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November 13, 2015

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RE: Request of the Fond du Lac Band of Lake Superior Chippewa for Predecision Referral to the Council on Environmental Quality of Disagreements Over Environmental Impacts of NorthMet Mining Project and Land Exchange Action

Dear Administrator McCarthy and Regional Administrator Hedman:

We write on behalf of the Fond du Lac Band of Lake Superior Chippewa (Band) to request that EPA make a predecision referral to the Council on Environmental Quality (CEQ) of unresolved disagreements over the environmental impacts of the proposed NorthMet Mining Project and Land Exchange, as provided by 40 C.F.R. Pt 1504. To ensure the full consideration of the request for a referral, and because the deadline for making a referral is expected to be December 8, 2015, we also ask that EPA request the Co-lead Agencies to consent to an extension of time in which a referral to the CEQ may be made.

The disagreements that are the subject of this request concern the position of the Co-lead Agencies on environmental impacts of the proposed mine which, at core, arise from fundamental disagreements about the groundwater hydrology and the impact of the proposed mine on surface and groundwater resources in northeastern Minnesota within two major watersheds – the Lake Superior Basin and Rainy River Basin –

which include world-class water resources among which is the Boundary Waters Canoe Area Wilderness. The disagreement on hydrologic characterization of the site and the significant differences of opinion about the potential environmental impacts of the project on groundwater flows, in turn, directly affect the mine's potential impacts on ground and surface water quality, water treatment needs both during the mine operations and post-closure, mercury loading, wetlands, natural resource habitat, cultural resources, and cumulative effects.

These disagreements are summarized principally (although not entirely) in Chapter 8 of the June 2015 Preliminary Final Environmental Impact Statement (PFEIS) which is entitled Major Differences of Opinion, as well as more recent memoranda exchanged in on-going efforts to resolve those disagreements. These disagreements were not resolved in the Final EIS (FEIS) that was recently released by the Co-lead Agencies on November 6, 2015.

The Band is submitting this request as a cooperating agency in the environmental impact statement process for the proposed project and accordingly, we request that, in considering this request, the EPA recognize the special expertise of the Band with respect to environmental issues, and the very specific steps that the Band and its experts have taken to carefully evaluate the hydrology on which many elements of the FEIS is based. The EPA should also consider this request in accordance with the government's obligations to the Band under the federal trust responsibility and the Environmental Justice Doctrine. The responsibilities of the federal government under the trust responsibility and environmental justice doctrine are at their zenith here, as the proposed mine is located in an area of northeastern Minnesota in which the Band holds Treaty protected off-Reservation rights to hunt, fish, and gather. Those rights extend throughout the entire northeastern portion of the state of Minnesota under the 1854 Treaty of LaPointe, Treaty with the Chippewa, September 30, 1854, 10 Stat. 1109 ("1854 Treaty"), and their exercise would be impacted by the proposed action. In addition, as set out below, the proposed action would also impact on-Reservation waters, which are also held by the Band under the 1854 Treaty. For this reason too, the Band's authorities under the Clean Water Act, §§303(c) and 401, must also be fully and carefully considered in the review of this proposed action.

A CEQ referral is necessary because the major differences of opinion directly affect the environmental impacts of the proposed mine and land exchange, and concerted and timely efforts to resolve those differences have been made but have not been successful. Those differences of opinion are magnified greatly by: the precedent-setting aspects of the proposed project, which is the first sulfide mine proposed in the state of Minnesota; its magnitude as it involves three new surface mine pits, permanent and temporary waste rock stockpiles, and processing facilities to extract copper, nickel, and platinum; and its location, namely lands that are currently part of Superior National Forest. The mine would operate for 20 years, closure and post-closure maintenance would continue indefinitely thereafter.

This letter sets forth the basis for the CEQ referral that the Band seeks. In addition, in the interest of expediency and efficiency – because the final environmental impact statement was recently released – we are providing a draft request to CEQ with this letter. *See* Exhibit 1.

I. THE BAND REQUESTS CONSULTATION WITH EPA TO DISCUSS THIS REQUEST.

The Band requests consultation with EPA in accordance with the consultation duties set forth in Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 65 Fed. Reg. 67,249 (2000) ("E.O. 13175"), and EPA's Tribal consultation policy. The duty to consult is based on the special relationship between the United States government and Indian tribes, as distinct sovereign nations, *see, e.g.*, *Morton v. Ruiz*, 415 U.S. 199, 236 (1974), and seeks to ensure that the federal government gives full consideration to the rights, interests and concerns of Indian tribes arising from federal actions that may impact their rights. In addition, the EPA has a duty to consult with the Band under the Environmental Justice Doctrine, which was established to address growing concern that minority populations, low-income populations, and Indian tribes bear a disproportionate amount of adverse health and environmental effects. *See* Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Fed. Reg. 7,629 (Feb. 16, 1994) (E.O. 12898). Pursuant to E.O. 12898, the EPA is obligated to identify and address any disproportionately high and adverse human health or environmental effects that the Band would suffer if the proposed project were approved.

II. THE BAND'S REQUEST MUST BE CONSIDERED IN LIGHT OF ITS STATUS AS A COOPERATING AGENCY IN THE ENVIRONMENTAL REVIEW PROCESS FOR THIS PROPOSED PROJECT

A. The Band's Request Must Be Evaluated in Light of its Status as a Cooperating Agency.

The Band is submitting this request as a Cooperating Agency pursuant to the Coordination and Communication Plan between the Co-lead Agencies (the Minnesota Department of Natural Resources (MDNR), the U.S. Army Corps of Engineers, and the U.S. Forest Service), and the Band regarding this proposed project. CEQ regulations make clear that the lead agencies shall "use the environmental analysis and proposals of cooperating agencies with . . . special expertise, to the maximum extent possible consistent with its responsibility as lead agency." 40 C.F.R. §1501.6(a)(2); *see also* 40 C.F.R. §1501.1(b) ("Emphasizing cooperative consultation among agencies before the environmental impact statement is prepared rather than submission of adversary comments on a completed document."), 40 C.F.R. §1501.6(a)(1) and (3) (the lead agency shall "[r]equest the participation of each cooperating agency in the NEPA process at the earliest possible time," and shall "[m]eet with a cooperating agency at the latter's request."). The CEQ's guidelines also emphasize the importance of incorporating comments of the cooperating agency with special expertise on a subject wherever possible. *See* CEQ, 40 Questions, 46 Fed. Reg. 18026, Question 14b ("If the lead agency leaves out a significant issue or ignores the advice and expertise of a cooperating agency, the EIS may later be found to be inadequate.").

B. The Band has Significant Expertise in Numerous Areas Relevant to this Matter.

The Band has significant expertise with respect to the environmental issues that are the subject of this request. Nancy Schuldt, Water Projects Coordinator in the Fond du Lac Band's Environmental Program, has over 18 years of experience as an aquatic ecologist and water policy professional for the

Band. Nancy Schuldt has served as the Fond du Lac Water Projects Coordinator since 1997. She has a BS in Biology from the University of Dayton, and a MA in Aquatic Ecology from the University of Kansas. She developed the Band's water quality standards and monitoring program, has directed research into fish contaminants and sediment chemistry to characterize mercury impacts to Fond du Lac Band members, collaborated on research into wild rice ecology and toxicity, as well as watershed hydrologic modeling to inform management and restoration efforts. She participates in numerous local, regional, national and binational working groups to ensure the tribal perspective is represented, and initiated a cooperative wastewater management project with the non-tribal community to protect Big Lake, a heavily developed lake on the Reservation. She initiated the tribe's nonpoint source management program, and leads the Band's environmental review of mining and energy industry impacts to trust resources. A copy of her resume is attached as Exhibit 2.

As a cooperating agency, the Fond du Lac Band has worked closely with experts at the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) including, with regard to the hydrology of the site, Dr. John Colman. Dr. Coleman has more than 22 years experience in spatial modeling of natural resources and water monitoring and analysis of hydrologic systems. He has, for the past 18 years, done extensive work on the development and application of groundwater models for characterization of groundwater hydrology at multiple mine sites, as well as modeling data on surface and sub-surface natural resources. He has served as an instructor in cooperation with U.S. Geological Service staff for groundwater modeling training focused on mine sites. He has participated as a member of a cooperating agency on two federal EISs, providing advice on water quality, water quantity modeling, and fugitive materials control, and developed and implemented baseline water quality sampling programs at mine sites. He has also developed and implemented sampling of biota at multiple mine sites to establish baseline concentrations of metals in biota. Dr. Coleman has a B.S. in Wildlife Management from the University of Maine, an M.S. in Fisheries and Wildlife Science from the Virginia Polytechnic Institute and State University, and a Ph.D. in Wildlife Ecology with a minor in Statistics from the University of Wisconsin, Madison. His M.S. and Ph.D. research focused on modeling the distribution and use of natural resources. A copy of his resume is attached as Exhibit 3.

Accordingly, the Band has special expertise on the environmental issues that are the subject of this request. In particular, the CEQ regulations provide that the lead agencies shall "use the environmental analysis and proposals of cooperating agencies with . . . special expertise, to the maximum extent possible consistent with its responsibility as lead agency." 40 C.F.R. §1501.6(a)(2). In addition, the CEQ's guidelines on this issue confirm the importance of incorporating comments of the cooperating agency with special expertise on a subject wherever possible:

> If the lead agency leaves out a significant issue or ignores the advice and expertise of a cooperating agency, the EIS may later be found to be inadequate.

See Council on Environmental Quality, *40 Most Asked Questions Concerning CEQ's National Policy Act Regulations*, 46 Fed. Reg. 18026, 18031 (March 21, 1981).

For all these reasons, the EPA should review the Band's request as that of a cooperating agency with special expertise regarding the environmental issues that are the subject of this request.

III. THE BAND'S REQUEST FOR CEQ REFERRAL.

A referral to the CEQ is necessary to resolve major differences of opinion with the Co-lead Agencies regarding the environmental impacts of the proposed mine which the Band has made timely and concerted efforts to resolve without success. The applicant for the proposed project, PolyMet Mine Inc., seeks to develop a copper sulfide ore open pit mine and processing plant. It would be the first non-ferrous mine in Minnesota and would include three new open pits, permanent and temporary waste rock stockpiles, and processing facilities to extract copper, nickel, and platinum ore. The processing facilities would be at the former LTV Steel Mining Company Site and would use the existing LTV tailings basin. The waste rock at the site is acid generating. The mine would operate for 20 years, after which active closure and post-closure maintenance would need to continue indefinitely. The mine site is within the Superior National Forest, within the 1854 Treaty Territory where the Band holds off-Reservation rights to hunt, fish and gather, and upstream of the Fond du Lac Reservation within the St. Louis River watershed.

As stated above, among the major differences of opinion between the Band and the Co-lead Agencies is a significant disagreement about the characterization of the groundwater hydrology and the impact of the proposed project on surface and groundwater resources in northeastern Minnesota, affecting two major watersheds – the Lake Superior Basin and Rainy River Basin. These watersheds include world class water and natural resources. Most notably the Rainy River Basin includes the Boundary Waters Canoe Area Wilderness, as well as Voyageurs National Park and several of the region's most famous walleye fisheries and other natural resources of great importance. The disagreement on hydrologic characterization of the site, in turn, directly affect the mine's potential impacts on ground and surface water quality, water treatment needs both during the mine operations and post-closure, mercury loading, wetlands, natural resource habitat, cultural resources, and cumulative effects.

The Major Differences of Opinion are summarized in Chapter 8 of the FEIS, a copy of which is attached as Exhibit 4, as well as correspondence from the Band and GLIFWC dated August 11, 2015 and October 20, 2015, attached as Exhibits 5 and 6.[1] The Band and GLIFWC had an opportunity to discuss some of the key differences of opinion regarding the groundwater hydrology with EPA Region 5 staff by conference call on November 10, 2015.

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1 The Major Differences of Opinion (MDOs) in the FEIS are based on differences of opinion as of 2013 when the Supplemental Draft EIS was released. Those MDOs in the FEIS were only updated to show the Co-lead Agencies' additional views, but were not updated to reflect the additional major differences of opinion identified thereafter – namely the mine site's north flow of the waters to the Rainy River Basin post-closure, which was identified in 2015, when the Band and other Cooperating agencies were provided with access to the final hydrologic model. In recent correspondence from the Co-lead Agencies to the Band dated October 12, 2015, the Co-lead Agencies reaffirmed their continued disagreement on these issues. Thus, while the Band and GLIFWC have not yet fully reviewed the FEIS that was released on November 7, preliminary review of the FEIS confirms that the major disagreements persist.

The major differences of opinion on hydrologic characterization of the site also call into question the conclusion expressed by the Co-lead Agencies throughout the environmental review and in the FEIS that the mine "would not directly, indirectly, or cumulatively affect the water" in either the Boundary Waters Canoe Area Wilderness or Voyageurs National Park. *See* FEIS at ES-36. Properly formulated with correct closure water levels, the hydrological model shows that post-closure the waters from the mine site would not only flow south and east as predicted by the applicant but would also, in fact, flow north to the Rainy River Basin (including the Boundary Waters Canoe Area Wilderness).

Although the experts may disagree on the modeling, the difference that exists here is intolerable because if that risk is realized it will lead to permanent and irreparable damage to water quality and natural resources in areas of the Superior National Forest and Boundary Waters Wilderness in which the Band has Treaty rights. Accordingly, the significant disagreement that exists here should be referred to the CEQ.

A. Errors in the hydrologic characterization.

Throughout the development of the EIS the Band has raised concerns about fundamental flaws in the models used to characterize the hydrology at the mine site and plant site. The model was developed by the applicant, PolyMet Mine Inc. and PolyMet's consultant, Barr Engineering. These flaws persist and lead to incorrect conclusions about the potential environmental impacts of the proposed project on water quality and related natural resources, and result in a failure to properly consider the potential effects by the Co-lead Agencies.

The project used several groundwater, surface water, and water quality models (MODFLOW, XP-SWMM, and GoldSim, respectively), to predict the hydrologic and water quality effects of the proposed mine. FEIS at ES-35. The flawed application of those models leads the Co-lead Agencies to incorrectly conclude that the proposed mine "would not cause any significant water quality impacts," would not "result in any significant changes to groundwater and surface water flows when compared to existing conditions," and "would not directly, indirectly, or cumulatively affect the water quality of" either the St. Louis River/Lake Superior Basin or the Rainy River Basin. FEIS at ES-35–ES-36.[2]

As we show next, because the hydrologic characterization of the mine site is flawed, the conclusions drawn from that characterization are incorrect.

Water modeling results are based on a flawed understanding of hydrology at the mine site. FEIS at Chapter 8 (Major Differences of Opinion (MDO)), pp 8-5, 8-11, 8-12 (MDO #1, #7). This fundamental error leads to others. For example, the error made in baseflow calculations is carried forward in the MODFLOW hydrologic modeling. Consequently, MODFLOW may under-predict the amount of water that would flow between the mine pits and the surrounding aquifer and thus under-

2 These conclusions are expressed throughout the body of the FEIS. *See, e.g. id* at 5-5 (no impact on BWCAW); 5-9 (predicting no substantial change to groundwater and surface water flows)

predict the water treatment needs of short and long term closure, and does not adequately identify water quality compliance points. MDO #7; *see also* MDO #1.

As a result of the modeling errors, the Project may overestimate the dilution of polluted water by underestimating flow in the aquifer at the mine site. That error enables PolyMet to reach a fictitious conclusion that there will be no water pollution resulting from the Project. Notably, no bedrock monitoring wells were installed near the tailings basin. The number of groundwater samples used to characterize the Mine Site groundwater quality were based on three or more samples from each of 23 monitoring wells in the surficial aquifer (a 24th well was dry after the first sampling, so it only provided a single sample). Of these, 12 were new monitoring wells installed in the surficial aquifer in 2012, yet data collected from them was not used to model and predict potential impacts to water surrounding the Project. Storage coefficients used to model the entire Plant site area are not consistent with any peer reviewed scientific literature.

The hydrology model that was applied used outdated data collected at a significant distance from the site. *See* Barr Engineering, Water Modeling Data Package Vol.1 Mine Site v12 and Vol. 2 Plant Site v9, March 2013. The Project XP-SWMM model is based on a stream gauging station for the Partridge River that is seventeen miles from the mine site and the data relied on from that station is more than twenty years old; stream gauging data for the Embarrass River is based on data that is more than fifty years old from eleven miles downstream. *Id.* Therefore, the results are highly unlikely to be representative of current conditions at the mine or plant site. This baseline hydrologic data deficiency has been carried forward from the 2009 DEIS, despite ample time and opportunity to collect sufficient new hydrologic data.

Because XP-SWMM's low estimates of baseflow are used in the calibration of the MODFLOW model, it influences many aspects of the baseline site characterization and impacts predictions made on the basis of that flawed characterization. The low estimates affect pit inflow during operations, pit outflow post-closure, dewatering impacts to the Partridge River and wetlands, water treatment needs, groundwater flow rates, contaminant transport times and concentrations, and contaminant dilution in the Partridge River watershed.

In addition, the Mine Site MODFLOW model was calibrated using Partridge River groundwater baseflows determined from historic 1980s flows measured at a downstream gauging station near Colby Lake. At the same time, however, the assumed water level for the Peter Mitchell (Northshore) pits (which lie immediately north of the proposed Mine) was based on the water level in 1996, when the pits had an unusually high water level which had not occurred before or since. As a result the MODFLOW model was calibrated (adjusted to fit reality) to baseflow in 1979-88, yet the Peter Mitchell pit water levels used as boundary conditions in calibration [493 m msl] were those that occurred in 1996, not those that occurred in 1979-88 [less than 483 m msl]. This major temporal mis-match of boundary conditions and calibration targets results in the model being incorrectly calibrated and unable to produce accurate predictions. See GLIFWC letter of August 11, 2015 to the Co-lead Agencies.

B. The adverse environmental impacts that result from incorrect assumptions of post-closure water levels

1. Northward flow of water from the Mine to the Rainy River Basin post-closure. The hydrological characterization of the mine in the FEIS site leads to another major area of disagreement – namely the Co-lead Agencies' assumption that after the mine is closed, water will continue to flow south and east into the St. Louis River basin. The Band, with expert assistance and training by U.S. Geological Service staff, examined the project modeling. The result of MODFLOW modeling of flow direction done by the Band indicate that there will, in fact, be a northward flowpath post-closure. The fundamental flaw in the FEIS estimates of post-closure flow are the result of the applicant, (PolyMet and its consultant), using incorrect water levels for the adjacent Peter-Mitchel taconite pits. Those taconite pits are scheduled, and permitted by the MDNR, to be deepened to approximately 1300 feet elevation and then allowed to reflood to 1500 feet elevation at closure. The FEIS, on the other hand, assumes that the taconite pits will remain at their unusually high 1996 water levels of over 1600 feet. Using the applicant's existing model, but incorporating the correct post-closure water levels for the adjacent taconite pits, results in northward flow of groundwater from the PolyMet project at closure. The northward flowpath means that water from the mine pits will, post-closure, flow north to the Rainy River Basin – not only south and east into the St Louis River watershed as predicted in the FEIS. In short, this one correction to the data used in the model – the use of the known and undisputed water levels for the adjacent Peter Mitchell taconite pits as set out in the MDNR permits for that mine – radically changes the post-closure water flow for the proposed PolyMet mine by 180 degrees.

Indeed, EPA agrees with the Band on this issue. In its comments to the Co-lead Agencies on the Preliminary Final EIS, EPA acknowledged that a post-closure northward flow of contaminated water from the Mine Site's East Pit is possible, yet the FEIS still does not identify possibly impacted resources to the north or predict water quality to the north. *See* Co-lead Agencies Matrix of Cooperating Agencies' Comments at cell K477 (October 12, 2015).

2. Mercury loading. The errors in the hydrologic characterization of the site lead to a major area of disagreement regarding the Co-lead Agencies' predicting that the mine would result in decreases to mercury loading and the concentrations of mercury in fish. (MDO # 2) The PFEIS predicts that there will be a small decrease in mercury loadings to the Partridge River and thus an overall net decrease in mercury loadings to the St. Louis River, despite increased mercury loadings to the Embarrass River. Among other bases for disagreement (including the fact that the CWA does not permit PolyMet's proposal to off-set contaminant-exceedances from one water-body against another), the Co-lead Agencies' projections on mercury mass balance is based on flow estimates from flawed hydrologic models. A mass balance, by definition, relies on accurate estimations of concentration and flow. As a result, the predicted mercury loadings from the mass balance analyses are unreliable. That error, coupled with other significant errors in the FEIS's mercury analysis, *see* GLIFWC's Extended Comments on PFEIS regarding Mercury (August 11, 2015), indicate that it is likely that the project will actually result in a net increase in mercury loadings to both the Embarrass and Partridge Rivers, and ultimately the St. Louis River.

3. *Water quality.* (MDO #13) Adequate characterization of the groundwater system at a proposed mine site is essential to understanding most of the potential impacts from the project. The amount of water entering and leaving the groundwater system, be it precipitation or discharge from the bed of lakes, rivers or mine pits, determines the direction of flow and dilution of contaminants, and dictates points of compliance for both ground and surface waters. The horizontal and vertical conductivity of the soil and bedrock materials determines how the groundwater system responds to stresses and the rate at which the groundwater flows horizontally and vertically. The character of interaction between surface water features and the groundwater system, whether it is loss of water from rivers or wetlands to the groundwater system, or discharge from the groundwater system to the surface water features, determines predicted impacts to surface water features by stresses such as mine dewatering. Estimating water budgets and quantities of water that must be treated requires an adequate understanding of the groundwater system. None of the above effects of a mine project can be predicted accurately if there is not an adequate characterization of the groundwater system.

The essential role of groundwater system characterization is to integrate information from the available sources into a coherent model, as demonstrated by the myriad of uses that have been made of the groundwater model in developing the EIS. The FEIS makes clear that the groundwater model is relied on to predict potential impacts on a wide range of resources. For example, the model directly affects the delineation of the Area of Potential Effect for purposes of the cultural impacts analysis (FEIS page 4-319 and Figure 4.2.9-5). Moreover, the evaluation of water quality – done though the GoldSim contaminant transport modeling, relies on many of the outputs from the MODFLOW groundwater modeling. Because the GoldSim modeling of contaminant transport depends on information generated by the MODFLOW model, it is essential that the MODFLOW outputs be valid. But because the MODFLOW model was incorrectly formulated and calibrated it is very unlikely that the MODFLOW outputs are correct which, in turn, call into doubt the predictions regarding water quality. In short, as a result of the hydrologic modeling errors, GoldSim cannot reliably predict whether the 28 solutes modeled at both the plant and mine sites would meet the Minnesota water quality standards.

4. *Wetlands.* (MDO #8). The disagreement regarding the hydrologic modeling also results in disagreement about the indirect impacts of the mine on wetlands. As described by the EPA in its 2010 comments on the Draft EIS, the proposed mine site will directly affect 1,300 acres of wetlands, 73% of which consist of open bog and coniferous bog communities. EPA further found that this area, as well as the approximately 33,880 total acres within the Partridge River Watershed (where the project lies), are an ARNI – an aquatic resource of national importance – "due to value they provide in terms of unique habitat, biodiversity, downstream water quality and flood control. *See* EPA letter of February 18, 2010 at 17. The EIS accordingly requires analysis of not only the proposed mine's direct effects on wetlands at the site itself, but also an assessment of the indirect wetland impacts.

As summarized in the MDO #8, the December 2013 Supplemental Draft EIS used an analog method of assessing potential indirect impacts from mine site pit dewatering which was not rigorous. It relied on only one comparison which is not analogous and did not use the other data available in the

region in formulating the analog, and as such, the Tribes commented, should not be the sole means of indirect impact assessment for the EIS for wetlands, groundwater, and surface waters. The impact zones and distances from the mine site are arbitrary, as is the automatic exclusion of ombrotrophic wetlands from potential drawdown effects. The Band and GLIFWC undertook an independent assessment using the same methods as the Co-lead Agencies, supplemented by additional analog data from other mining-impacted sites. That analysis showed that an estimated total of 5719.75 acres of wetlands would be potentially susceptible to severe indirect impacts from mine pit drawdown – a larger area than that described in the SDEIS as well as the FEIS – and which should be addressed by up-front mitigation. The Co-lead Agencies changed their approach in the FEIS, such that the analog method was used solely for the identification of monitoring sites. The FEIS makes no attempt to quantify indirect wetland impacts.

The FEIS's assessment of indirect impacts on wetlands is premised on assumptions about hydrology, *see, e.g.*, FEIS at 4-173– 4-180, 5-307, which, given the substantial disagreement on the hydrologic modeling, is not reliable. For example, because hydrologic changes to the Partridge River are unknown, potential impacts to riparian wetlands cannot be properly identified. The FEIS also states that the categories of wetland impact used in the FEIS were those developed during the environmental impact assessment of the Crandon project in Wisconsin. FEIS at 5-307. However, the FEIS did not in fact apply the method applied for the Crandon project in Wisconsin. The "Crandon Method" relied on detailed information on plant communities in the wetland and a detailed knowledge of groundwater hydrology based on a calibrated MODFLOW model – which was not done here.

Further, recent memoranda from the Co-lead Agencies regarding the hydrologic modeling respond to the predicted northward flow of water from the mine to the Rainy River Basin post-closure by advancing a theory that post-closure, a bedrock groundwater mound would form between the two mines and prevent water from the proposed NorthMet pits from flowing northward to the Northshore pits. *See* Co-lead Agencies Memoranda dated October 12, 2015. But their theory about a potential groundwater mound is premised on their consultant's use of an incorrect elevation for land surface and bedrock surface at the site and applied without regard to the actual physical features of the site, consideration of which render the creation of such a mound a physical impossibility. Moreover, this theory directly contradicts what the Co-lead Agencies have said in the PFEIS and FEIS regarding groundwater flowpaths and their relationship to wetlands. In the PFEIS and FEIS, the Co-lead Agencies state that there are no predicted impacts on wetlands because there is no anticipated vertical movement of water (low vertical connectivity) in the area. In contrast, for purposes of the potential mound, they require and assume high vertical connectivity. Both cannot simultaneously exist. There is either high or low vertical connectivity. If they are correct about the mound, then they are wrong about the project's impact on wetlands. In other words, the PolyMet Mine would either substantially dewater the One Hundred Mile Swamp or it will result in substantial northward flow of the groundwater post-closure.

In sum, because the NorthMet project lacks a MODFLOW model that incorporates site characteristics such as accurate water levels in the adjacent taconite pits, the conclusions regarding indirect wetlands impacts are the subject of significant disagreement.

5. *Cumulative Effects*. (MDO #11). The significant disagreements on the hydrology and its potential impacts on water quality, water treatment during mine operations and post-closure, mercury loading, wetlands, natural resource habitat, and cultural resources, also results in significant disagreements about the cumulative effects of the project. The Co-lead Agencies are of the view that no cumulative effects to groundwater resources are expected. The Bands disagree. MOD #11. Bedrock and surficial groundwater pollution is already documented at the sites which PolyMet intends to re-use for this project (the old LTVSMC site which includes a former iron ore plant site and area pits 5, 6, and 9S), as well as the Dunka Pit. The Bands have urged, without success, that cumulative effects at these locations should be assessed with the proposed project along with potential groundwater pollution from nearby iron ore mines – the Peter Mitchell Pit, Laskin Energy, Arcelor-Mittal, United Taconite, and US Steel Minntac. The Bands have also urged future action that should be considered in a cumulative effects analysis is any potential future backfill of Virginia Formation waste rock for in-pit disposal at the Cliffs Peter Mitchell Pit, and that potential dewatering-related interaction effects between the proposed NorthMet Project and the Peter Mitchell Pit should be evaluated for cumulative effects.

The Band also believes that the Co-lead Agencies' decision to limit the cumulative effects analysis area (CEAA) for water resources to the Partridge and Embarrass River watersheds is too small but should be expanded to include the St. Louis River and the Rainy River Basins. (MDO 12). Impacts associated with United Taconite's proposal for 1,200 acres of wetland destruction to build a new tailings basin should be considered. More broadly, the project would add to the load of pollutants that are already causing an excursion from the water quality standards in the St. Louis River and would reduce tributary flows to the river. If true, then project-related impacts that may occur due to the project could be underestimated (due to modeling errors), and would not stop before reaching the St. Louis River. Any added impact from the project to the St. Louis River would in turn impact Lake Superior, making the full St. Louis River Basin the appropriate scale to analyze cumulative effects.

But the Co-lead Agencies, based on their view of the flowpaths that result from the applicant's incorrect identification of post-closure adjacent pit water levels, disagree with the Band, and take the position that the relevant cumulative effects have been evaluated.

C. <u>The need for corrected and properly calibrated hydrological modeling</u>.

The Band and other tribal cooperating agencies have long urged the Co-lead Agencies to require a more rigorous effort to characterize mine site hydrology before any confidence can be placed in predictions of Project impacts. A conceptual and analytical framework that integrates the site's diverse hydrologic data sets is essential in order to draw conclusions about how the project will affect the hydrologic environment. A coherent and consistent framework does not currently exist. A correctly bounded and calibrated MODFLOW model would provide the framework needed for this use. Because the current characterization of the site hydrology is based on pre-conceived notions that adjacent taconite pits have no hydrologic effect, calibration to non-contemporaneous data sets, and predictions based on grossly incorrect post-closure water levels, none of the federal or state agencies which must make decisions on the permits required for the proposed mine can make credible

determinations of the environmental impacts, mitigation measures or public interest required for such decisions.

The Co-lead Agencies have declined to correct the errors in the site characterization or even investigate the impacts of the adjacent taconite pits. They disagree with the Band's position that a corrected and properly calibrated hydrological model is needed. Instead of correcting the flaws in the model, they take the position that the potential adverse impacts can be addressed by "adaptive management" – meaning that after the mine is approved and in operation, monitoring would be done to determine potential adverse impacts, and if such were to occur, then future mitigation measures would be identified, developed and implemented on an as-needed basis. For example, as had been stated in the June 2015 PFEIS,

> Several decisions were made while setting up the GoldSim models. An approach was taken not to represent in those models the interactions between bedrock groundwater and surficial deposits groundwater, or between groundwater and wetlands. Instead, an extensive monitoring was proposed during mine operations and closure to assess if such interactions occur and if they would raise concerns for permitting agencies. If monitoring data indicate trends toward permit non-compliance, adaptive mitigation measures would be implemented to prevent or eliminate what is expected to be a small transport-related bedrock impact relative to surficial flows.

PFEIS 5-53. This approach was carried forward in the FEIS. *See* FEIS at 5-55.

Adaptive management is similarly proposed as the way to address the post-closure northward flow of water from the mine to the Rainy River Basin. The Co-leads have opted for after-the-fact adaptive management, even though a defensible, site specific groundwater model, based on a consistent conceptualization of the site hydrology and correct post-closure pit water levels *could* be used to determine the site hydrology and predict impacts of northward flow.

And rather than undertake hydrologic modeling to determine indirect effects of the mine on wetlands, the FEIS does no analysis at all, but instead relies on adaptive management. The only analysis done was to determine "where monitoring should take place for those areas that were identified as having a potential for indirect wetland effects." (FEIS at 5-257) But a site specific MODFLOW model that incorporates existing information could provide reasonable estimates of the potentiometric surface (water table). *See* GLIFWC Comments of August 11, 2015.

Monitoring does not avoid or prevent mine related environmental impacts. Monitoring can only detect impacts after they have begun to occur and the adaptive management activities would only be a reaction to an impact. At that point, it will be too late to prevent the damage to water quality and the human and natural resources that depend on those waters. The potential impacts should be evaluated to the fullest extent possible in the EIS to better inform efforts to avoid impacts and permitting decisions before the project starts.

The purpose of an EIS is to identify all reasonably foreseeable impacts and scientifically characterize them so that impacts can be avoided and for unavoidable impacts decision makers can evaluate the cost and benefits of a proposed action. The purpose of the EIS is not satisfied by a document that substitutes identification of foreseeable impacts with a plan to monitor the activity so that if adverse effects occur, a plan can then be made to try and mitigate the damage.

D. The CEQ needs to address these significant areas of disagreement

The major differences of opinion on the hydrologic characterization and the evaluation of environmental impacts that directly depend on proper hydrologic modeling amply meet the criteria for a referral to the CEQ. 40 C.F.R. §1504.2(a)–(f). The potential adverse environmental impacts arising from the disagreement on the hydrologic characterization threaten to lead to violations of national environmental standards governing water quality and the protections required by law for the Boundary Waters Canoe Area Wilderness and for Lake Superior – an Outstanding International Resource Water. 40 C.F.R. § 1504.2(a).

Those potential effects are severe, *id.* §1504.2(b), with adverse effects over a broad geographical scope – extending to both the St Louis River/Lake Superior watershed during the mine's operations, and into the Rainy River Basin and the BWCAW post-closure. *Id.* §1504.2(c). Because the mine would operate for 20 years and then, by its own terms, require water treatment facilities to satisfy water quality standards for possibly more than 200 years, the duration of the adverse impacts are effectively perpetual. *Id.* §1504.2(d). Because the project is the first sulfide mine proposed for development in Minnesota, the proposed project and the issues regarding hydrologic characterization would establish significant precedent. *Id.* §1504.2(e).

Finally, the dispute can be resolved by application of a properly formulated and calibrated hydrological model, recognition of the potential of interaction between the proposed project and adjacent taconite mines, and incorporation of correct post-closure water levels. That hydrologic characterization would provide a basis for meaningful evaluation of the potential environmental impacts of the project so that informed decisions can be made for avoiding impacts and on the permits and land exchange required for it to proceed. 40 C.F.R. §1504.2(f).

IV. CONCLUSION.

The Band appreciates EPA's consideration of this request, and looks forward to consulting with you and your staff to discuss it and ensure timely submission of a request for a CEQ referral.

Respectfully submitted,

Wally Dupuis
Vice Chairman

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