GREAT LAKES INDIAN FISH AND WILDLIFE COMMISSION

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• MEMBER TRIBES •

MICHIGAN
Bay Mills Community
Keweenaw Bay Community
Lac Vieux Desert Band

WISCONSIN
Bad River Band
Lac Courte Oreilles Band
Red Cliff Band
St. Croix Chippewa
Lac du Flambeau Band
Sokaogon Chippewa

MINNESOTA
Fond du Lac Band
Mille Lacs Band

Via Electronic Mail

March 6, 2018

MN Department of Natural Resources
ATTN: PolyMet NorthMet Project
500 Lafayette Road N., Box 45
St. Paul, MN 55155-4045

Re: NorthMet Permit to Mine.

Thank you for the opportunity to comment on the "Permit to Mine Application, NorthMet Project" of December 2017 and the draft Special Conditions.

GLIFWC is acting in coordination with our member tribes, including Fond du Lac, to review and contribute to the PolyMet permitting process. As you may know, GLIFWC is an agency exercising delegated authority from 11 federally recognized Ojibwe (or Chippewa) tribes in Wisconsin, Michigan and Minnesota.[1] Those tribes have reserved hunting, fishing and gathering rights in territories ceded in various treaties with the United States. GLIFWC's mission is to assist its member tribes in the conservation and management of natural resources and to protect habitats and ecosystems that support those resources. The PolyMet project is located within the territory ceded by the Treaty of 1854 and impacts treaty protected resources in that territory. As part of the regulatory review process GLIFWC has submitted many comments in the past 11 years, many of our concerns remain unresolved. Here we focus on a small number of issues related to the Permit to Mine and associated draft special conditions. Our member tribes may choose to also submit comments from their own perspective.

In our comments we focus on four areas of particular concern:

Monitoring for Northward Flow:

The scattered monitoring well nests and geophysical tests that are proposed between the Polymet mine pits and the Peter-Mitchel pits will add substantially to understanding the potential for bedrock to transmit water between mines. The monitoring might detect gradients that would cause northward flow but a more complete monitoring program of drawdown by the Peter-Mitchel pits would be more likely to produce useful information. The pertinent question is: to what extent does the Peter-Mitchel pit depressurize the surrounding bedrock and thereby create inward gradients? Those Peter-Mitchel pit induce inward gradients are what would cause northward flow of contaminants from the Polymet project.

1 GLIFWC member tribes are: in Wisconsin -- the Bad River Band of the Lake Superior Tribe of Chippewa Indians, Lac du Flambeau Band of Lake Superior Chippewa Indians, Lac Courte Oreilles Band of Lake Superior Chippewa Indians, St. Croix Chippewa Indians of Wisconsin, Sokaogon Chippewa Community of the Mole Lake Band, and Red Cliff Band of Lake Superior Chippewa Indians; in Minnesota -- Fond du Lac Chippewa Tribe, and Mille Lacs Band of Chippewa Indians; and in Michigan -- Bay Mills Indian Community, Keweenaw Bay Indian Community, and Lac Vieux Desert Band of Lake Superior Chippewa Indians.

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Barr Engineering's groundwater model presented during the EIS process indicated that most northward flow could occur in the Virginia Formation and the Biwabik Iron Formation because of those formations' higher conductivity relative to the Duluth Complex. Furthermore, a substantial portion of bedrock groundwater movement likely occurs in bedrock fractures and faults. Monitoring should target formations and depths at which northward flow is most likely to occur.

It is unclear, from the description of monitoring for northward flow in the permit to mine application and in reference 10 of the application, at what depth northward flow would be monitored. The depth of the monitoring wells is described in Table 2-1 of reference 10 but, given that the wells will be "open-hole within the bedrock", it appears that long-term monitoring will provide no information as to head pressures at different depths in the bedrock. Information on head pressure at depth could be provided by installation of nested piezometers within the individual wells. These are commonly described as multilevel monitoring wells and can provide long-term information on head pressures at multiple levels within one hole. A special condition should require that head pressures be monitored at multiple levels in the bedrock.

While the Polymet monitoring proposal developed by Barr (reference 10) indicates that the monitoring data will be used for annual analysis, predictive modeling, and generation of an annual report to identify potential or actual northward flow and revision of the monitoring approach, the permit to mine makes no mention of such ongoing analysis, modeling activities or reporting.

Regardless of of the pros and cons of the described northward flow monitoring at the mine site, a plan that can not be implemented is useless. Our understanding is that to date none of the monitoring wells that were proposed under the monitoring plan to be installed in 2016-2017 have been installed because of logistical difficulties.

Given the complete lack of progress on northward flow monitoring, it is unclear how special condition #66 could be implemented. A path forward for actually implementing the monitoring for northward flow needs to be described and required as a special condition in the permit to Mine.

Capture efficiency of FTB Containment System is untested and monitoring is inadequate:

For the Polymet site, there has been no demonstration that the capture efficiencies claimed by the applicant in order to meet water quality standards (>95% capture efficiency) are achievable. A seepage capture system for tailings basin water at the U.S. Steel Minntac tailings basin performs with an efficiency of approximately 40 to 60%. The inability of that system to adequately reduce tailings basin discharges has been well documented by MN-PCA staff and most recently during a September 2017 EPA inspection of the Minntac site. That inspection showed water quality in the wetlands outside the containment system to be as highly polluted as the water inside the containment system. There has been no evidence provided to suggests that the Polymet capture system could achieve anything close to the efficiencies needed to meed water quality standards.

The collection trench and monitoring proposed for the Flotation Tailings Basin Seepage Containment System (Section 10.2.3.4 and reference #4 of the Permit to Mine Application) does not take into account the possibility of underflow. The containment system is predicated on establishing a gradient toward the basin and away from the surrounding wetlands in the materials that conduct groundwater. However, the collection trench and monitoring wells only establish and monitor a gradient near the land surface.

Polymet and its contractors have maintained for years that the wetland soils in the area have a very low vertical conductivity, effectively creating a confining layer above the tills and bedrock. The low vertical conductivity claimed for the peat and compressed peat would isolate the collection trench and the performance monitoring wells from head pressures and water movement near the bedrock surface.

Given the stratigraphy of the soils near the tailings basin (see figure 10-3 of the permit application), with glacial till on top of fractured bedrock, one would expect most water movement to be

near or in the weathered bedrock surface. To prevent escape of tailings basin water through the higher conductivity till and fractured bedrock, the cutoff wall must be keyed into competent bedrock and an inward gradient must be established at all stratigraphic levels, from the land surface down into the fractured bedrock. Furthermore, monitoring must recognize that the highest conductivity materials, i.e. tills and fractured bedrock are at the bedrock surface and the piezometers should be established to monitor gradients not only in the near-surface groundwaters but at depth. Additional containment system performance monitoring near the top of bedrock should be required as a special condition.

Stormwater and Rail Car Spillage Monitoring:

From the NorthMet Project Water Management Plan - Mine of July 2016, it appears that the runoff from the internal haul roads will be routed to the WWTF. However, stormwater from areas adjacent to the haul roads will be routed to stormwater ponds for discharge to natural waterways with no or minimal treatment under an Industrial Stormwater Permit. The only constraint proposed appears to be a goal of 100 mg/L of TSS in water discharged from the stormwater ponds. TSS is often a vehicle for other contaminants. For example, discharge from the White Pine Mine in May 2017, with only 5 mg/L of TSS, carried total copper of 74 ug/L, 29 ug/L of which appeared to be bound to TSS. Stormwater that is exposed to dusting from haulroads has been documented at other mine sites (e.g. Red Dog, Flambeau) to carry contaminant loads from ore dust escaped from trucks. Numeric limits for contaminants should be included in the Industrial Stormwater Permit and a special condition should require stormwater pond monitored for contaminants until it is demonstrated that they are not discharging excessive contaminant loads to natural waterways.

The monitoring for rail car spillage includes visual inspection with photo documentation. Such inspection is unlikely to detect spillage of significance, that is spillage of fine material that has a high surface to volume ratio. It is such fine material that is most likely to cause water pollution problems. For example, at the Flambeau Mine the spillage of copper containing ore dust went undetected until after mining when rail bed and parking lot aggregate began developing a green patina. A special condition should require additional water monitoring along the rail line to include monitoring of the Unnamed Creek just south of the west pit.

Flow augmentation is needed for the Partridge River:

Because appropriation of water from the Partridge watershed to the Embarrass River watershed is of waters needed to support low-flows in the Partridge, augmentation should be planned. As in the Embarrass River watershed, some surface waters will be adversely impacted by the permitted appropriations. Because the upper Partridge River is very likely to be impacted by the proposed mine site water appropriations, the permits must require implementation of flow augmentation of the Partridge River above the confluence with the South Branch of the Partridge River (i.e. above site SW004). In addition, because flow impacts are also likely further downstream, a contingency plan for flow augmentation should be required for the Partridge River downstream of the confluence with the South Branch. The substantial reduction in flow that can be anticipated from the proposed appropriations from the mine site to the plant site will not only impact river biota but also impact the extensive riparian wetlands along the river corridor. A special condition needs to be added that requires planning for flow augmentation of the Partridge River.

In conclusion:

1) Monitoring for the potential for northward flow needs to be at multiple depths in the bedrock and implementation of the plan needs to have firm deadlines.

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2) The seepage containment system at the tailings basin needs to prevent underflow by way of the tills or fractured bedrock and monitoring must include gradients near the bedrock surface.

3) Industrial stormwater permits must contain numeric limits and there needs to be additional monitoring of waterways that pass under the rail line, i.e. Unnamed Creek south of the west pit.

4) The water allocation permits, as drafted, would remove a substantial portion of the water that normally supports low flows in the Partridge River. Flow augmentation for the Partridge needs to be planned.

Thank you for the opportunity to comment on the draft permits for the PolyMet Permit to Mine. If you have questions, please contact me at 608-263-2873.

Sincerely,

John Coleman, GLIFWC Environmental Section Leader

cc: Jonathan Gilbert, Director, GLIFWC Biological Services Division
Ann McCammon Soltis, Director, GLIFWC Division of Intergovernmental Affairs
Nancy Schuldt, Water Projects Coordinator, Fond du Lac Environmental Program
Melanie Burdick, U.S. EPA, Watersheds and Wetlands

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