

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
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October 4, 2019

Dave Cline
Flambeau Mining Company
4700 Daybreak Parkway
South Jordan UT 84095

Subject: Reclaimed Flambeau Mine Request to Modify the Updated Monitoring Plan

Dear Mr. Cline:


The Department has completed its review of your request dated November 13, 2018, to modify the monitoring plan for the reclaimed Flambeau Mine. Enclosed is the Department's decision on your request. Please note that while the Department's decision reduces some monitoring requirements, the decision requires the Flambeau Mining Company to continue to conduct groundwater sampling biannually in accordance with the schedule attached to the decision.

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department as the respondent.

To request a contested case hearing pursuant to sections 293.95 and 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the period for filing a petition for judicial review.

Sincerely,

 BENJAMIN CALLAN FOR

Greg Pils, Director
Bureau of Environmental Analysis & Sustainability

Cc (via email)

Hank Handzel, DeWitt Ross & Stevens
Timm Speerschneider, DeWitt Ross & Stevens
Leland Roberts, Rio Tinto
Steve Donohue, P.H. Foth Infrastructure & Environment, LLC

Sharon Kozicki, P.G., P.M.P, Foth Infrastructure & Environment, LLC
Andrew Simek, WDNR
Ben Callan, WDNR
Zoe McManama, WDNR

BEFORE THE STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

FINDINGS OF FACT,
CONCLUSIONS OF LAW AND
DECISION ON FLAMBEAU MINING COMPANY
REQUEST TO MODIFY UPDATED MONITORING PLAN

Findings of Fact

1. Flambeau Mining Company is a wholly owned subsidiary of Rio Tinto whose principal address is 4700 Daybreak Parkway, South Jordan, Utah 84095.
2. Flambeau Mining Company owns, and is responsible for, the 181-acre Flambeau Mine property, located on State Highway 27, Ladysmith Wisconsin 54848 ("mine site").
3. On January 14, 1991, the Wisconsin Department of Natural Resources ("Department") issued a Mining Permit (IH-89-14) to Flambeau Mining Company.
4. Part 4 of the Mining Permit approved the Monitoring Plan as submitted as part of the Mining Permit Application with some conditions. Section 10 of the Monitoring Plan in the Mining Permit Application included monitoring provisions and reporting requirements, among other conditions.
5. Part 4 of the Mining Permit required Flambeau Mining Company to submit an Updated Monitoring Plan consistent with the Mining Permit conditions.
6. Flambeau Mining Company submitted an Updated Monitoring Plan to the Department in July 1991, which the Department subsequently approved.
7. The Updated Monitoring Plan specifies the requirements for environmental monitoring of the reclaimed mine site.
8. Since the closure of the mine site in October 1998, Flambeau Mining Company has conducted long-term monitoring and has submitted to the Department the results of that monitoring as required by the Mining Permit and the Updated Monitoring Plan.
9. The Flambeau Mining Company continues to monitor the Flambeau River. The Department has seen no evidence of a physical or geochemical contaminant pathway between the former mine pit and the Flambeau River. The Department continues to require monitoring of the intervention boundary monitoring wells.

10. The Department issued a Certificate of Completion of reclamation for the mine site, with the exception of a 32-acre Industrial Outlot, in August 2007.
11. Monitoring has continued on the reclaimed mine site in accordance with the Mining Permit and Updated Monitoring Plan through 2019.
12. On or about November 13, 2018, the Flambeau Mining Company submitted a request to the Department for modifications to the Updated Monitoring Plan. The request includes proposed changes in groundwater monitoring requirements as well as proposed changes to monitoring relating to vegetation, surface subsidence, and wetland water levels.
13. On or about December 7, 2018, the Department requested additional information and clarifications on Flambeau Mining Company's requested modifications.
14. On or about January 17, 2019, the Department requested a conference call with Flambeau Mining Company to discuss the requested modifications.
15. On April 3, 2019, the Department and the Flambeau Mining Company held a conference call to discuss the requested modifications.
16. On April 29, 2019, the Flambeau Mining Company submitted additional clarifying information to the Department.
17. On May 20, 2019, the Department public noticed an informational hearing on the Department's website.
18. Documents related to the requested modification were made available to the public for review at the Rusk County Community Library, 418 Corbett Avenue West, Ladysmith, Wisconsin 54848.
19. The Department public noticed the informational hearing and its proposed decision on June 10, 2019 in the *Wisconsin State Journal* and June 13, 2019 in the *Ladysmith News*.
20. On June 20, 2019, at 2:00 pm the Department held an informational hearing at the Wisconsin Department of Natural Resources Ladysmith Service Center located at N4103 Highway 27, Ladysmith, Wisconsin 54848.
21. Five members of the public attended the informational hearing, with Ernest Martinson of Hayward, WI providing oral comment.
22. The Department kept the hearing record open until July 8, 2019 for receipt of written public comment.

23. The Department received written comments from John Coleman on behalf of GLIFWC, from Tom Wilson on behalf of Northern Thunder, and from Laura Gauger on behalf of Deer Tail Scientific and 42 signees, who provided multiple attachments with her comments.

24. Flambeau Mining Company's request included the following proposed modifications to the Updated Monitoring Plan:

- a) Reduce groundwater monitoring frequency and parameters, including groundwater elevation, both for wells located within the backfilled pit and for wells located elsewhere on the mine property;
- b) Remove the requirement for aerial color infrared vegetation photography for the reclaimed area;
- c) Remove the requirement for monitoring water levels at the wetland staff gauge for wetland 1; and
- d) Remove the requirement for subsidence monitoring for reclaimed area over the backfilled pit.

25. The Department has reviewed the Flambeau Mining Company's request based on the information presented by Flambeau Mining Company, the comments received from members of the public during the comment period, and the information in the Department's files on the reclaimed Flambeau Mine project.

Groundwater Monitoring

26. Part 4(2) of the Mining Permit provides for quarterly water quality monitoring of wells in the backfilled pit. The water quality parameters are specified in the Mining Permit and the Updated Monitoring Plan.

27. Part 4(2) authorizes Flambeau Mining Company to request and the Department to approve a reduction in monitoring requirements under certain circumstances. Part 4(2) provides:

Water quality monitoring wells MW-1013G, 1013P, 1014G and 1014P shall be conducted on a quarterly frequency at all of the wells until at least 8 samples have been obtained from each well. At that time, a reduction in monitoring frequency may be requested by Flambeau and, provided that the monitoring results confirm the predictive modeling of water quality within the backfilled material and verify that no adverse impacts to water quality within the Flambeau River will occur, the Department may approve such a request. The parameter list for the sampling round occurring in June of each year shall be expanded as specified in section 10.1.3.2 of the Mining Permit Application. The provisions of

NR 140, Wis. Adm. Code, shall be used to determine statistically significant changes in the groundwater quality.

28. Part 4(3) of the Mining Permit provides for quarterly water level monitoring of wells in the backfilled pit. Part 4(3) requires the monitoring program to continue until water levels have stabilized. Part 4(3) provides:

Wells MW-1013G, 1013P, 1014G and 1014P shall be monitored for water level as part of the water level monitoring program described in Section 10.1.3.3 of the Mining Permit Application. The water level monitoring program shall continue on a quarterly frequency until the Department determines that the water levels to have stabilized. Water levels shall be deemed as stable when no significant net annual changes occur in water levels over a two year period. An acceptable range of annual fluctuations in groundwater levels shall be based on a statistical analysis of observed pre-mining annual fluctuation ranges of those wells with a pre-mining monitoring record which are to be included in the long term monitoring program. To the extent technically feasible, the entire record of pre-mining water level measurements shall be considered when determining the normal or acceptable annual fluctuation range. The average range will be based on the combined average of the annual fluctuation ranges of all the wells presently on site that are to be included in the long term monitoring program plus minus one standard deviation. During the post reclamation period as the water table recovers, the net annual fluctuation should be relatively large showing an upward movement of the water table. As stability is approached, this new upward fluctuation will be reduced through time, eventually falling back into the average annual range that exists today. When the average annual fluctuation falls within this range for two consecutive years, the water table will then be deemed to have stabilized.

29. Section 3.1.3.3 of the Updated Monitoring Plan contains requirements for the in-pit wells and other wells on the mine site. Section 3.1.3.3. provides that monitoring of water levels will continue until the levels stabilize. Section 3.1.3.3. provides:

Quarterly water level measurements at wells MW 1013G, 1013P, 1014G, and 1014P, as well as all wells used for this purpose during construction and operations monitoring . . . shall be continued into the long-term care and maintenance period, until water levels are stabilized.

30. Flambeau Mining Company has requested a decrease in the number of parameters analyzed as part of groundwater quality monitoring.

31. The Department has reviewed the data provided by the Flambeau Mining Company in support of its request to decrease the number of parameters that are

analyzed for purposes of assessing water quality (see attachments 1 and 2 to the November 2018 request).

32. The Department concurs with Flambeau Mining Company's assessment that there is no longer a need for monitoring of the following parameters: barium, cadmium, selenium, silver, and laboratory pH. These parameters have shown very little variation in concentration and for some, results are consistently below detection limits. Pre-mining characterization data verified leachable barium associated with the native overburden. This presence negates the value of continuing to monitor barium to ascertain potential shifts in pit geochemistry, as its source cannot reliably be differentiated between upgradient overburden and groundwater, and in-pit generation. Laboratory pH is not needed because the Flambeau Mining Company will continue to record groundwater pH during the field event.

33. While current monitoring results for sulfate, copper, manganese and iron show some variation from the projected results of prior predictive modeling of groundwater quality, Flambeau Mining Company has provided more recent modeling and analysis that supports the Flambeau Mining Company's assessment that elimination of the parameters requested will have no adverse effect on the water quality of the Flambeau River.

34. The Flambeau Mining Company has requested a decrease in groundwater water level monitoring frequency from quarterly to annual. The Company has also requested permission to abandon some wells used for monitoring water levels (see Table 4 in November 2018 request).

35. The Department has reviewed the data provided by the Flambeau Mining Company in support of its request to decrease the frequency of water level monitoring (see attachments 1 and 2 to the November 2018 request).

36. The Department concurs with Flambeau Mining Company's assertion that groundwater levels appear to have stabilized in reference to environmental conditions, with fluctuations occurring at intervals consistent with changing precipitation contributions to the groundwater system.

37. While a reduction in frequency of monitoring is warranted, a reduction to annual monitoring is not acceptable at this time. A reduction in monitoring of groundwater levels from quarterly to biannual will allow for appropriate continued evaluation and will ensure a reduced response time should any changes be reported that require further assessment.

38. The Department concurs that monitoring wells MW-1003, MW-1003P, PZ-1006, PZ-1006G, PZ-1006S, PZ-1007S, PZ-1008, PZ-1008G, PZ-1009, PZ-1009G, PZ-1011, PZ-

1012, PZ-R1, PZ-S1, Sandpoint, OW-7, OW-10, OW-42, OW-43 are no longer needed for monitoring groundwater at the site.

Revegetation Monitoring

39. During the reclamation process, the majority of the mine site (excluding the industrial outlot) was revegetated. Seeding was completed in 2001.

40. Section 3.1.6 of the Updated Monitoring Plan provides:

Aerial and color infrared photography will be completed in the later summer for four consecutive years following the completion of closure and every five years thereafter throughout the long-term care and maintenance period to monitor the success of revegetation.

41. The most recent vegetative evaluation occurred in 2017. Flambeau Mining Company has requested discontinuance of the requirement for aerial and color infrared photography.

42. The Department has reviewed the data provided by the Flambeau Mining Company in support of its request to eliminate the requirement for aerial and color infrared photography to assess revegetation. (see attachment 3 to the November 2018 request).

43. Vegetation coverage is established and abundant across the reclaimed site. The Department concurs with Flambeau Mining Company's assessment that aerial and color infrared photography is no longer needed to assess the success of revegetation on the mine site.

Wetland Staff Gauge Monitoring

44. Sections 2.4.6 and 3.1.4.3 of the Updated Monitoring Plan require water levels at staff gauges in Wetlands 1, 5c, 7, 10a and 6c to be monitored starting two months after project permits were granted to document preconstruction water levels. The Updated Monitoring Plan states that the wetland monitoring should continue until water levels in monitored groundwater monitoring wells stabilize.

45. In 2001, the Department agreed that wetland surface water levels were no longer needed for Wetlands 5c, 7, 10a and 6c.

46. Flambeau Mining Company has requested removal of the requirement for continued water level monitoring at the wetland staff gauge at Wetland 1.

47. The Department has reviewed the data provided by the Flambeau Mining Company in support of its request (see attachment 3 to the November 2018 request).

48. Wetland 1 has established and maintained wetland hydrologic processes. With the stabilization of water levels in intervention boundary wells across the site, the Department agrees that monitoring at staff gauge WT-5 for Wetland 1 can be discontinued.

Subsidence Monitoring

49. Section 3.1.7 of the Updated Monitoring Plan provides for monitoring of the surface of the reclaimed backfilled pit. The purpose of the monitoring is to assess whether the reclaimed surface is settling. Section 3.17 provides:

Surface subsidence monitoring will consist of topographically mapping, following reclamation, the ground surface of the 32-acre pit area by aerial photography. The initial survey will be performed during the fall or early spring immediately following the completion of reclamation activities in the area of the pit. Subsequent surveys will occur in the third, tenth, twentieth, and fortieth year after reclamation activities in the area of the pit are completed.

50. Subsidence monitoring has taken place in 1998, 2001, 2008, and 2018. Flambeau Mining Company has requested the elimination of the requirement for topographical monitoring of the surface of the mine site at year 40.

51. The Department has reviewed the data provided by the Flambeau Mining Company in support of its request to eliminate the requirement for surface subsidence monitoring in year 40. (see attachment 3 to the November 2018 request).

52. Previous subsidence monitoring has confirmed site stability. Although there are some variations in ground levels documented, no adverse environmental impacts have been observed or indicated.

53. The Department concurs with Flambeau Mining Company's assessment that the requirement for topographical mapping in year 40 may be eliminated.

Conclusions of Law

1. Pursuant to s. 293.49(7) Wis. Stats., the Department shall require a mining permit holder to perform adequate monitoring of environmental changes during the course of the permitted activity and for such additional period of time as is necessary to

satisfactorily complete reclamation and completely release the permit holder from any bonds required:

2. Pursuant to s. NR 132.11(1), Wis. Admin. Code, and Part 4 of the Mining Permit, Flambeau Mining Company must monitor the mining site in accordance with the Updated Monitoring Plan.
3. Pursuant to s. NR 132.11(4), Wis. Admin. Code, and Part 4(10) of the Mining Permit, Flambeau Mining Company may submit a request for modification of the Updated Mining Plan that has been approved the Department consistent with the Mining Permit, and any request for a modification must comply with the procedures specified in s. NR 131.12 Wis. Admin. Code.
4. Section NR 131.12 authorizes a prospecting permit holder to request an amendment or modification to a prospecting permit. Pursuant to s. NR 131.12(3)(a) if a proposed amendment substantially changes the scope of the original prospecting proposal, the Department shall process the amended application in the same manner as an original application for a prospecting permit.
5. In accordance with s. NR 131.12(3)(a), Wis. Admin. Code, the Department has evaluated whether the Flambeau Mining Company's proposed changes to the Updated Monitoring Plan represent a substantial change.
6. The Department has determined that the proposed changes submitted by Flambeau Mining Company do not constitute a substantial change.
7. The issuance of an approval for the modifications identified in the Decision will not result in significant increased environmental impacts and will ensure adequate monitoring of environmental changes at the reclaimed mine site.

Decision

1. The Department approves the removal of barium, cadmium, chromium, mercury, selenium, silver and laboratory pH from the required groundwater water quality sampling parameters.
2. The Department approves a reduction in the frequency of groundwater monitoring from quarterly to biannual sampling.
3. The Department approves the abandonment of the following wells: MW-1003, MW-1003P, PZ-1006, PZ-1006G, PZ-1006S, PZ-1007S, PZ-1008, PZ-1008G, PZ-1009, PZ-1009G, PZ-1011, PZ-1012, PZ-R1, PZ-S1, Sandpoint, OW-7, OW-10, OW-42, OW-43. These wells shall be filled and sealed in accordance with s. NR 141.25, Wis. Admin. Code.

4. The Flambeau Mining Company shall conduct biannual groundwater sampling in May and November in accordance with the groundwater monitoring schedule and parameters listed in Appendix A of this Decision. The Department will continue to review the monitoring results and may require additional sampling if spatial or other quantifiable changes in sample parameter concentrations warrant such action.
5. The Department approves the removal of the requirement for color infrared vegetation photography to be conducted at 5-year intervals until 40 years after closure. This requirement may be reinstated should there be evidence of reduced vegetative cover which compromises site stability, drainage, or water quality, or otherwise becomes problematic for the long-term environmental performance of the site.
6. The Department approves the cessation of monitoring at wetland staff gauge WT-5. Wetland staff gauge WT-5 shall be removed and filled and sealed in accordance with applicable state requirements.
7. The Department approves the removal of the requirement for subsidence monitoring at year 40. This requirement may be reinstated if ground movement compromises site stability, drainage or water quality, or otherwise becomes problematic for the long-term environmental performance of the site.
8. Flambeau Mining Company continue all other monitoring and shall submit to the Department a Revised Monitoring Plan reflecting this Decision.



BENJAMIN CAHLAN FOR

10-4-2019

Greg Pils, Director
Bureau of Environmental Analysis & Sustainability

Date

Appendix A. Groundwater Monitoring Schedule and Parameters.

Approved Parameters (May)	Approved Parameters (Nov)
Field	
Color	Color
Odor	Odor
ORP	ORP
pH	pH
Specific Conductivity	Specific Conductivity
Turbidity	Turbidity
Laboratory	
Alkalinity	Alkalinity
Arsenic	Arsenic
Calcium	Copper
Chloride	Iron
Copper	Manganese
Iron	Sulfate
Lead	TDS
Magnesium	Total Hardness
Manganese	
Potassium	
Sulfate	
Zinc	
TDS	
Total Hardness	