, common sense Moratorium Law. The fact that the mining industry itself has yet to provide a single example of a successfully operated and closed mine in metallic sulfide ores is extraordinary and the utter lack of success of mining these dangerous materials gives state lawmakers ample reason to preserve this common sense, landmark law.

¹⁶ Moran, R.E., *Flambeau Mine: Water Contamination and Selective “Alternative Facts” Summary*, 2017

Votes for Senate Bill 3 (Mining Moratorium Law, 1997 Wisconsin Act 171)

1998 Wisconsin State Assembly (Passed 91-6, 2/4/98)

Ainsworth (R)	Hebl (D)	Murat (D)	Sykora (R)
Albers (R)	Hoven (R)	Musser (R)	Travis (D)
Baldwin (D)	Huber (D)	Nass (R)**	Turner (D)
Baumgart (D)	Hubler (D)	Notestein (D)	Underheim (R)
Black (D)	Huebsch (R)	Olsen (R)**	Vander Loop (D)
Bock (D)	Hutchinson (R)	Ott (R)	Vrakas (R)
Boyle (D)	Johnsrud (R)	Otte (R)	Scott Walker (R)***
Brandemuehl (R)	Kaufert (R)	Ourada (R)	Ward (R)
Carpenter (D)	Kedzie (R)	Owens (R)	Wasserman (D)
Coggs (D)	Kelso (R)	Plale (D)	Wieckert (R)
Cullen (D)	Klusman (R)	Plouff (D)	Williams (D)
Dobyns (R)	Kreibich (R)	Porter (R)	Wood (D)
Dueholm (D)	Kreuser (D)	R. Potter (D)	L. Young (D)*
Foti (R)	Krusick (D)	Powers (R)	R. Young (D)
Freese (R)	Kunicki (D)	Reynolds (D)	Ziegelbauer (D)
Gard (R)	La Fave (D)	Riley (D)	Zukoski (R)
Goetsch (R)	Ladwig (R)	Robson (D)	
Green (R)	F. Lasee (R)**	Ryba (D)	Noes-
Gronemus (D)	Lazich (R)	Schafer (R)	Duff (R)
Gunderson (R)	J. Lehman (D)	Schneider (D)	Grothman (R)
Hahn (R)	M. Lehman (R)	Skindrud (R)	Jeskewitz (R)
Handrick (R)	Linton (D)	Spillner (R)	Seratti (R)
Hanson (D)	Lorge (R)	Springer (D)	Urban (R)
Harsdorf (R)**	Meyer (D)	Staskunas (D)	Jensen (R)
Hasenohrl (D)	Morris-Tatum (D)	Steinbrink (D)	

1997 Wisconsin State Senate (Passed 29-3, 3/11/97)

Adelman (D)	Ellis (R)	C. Potter (D)	Wirch (D)**
Breske (D)	Fitzgerald (R)**	Risser (D)**	Zien (R)
Burke (D)	George (D)	Rosenzweig (R)	
Chvala (D)	Grobschmidt (D)	Rude (R)	Noes-
Clausing (D)	Jauch (D)	Schultz (R)	Buettner (R)
Cowles (R)**	Moen (D)	Shibilski (D)	Farrow (R)
Darling (R)**	Moore (D)	Weeden (R)	Huelsman (R)
Decker (D)	Panzer (R)	Welch (R)	
Drzewiecki (R)	Plache (D)	Wineke (D)	

*currently serving in the 2017 Wisconsin State Assembly

**currently serving in the 2017 Wisconsin State Senate

***currently serving as Governor of Wisconsin