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Dear Ms. Fay, Mr. Bruner, and Mr. Jiminez:

The Fond du Lac Band of Lake Superior Chippewa (the “Band”) has reviewed the NorthMet Mining Project (the “Project”) November 2013 Supplemental Draft Environmental Impact Statement (“SDEIS”), notice of which was published in the Federal Register on December 13, 2013, and the Clean Water Act (CWA) §404 wetlands permit notification. We are submitting comments regarding our unresolved questions and concerns for impacts to tribally important and treaty protected resources upstream of our reservation in the St. Louis River watershed, and within the 1854 Ceded Territory, as a result of the NorthMet Project Proposed Action and Land Exchange Proposed Action.

The Band is a federally recognized Indian tribe and one of the six member bands of the Minnesota Chippewa Tribe (“MCT”). The Band is a cooperating agency on the Project, along with other MCT-member Bands, the Grand Portage Band of Lake Superior Chippewa and the Bois Forte Band of Chippewa. All the Bands involved retain hunting, fishing, and other usufructuary rights that extend throughout the entire northeastern portion of the state of Minnesota under the 1854 Treaty of LaPointe¹ (the “Ceded Territory”). Throughout the Ceded Territory, all three Bands have a legal interest in protecting natural resources, and all federal agencies share in the federal government’s trust responsibility to the Bands to maintain those treaty resources.²

¹ Treaty with the Chippewa, 1854, 10 Stat. 1109, in Charles J. Kappler, ed., *Indian Affairs: Laws and Treaties*, Vol. II (Washington: Government Printing Office, 1904), available on-line at <http://digital.library.okstate.edu/kappler/Vol2/treaties/chi0648.htm> (last visited Feb. 1, 2010).

² See, e.g., Exec. Order 13175—Consultation and Coordination With Indian Tribal Governments (Nov. 6, 2000) (stating “the United States has recognized Indian tribes as domestic dependent nations under its protection . . .,” there is a “trust relationship with Indian tribes,” and “[a]gencies shall respect Indian tribal self-government and sovereignty, honor tribal treaty and other rights, and strive to meet the responsibilities that

Fond du Lac sought cooperating agency status for this proposed project because we believed it would provide the most direct and effective way to elevate our legitimate concerns for impacts to treaty-protected cultural and natural resources within the Ceded Territory, as well as impacts within the St. Louis River watershed where our reservation lands are located downstream of the Mesabi Iron Range and the proposed project area, to the state and federal agencies leading the environmental review. We provided substantive comments on the 2009 DEIS, concluding with our opinion that:

“...the DEIS as published does not contain sufficient detail or complete analysis to ensure that environmental consequences of the Project have been fully considered, and the public provided opportunity for review. The deficiencies identified throughout the EIS process by the tribal cooperating agencies have been rarely addressed, let alone incorporated into the analysis.³”

Further, we identified outstanding significant issues including:

- Elimination of the underground mining alternative
- Inadequacy of scoping process
- Inclusion of the proposed land exchange in this EIS process
- Full discussion of appropriate financial assurance for reclamation, remediation and restoration of resources
- Long-term treatment of contaminated water/consistency with maintenance-free closure goals
- Clear discussion of PolyMet liabilities for legacy contamination, and inclusion of existing levels of groundwater contaminants in modeling predictions
- Inadequate water quality impacts analysis
- Project’s effect on existing water quality impairment (mercury bioaccumulation)
- Project’s effect on wild rice waters (sulfate loadings)
- Project’s effect on wildlife corridors
- Project’s effect on air quality (new source of mercury; visibility in Class 1 airshed)
- Inadequate analysis of geotechnical stability (waste rock stockpiles, tailings basin, hydrometallurgical residue cells)
- Inadequate hydrologic and geochemical characterizations using all existing data; insufficient new data to support modeling and assumptions
- Inadequate assessment of indirect impacts to wetlands
- Inadequate cumulative effects analysis, across all resource categories
- Inadequate analysis of impacts to the 1854 Ceded Territories and exercise of treaty rights
- Inadequate analysis of environmental justice issues
- Inadequate analysis of climate change impacts

From our perspective, the only outstanding significant issue from the 2009 DEIS that has been sufficiently addressed in the 2013 SDEIS is the inclusion of the Land Exchange Proposed Action in the analysis.

arise from the unique legal relationship between the Federal Government and Indian tribal governments.”), available at <http://ceq.hss.doe.gov/nepa/regs/eos/eo13175.html> (last visited Feb. 1, 2010).

³ See, FDL DEIS comments Feb 2010

Elimination of underground mining and other alternatives

From the SDEIS Chapter 1:

MEQB statutes and rules (Minnesota Statutes, chapter 116D, sections 04 and 045; and Minnesota Rules, part 4410, subpart 0200 through 7500) require that an EIS include at least one alternative in each of the following categories (in addition to the No Action Alternative):

- *alternative sites,*
- *alternative technologies,*
- *modified designs or layouts,*
- *modified scale or magnitude, and*
- *alternatives incorporating reasonable mitigation measures identified through comments received during the comment periods for EIS scoping or for the DEIS.*

If no alternative is included for any given category, an explanation must be provided in the EIS. An alternative may be excluded if it fails to meet the underlying need for or purpose of the project, is unlikely to have any significant environmental benefit compared to the project as proposed, or another alternative would likely have similar environmental benefits but substantially less adverse economic, employment, or sociological effects.⁴

The NEPA “hard look” requires agencies to “exercise a degree of skepticism in dealing with self-serving statements from the prime beneficiary of a project”⁵ when analyzing alternatives. Contrary to the explicit requirements of the Council on Environmental Quality (CEQ) rules, *the SDEIS does not evaluate or examine in any substantive way potentially viable Project alternatives.*⁶ Even the no action alternative is lacking in detail and analysis. Tribal cooperating agencies identified this deficiency in the DEIS, consistently brought it forward for discussions throughout the SDEIS process, and US EPA cited the lack of alternatives as a factor when issuing an EU-3 rating for the DEIS. Although the SDEIS was revised to reflect the Project proponent’s preferred action, the *only* alternative analyzed in any detail concerns simply the acreage of the proposed land exchange. This is not consistent with the CEQ regulations that require federal agencies to identify an agency-preferred alternative in a draft EIS. Yet the SDEIS states “At this time, the Co-lead Agencies have not identified a preferred alternative, and for the USACE, Appendix B of 33 CFR Part 325 supersedes the CEQ requirement to identify an agency-preferred alternative.”⁷

There is no evaluation or identification in the SDEIS of the ‘least environmentally damaging practicable alternative’ (“LEDPA”) as required before approving a CWA §404 wetlands permit. 40 CFR § 230.10(a) specifies that “no discharge of dredge or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.” In addition, the CEQ guidance clarifies that “Reasonable alternatives include those that are practical or

⁴ SDEIS 1.4.2.2 Alternatives

⁵ Simmons v. United States Army Corps of Engineers, 120 F.3d 664 (7th Cir. 1997)

⁶ 40 C.F.R. § 1502.14 (stating also that the EIS must “[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.”); 40 C.F.R. § 1502.16 (requiring the EIS to include analysis of “[t]he environmental effects of alternatives including the proposed action.”)

⁷ SDEIS, Comparison of Alternatives, 7-12

feasible from the technical and economic standpoint and using common sense, rather than *simply desirable from the standpoint of the applicant.*⁸

Multiple mine plan alternatives exist that could provide mitigation for or prevent long-term environmental damage, but none are considered in the SDEIS. Examples of alternatives and their resultant environmental benefits include:

- paste or dry tailings disposal to reduce the project footprint and use less water (decrease risk of surface and groundwater pollution);
- perpetual pumping of the west pit to prevent a pit lake from forming (protect surface and groundwater);
- back-filling all waste rock into the east, central and west mine pits (reduce the mine foot print at closure, reduce contaminant runoff to surface and groundwater, reduce volume of water requiring perpetual treatment, restore mine site wetlands);
- provide reverse osmosis treatment at the mine site immediately rather than waiting until year 40 (augment water loss in adjacent high quality wetlands in the Partridge River watershed), and;
- underground mining (multiple environmental benefits).

Paste Tailings

A fundamental operational component of the Proponent's preferred alternative analysis described in the SDEIS is to deposit their reactive slurry tailings on top of existing taconite tailings in an unlined basin that is currently required, under a Consent Decree, to remediate seepage that has already polluted the nearby ground and surface waters⁹. The SDEIS analysis assumes a tailings basin seepage capture rate of 95% – a performance efficiency that has not been demonstrated anywhere in the US,¹⁰ nor is it feasible since the tailings basin was constructed (per standard Minnesota ferrous mining practices) without a liner. There is an existing seepage capture system installed at SD026 as a requirement of the Consent Decree, yet it has proven to be so ineffective that Cliffs Erie LLC (the responsible party) has proposed building an additional dam and capture system further downstream¹¹.

Dewatered or paste tailings placed on a liner and covered could substantially minimize the mass and concentration of pollutants reaching the Embarrass River watershed wetlands and the Embarrass River. This is a modern mine waste management technique used by many mines in the US and around the world,¹² yet it has never been evaluated as an alternative for this project. "Converting to paste tailings technology from conventional slurry tailings at most mines makes sense, both environmentally and economically. Paste tailings use less water, require less land, do not require engineered containment dams, generate less acid and contaminants, reduce long-term costs and allow for early reclamation. Slurry tailings use and discharge large volumes of water, require dust control measures, require large

⁸ CEQ, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act, March, 1981.

⁹ Barr Engineering, Long-term Mitigation Evaluation and Implementation Plan for SD026, Prepared for Cliffs Erie LLC and PolyMet Mining Inc., April 2012.

¹⁰ US EPA, Evaluation of Subsurface Barriers at Waste Sites, August, 1998.

¹¹ Letter of Cliffs to John Thomas, MPCA, Compliance and Enforcement, May 7, 2013, regarding planned improvements to SD026 pump-back system, copying Kevin Pylka, PolyMet Mining, Inc.

¹² Mining Engineering, November 2011, Vol. 63, No. 11

(<http://www.knightpiesold.com/en/assets/File/NovemberOptimized11article.pdf> last visited March 1, 2014)

land areas and containment dams for disposal, and create contaminated water that must be captured and treated.”¹³

Perpetual Pumping

The State of New Mexico, Office of Natural Resource Trustee, requires perpetual pumping of the mine pits to prevent formation of a pit lake at the Chino and Tyrone copper mines, specifically for the protection of groundwater.¹⁴ The experience of numerous western mines discharging plumes of polluted water into the bedrock aquifer from leaking mine pits, tailings basins and waste rock piles, highlights a predictable problem that is not only difficult but expensive to fix. By requiring perpetual pumping of the mine pit, the regulatory agencies would minimize leakage of contaminated water into the surrounding bedrock aquifer, and thereby protect groundwater that the State of Minnesota is required to protect as source of drinking water.

Backfilling all waste rock

In the 2009 DEIS, the co-lead agencies maintained that all waste rock should be considered reactive. SDEIS Table 3.2-8, Waste Rock Characterization Properties¹⁵, acknowledges that the Category 1 waste rock (rock that is <0.12% sulfur), which constitutes 70% of the volume of waste rock, has a **“low potential to generate acid, but may leach metals.”** Back-filling all of the mine pits with all of the waste rock would reduce the final surface footprint of the mine at closure, and make possible 526 acres of wetland restoration where the Category 1 stockpile is now proposed to be stored in perpetuity. This alternative would prevent the need for a permanent separate seepage capture system around an unlined waste rock pile, as proposed in the preferred alternative, which would have to perform at an above-optimum capture rate in perpetuity to comply with Minnesota Water Quality Standards (“MN WQS”). Capping and re-vegetating the mine pits after backfilling with waste rock would prevent deep infiltration of precipitation and reduce mobilization of toxic metals.

The SDEIS inexplicably removes the stockpile liner described in the 2009 DEIS for Category 1/2 waste rock in the current project proposed action. From Table 3.2-16 Comparison of DEIS and SDEIS NorthMet Project Proposed Action:

DEIS: Category 1 and 2 waste rock would be stored in a permanent lined/covered stockpile (Category 1/2 Stockpile) north of the west pit (years 1-11)

SDEIS: Category 1 waste rock mined from years 1-13 would be stored in an unlined, permanent stockpile north of the West Pit. The stockpile would have a geomembrane cover system at completion and surface water and groundwater collection system would encompass the entire stockpile and direct water to the Mine Site WWTF

If not backfilled, the Category 1 waste rock stockpile must be lined.

¹³ Kuipers & Associates, Converting to Paste Tailings at the Chevron Mining, Inc. Molybdenum Mine Questa, New Mexico, Sept. 2012.

¹⁴ New Mexico Office of Natural Resources Trustee, Final Groundwater Restoration Plan for the Chino, Cobre, and Tyrone Mine Facilities, January 4, 2012.

¹⁵ SDEIS 3-45

However, combining the two alternatives of perpetual pumping and backfilling the Category 1 waste rock pile would substantially reduce the risk of polluting groundwater and wetlands in the Partridge River watershed.

Underground Mining

The Minnesota Department of Natural Resources (DNR) and US Army Corps of Engineers (USACE) superficially evaluated and subsequently dismissed underground mining as an alternative to the proposed open pit Project for the 2009 DEIS. The co-lead agencies eliminated this alternative from further evaluation because it would have had “a significantly reduced rate of operation that would not be considered economically feasible, and, therefore, would not meet the Purpose and Need of the Project.”¹⁶ Tribal cooperating agencies urged the co-lead agencies, now including the US Forest Service (USFS), to do a more robust analysis of the underground mining alternative for the SDEIS, but the co-lead agencies did not “exercise a degree of skepticism in dealing with self-serving statements from the prime beneficiary of a project”¹⁷ when analyzing this alternative. This alternative was eliminated by the Project proponent based purely on an economic decision that underground mining would not be as profitable as open pit mining.

The co-lead agencies claim that “it was not possible to undertake a quantitative, side-by-side assessment of the underground mining alternative.”¹⁸ An underground mine would have a reduced mining rate and life of mine, employed fewer workers for a shorter period of time, and reduced state and local tax revenues. Although the underground mining alternative would offer substantial environmental benefits (significantly less wetland destruction, less mine-generated waste, less groundwater and surface water pollution generated and requiring treatment and control, less reclamation and closure activities, less nuisance and reactive dust to be controlled, less noise and vibration impacts, less visual impacts), the economic and intrinsic value of those benefits are not even estimated. In addition, an underground mine project would not require a federal land exchange, resulting in lower start-up costs and avoiding the permanent loss of high quality resources (as discussed in later comments on Land Exchange impacts). Based upon an incomplete analysis of the *benefits* of an underground mine, the co-lead agencies determined that this alternative would result in reduced socioeconomic benefits, and; “PolyMet would not move forward with an unprofitable project, thus any potential environmental or socioeconomic benefits associated with this alternative are moot.”¹⁹

The co-lead agencies determined that underground mining was considered technically feasible, but concluded that “PolyMet is a private sector and for-profit company, the value of the saleable material would need to provide sufficient income to cover operating cost (which includes, but is not limited to, the cost of mining, processing, transportation, and waste management), capital cost (to build and sustain facilities), *an adequate return to investors*, reclamation, and closure costs and taxes. An underground mining project would leave most of the NorthMet Deposit unmined because of its low metal value relative to the cost of mining and mineral processing. Other material would have to be left

¹⁶ See MN DNR, US ACE, USFS, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, September 27, 2013.

¹⁷ *Simmons v. United States Army Corps of Engineers*, 120 F.3d 664 (7th Cir. 1997)

¹⁸ See MN DNR, US ACE, USFS, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, September 27, 2013.

¹⁹ *Id.*

in place for safety reasons, to prevent collapse.”²⁰ Therefore, “the Co-lead Agencies found that while underground mining is technically feasible, available, and would offer significant environmental benefits over the proposed NorthMet Project, it would not be economically feasible and would not meet the Purpose and Need. Since the underground mining alternative would not meet all of the screening criteria, it is not considered to be a reasonable alternative. Therefore, the underground mining alternative was eliminated from further evaluation in the SDEIS.”²¹

The SDEIS does not contain the appropriate level of detail required to eliminate this alternative. The conclusion that underground mining is neither viable nor preferable remains substantially unjustified, despite repeated requests by the tribal cooperating agencies for further analysis.²² The Project Proponent, without considering the economics of perpetual treatment, the purchase of thousands of acres of land for the federal land exchange, direct and indirect wetland mitigation costs, etc., concludes in their economic analysis that underground mining is “[n]ot economically viable” while simultaneously claiming that backfilling the west pit would create encumbrances not allowed in their mineral lease due to mineral resources located below the west pit that could only be accessed through underground mining. This is not the appropriate rigor in a cost-benefit analysis for thoroughly evaluating an EIS alternative. The CEQ regulations require that, where a cost-benefit analysis is “relevant to the choice among environmentally different alternatives,” there are a variety of additional requirements, including “analysis of un-quantified environmental impacts, values, and amenities,”²³ in addition to other CEQ alternatives rules.

As already argued in the Tribal Position,²⁴ significant additional study of the underground mining alternative is mandated, and the SDEIS offers no new discussion of the reasons for rejecting the alternative. The economic viability of an underground mine depends on a variety of factors including ore grade, market prices, cost of tailings management, and waste rock disposal. A study of this particular deposit was performed by the prior owner of the site, US Steel, which actually *recommended* underground mining.²⁵ PolyMet is well aware of this study, given that the company included it in a filing with the Securities and Exchange Commission in 2003.²⁶ In fact, by examining geologic cross-sections showing the distribution of ore by depth,²⁷ it appears that there are substantial ore reserves at depths that likely could not be accessed by the proposed open-pit mine. The environmental costs of open-pit mining and the requisite wetland mitigation and above-ground disposal of tailings and waste rock are immense. These environmental costs, combined with the most current understanding of deposit ore

²⁰ *Id.*

²¹ *Id.*

²² Tribal cooperating agency/co-lead agency ‘sieve list’ meetings, teleconferences on this issue

²³ 40 C.F.R. § 1502.23.

²⁴ DEIS Table 3.2-4 fn 22.

²⁵ See, e.g., S.E.C. Form 20-F, PolyMet, Inc. Annual Report for Yr. ending 1/31/03, ITEM 4.D(d) (stating “[a] 1971 study for US Steel suggested mineralized deposits to a depth of 2000 feet and recommended underground mining techniques for recovery.”), available on-line at <http://www.sec.gov/Archives/edgar/data/866028/000086602803000003/pmf2003.txt> (last visited Feb. 1, 2010).

²⁶ *Id.*

²⁷ See PolyMet Tech. Doc. GC06. All Project Technical Documents available on the MNDNR’s ftp site for the Project (password protected) at <ftp://ftp.dnr.state.mn.us/PolyMet/Reports%20and%20Studies/Reports%20Posted%20by%20PolyMet/> (last visited Feb. 2, 2010).

grades, reasonably potential metals prices, and the costs associated with perpetual treatment must all be evaluated to determine the feasibility of this alternative.

No-Action Alternative

From the SDEIS Chapter 3, Screening:

As a result of screening and analysis, the NorthMet Project No Action Alternative (i.e., the NorthMet Project Proposed Action would not occur) is the only alternative to the NorthMet Project Proposed Action evaluated in detail in the SDEIS. Tailings Basin closure cap alternatives were reconsidered, and underground mining and backfilling the West Pit with Category 1 waste rock were considered in more detail, but remained eliminated.²⁸

Even the No Action Alternative analysis is deficient:

Under the NorthMet Project No Action Alternative, the NorthMet Project Proposed Action would not occur. The consideration of a No Action Alternative is required to be evaluated in the SDEIS in accordance with NEPA and MEPA.

If the NorthMet Project Proposed Action is not approved, the Mine Site would be returned to pre-exploration conditions under the requirements of exploration approvals to reclaim surface disturbance associated with exploratory and development drilling activities. Other existing surface uses would be allowed to continue consistent with the Forest Plan.

No further upgrades or new segments would be constructed along the existing power transmission line, railroad, or Dunka Road, which would continue to be used by their private owners.

At the brownfield Plant Site, Cliffs Erie would continue to complete closure and reclamation activities as specified under state permits and plans and the Cliffs Erie Consent Decree. This would include completing activities for the localized affected areas under the Minnesota Voluntary Investigation and Cleanup (VIC) Program, removal of the former Plant Site building, and management of seepage at the Tailings Basin embankment.²⁹

This evaluation must also acknowledge that there would be no direct disturbance of over 900 acres of high quality wetlands, thousands more wetland acres that would not be indirectly affected, no loss of high quality forested uplands, no further diminishment of wildlife habitat, no permanent loss of treaty resources under the land exchange, no cumulative effects to resources and environmental quality. In fact, water quality should improve substantially under the No Action Alternative, as the Cliffs Erie Consent Decree requires that the closed tailings basin ultimately achieves compliance with MN WQS.

The SDEIS is approach to considering less environmentally degrading alternatives is fundamentally inadequate. CEQ rules require that the EIS “present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice

²⁸ SDEIS 3.2.3.1.2 Screening

²⁹ SDEIS 3.2.3.2 NorthMet Project No Action Alternative

among options by the decision maker and the public.”³⁰ The SDEIS must be revised to fully evaluate reasonable alternatives in the SDEIS, including identifying the federal agency preferred alternative and the LEDPA.

Land Exchange

The Band submitted comments³¹ on the Feasibility Analysis for the Proposed Land Exchange, including:

“The Federal Land Planning and Management Act (FLPMA) requires that National Forest System lands may only be exchanged for lands of equal value (43 U.S.C. §1716(a); 36 C.F.R. 254.12(a)). The policy is intended to avoid conferring an inequitable private benefit and the resulting public loss when exchanging federal for non-federal estates. However, the valuation of the federal estate appears to have been made without considering the future use of the property; i.e., the mining project described in the PolyMet DEIS and the de facto purpose for the land exchange. A full consideration of the fair market value and future use of the federal land in the proposed PolyMet Land Exchange would recognize a private windfall instead of an equal exchange, in violation of federal statutes, rules and policies.

...The Band is also concerned that most of the non-federal land proposed in the PolyMet Land Exchange has a divided mineral estate. Divided ownership raises uncertainties about future benefits that that the non-federal surface could afford to the public, further diminishing the value of the non-federal lands, and is not consistent with Forest Service Conveyance policy (36 CFR 254.15) which states:

(ii) The United States shall not accept lands in which there are reserved or outstanding interests that would interfere with the use and management of the land by the United States or would otherwise be inconsistent with the authority under which, or the purpose for which, the lands are to be acquired. Reserved interests of the non-Federal landowner are subject to the appropriate rules and regulations of the Secretary, except upon special finding by the Chief, Forest Service in the case of States, agencies, or political subdivisions thereof (36 CFR part 251, subpart A).

Federal rules also state, “The Secretary is not required to exchange any Federal lands. Land exchanges are discretionary, voluntary real estate transactions between the Federal and non-Federal parties” (36 C.F.R. 254.3(a)). Further, any proposed federal land exchange that is not consistent with forest resource management plans must be rejected under 36 C.F.R. 254.3 (f) which states, “The authorized officer shall consider only those exchange proposals that are consistent with land and resource management plans.” Finally, an exchange of federal land may only be completed after a determination is made “that the public interest will be well served” (36 C.F.R. 254.3(b)). The public interest determination must include a specific finding that “The

³⁰ 40 C.F.R. § 1502.14 (stating also that the EIS must “[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.”). *See also* 40 C.F.R. § 1502.16 (requiring the EIS to include analysis of “[t]he environmental effects of alternatives including the proposed action.”)

³¹ *See* letter to James W. Sanders (USFS), Jon K. Ahlness (USACE) RE: PolyMet Land Exchange Supplemental Draft EIS Scoping, Nov. 29, 2010

intended use of the conveyed Federal land will not substantially conflict with established management objectives on adjacent Federal lands, including Indian Trust lands” (36 C.F.R. 254.3(b)(2)(ii)).

The Fond du Lac Integrated Resource Management Plan (IRMP), approved by the Reservation Business Committee in 2008, identifies both on- and off-reservation resource management priorities, including protecting and improving wild rice harvest, improving in-stream habitat for fishing, preserving traditional hunting, fishing and gathering rights in the 1854 and 1837 Ceded Territories, preserving the quality and quantity of wildlife and wildlife habitat in the Ceded Territories, and vigorous environmental protection such as enforcement of water quality standards affecting the Reservation. The Band expects that the U.S. Forest Service, in facilitating the PolyMet Land Exchange, would coordinate with the policies expressed in our plans to protect natural resources on the Reservation and in the Ceded Territories.

... The Band is extremely concerned about the loss of high quality, even exceptional, wetlands within the federal estate, without sufficient information to understand whether the proposed non-federal parcels provide equivalent functions and values. Clearly, there will be a net loss of over 1400 acres of wetlands under the proposed land exchange, including much of the Hundred Mile Swamp. The federal lands include 4,166 acres of high quality, undisturbed wetlands within the Lake Superior Watershed that would be permanently lost (the map and chart in the FA show all 2,827 acres of Hay Lake wetlands and most of the 1,259 acres of wetlands in the Wolf Lands parcels are outside the Lake Superior Basin).

Access to treaty-protected resources is of prime importance to Band members. Loss of access to or use of public lands within the Ceded Territory can significantly impact exercise of treaty rights, and this issue should be thoroughly evaluated in the SDEIS process. The Band also looks forward to substantive discussions with the U.S. Forest Service as part of the Section 106 (National Historic Preservation Act) consultation process, in order to raise more specific concerns about cultural and natural resource impacts that would likely occur under the proposed land exchange.”

The Land Exchange Proposed Action, as described in the SDEIS, serves to confirm our concerns for permanent, unmitigated impacts to treaty resources in the 1854 Ceded Territory.

The Government Accountability Office (GAO) issued a critical report in 2000, assessing how the Bureau of Land Management (BLM) and the US Forest Service (USFS) land exchange program requirements had been implemented between 1989 and 1999, and identified several significant problems. According to the report, “agencies did not ensure that the land was being appropriately valued, or that exchanges served the public interest, or met certain other exchange requirements. In view of the many problems in both agencies’ land exchange programs and given the fundamental difficulties that underlie land exchanges when compared with cash-based transactions, we believe that the Congress may wish to consider directing the Service and the Bureau to discontinue their land exchange programs.”³² Nine years later in a separate review, the GAO found substantial problems implementing land exchanges.

³² G.A.O., BLM and the Forest Service: Land Exchange Need to Reflect Appropriate Value and Serve the Public Interest, June 2000. <http://www.gao.gov/archive/2000/rc00073.pdf> (Last visited March 4, 2014)

One third of the 31 land exchanges examined had documented issues in the agency's public interest determination.³³

From SDEIS 1.4.3, Land Exchange Requirements:

Regulations provide that the Forest Supervisor "may complete an exchange only after a determination is made that the public interest will be well served" (36 CFR 254.3(b)). Factors that must be considered include: the opportunity to achieve better management of federal lands and resources, to meet the needs of state and local residents and their economies, and to secure important objectives, including but not limited to: protection of fish and wildlife habitats, cultural resources, watersheds, and wilderness and aesthetic values; enhancement of recreation opportunities and public access; consolidation of lands and/or interests in lands, such as mineral and timber interests, for more logical and efficient management and development; consolidation of split estates; expansion of communities; accommodation of existing or planned land use authorizations; promotion of multiple-use values; implementations of applicable Forest Land and Resource Management Plans; and fulfillment of public needs. See 36 CFR 254.3(b) and 254.4(c)(4).

The Land Exchange Proposed Action does not meet the need of the Bands in the 1854 Ceded Territory. It results in a permanent loss of 382 acres, does not protect fish and wildlife habitat within the Mine Site, does not protect important cultural resources such as wild rice beds, historic trails, and a substantial portion of the Mesabi Widjiu, does not protect the Embarrass, Partridge or St. Louis River watersheds, does not consolidate mineral interests in the private parcels that would be conveyed to the federal estate, does not promote multiple-use values, or fulfill public needs.

In the 1854 Ceded Territory, Fond du Lac, Bois Forte and Grand Portage band members can exercise treaty rights on private land, but only with landowner permission unless the land is generally open to public use; therefore, maintaining public land ownership is critical for the exercise of treaty rights. There are 382 acres of Lake County land proposed for the land exchange (Tract 2). This means a net loss, through the exchange, of publicly accessible land for band members exercising their treaty rights. The original Forest Service land and the resources it supports is permanently lost to mine development, and the County land is merely changing the type of public ownership. The Forest Service should consider exchange for private lands *only* in order to maintain - or better yet, increase - the total public land acreage within the 1854 Ceded Territory.

From SDEIS 3.1.2, Land Exchange Overview:

"The federal lands are located adjacent to historic mining projects on the Mesabi Iron Range and are mostly surrounded by privately held land used for mining and other industrial purposes; portions of the east and southwest areas of the federal lands are bordered by Superior National Forest lands."

This language and description is misleading; it downplays the largely undisturbed nature and ecological and biodiversity significance of most of the contiguous lands (i.e., the Hundred Mile Swamp, St. Louis River Headwaters Site). Biodiversity is described in the Forest Plan as the "variety of life and its ecological processes... [as well as] ecosystems, which comprise both the communities of organisms within particular habitats, and the physical conditions under which they live" (USFS 2004b). Biodiversity

³³ G.A.O., BLM and the Forest Service Have Improved Oversight of the Land Exchange Process, but Additional Actions are Needed, June 2009 <http://www.gao.gov/assets/300/290765.pdf> (last visited March 4, 2014)

is important to consider for managing natural communities in a sustainable and ecological manner.”³⁴ The federal lands proposed for exchange contain portions of the Minnesota County Biological Survey (MCBS) Headwater Site.³⁵ “The Headwaters Site straddles the continental divide, with water from the Site flowing both east through the Great Lakes to the Atlantic Ocean and north to the Arctic Ocean. Paradoxically, the divide runs through a peatland. Although the peatland appears flat, water flows out of it from all sides, forming the ultimate source of rivers that eventually reach two different oceans. The Site is the headwaters of four rivers: Stony River, Dunka River, South Branch Partridge River, and the St. Louis River, which is the second largest tributary to Lake Superior....[t]hese conservation areas are the best opportunities for conserving the full diversity of terrestrial and aquatic ecosystems and globally rare or declining species.”³⁶

Of the approximately 6,025 acres of MBS Sites of High Biodiversity Significance under the Land Exchange Proposed Action,³⁷ nearly 2,000 acres of coniferous bog wetlands will be lost to the federal estate and therefore effectively to the Bands, if the Land Exchange Proposed Action is implemented. This is significant because many tribally harvested resources are only available in coniferous bogs (e.g. cranberries, soft-leaved blueberries, sweet flag), and mitigation for coniferous bogs is simply not feasible. The ecological term ‘biodiversity’ equates to ‘abundance’ and ‘subsistence’ for the Bands. The exchange of thousands of acres of high quality wetlands and forests containing some of the few remaining wildlife corridors in northeastern Minnesota available to the Bands to exercise reserved 1854 Treaty rights, for lands that have moderate diversity is inconsistent with fiduciary responsibilities that are shared by all federal agencies.

The SDEIS attempts to diminish the significance of the loss of these high quality lands by stating “Given the existing lack of overland public access and actual use of the federal lands, as well as historic use of this area for mineral exploration (see Section 4.2.9), the Land Exchange Proposed Action represents little to no change in the actual level of recent or current use of the federal lands.” In fact, historic trails connect what is now Beaver Bay with Lake Vermillion. These trails “are associated with the lives of persons significant in our past”³⁸ including John Beargrease³⁹, Peter Gagnon⁴⁰, and Alec Posey⁴¹. In more recent history, Bois Forte Band members used a sugarbush near the plant site and harvested wild rice in the Embarrass River near the LTVSMC tailings basin.⁴²

The SDEIS does not provide adequate discussion of the adverse effects of the proposed land exchange on wetlands and headwater streams within the St. Louis River watershed/Lake Superior Basin, where the loss of first-order headwaters streams, second-order streams and wetlands have the potential to significantly adversely impact downstream water quality, fisheries, and wildlife that are important to the Bands. The Land Exchange Proposed Action would relinquish water resources within the Lake Superior basin for wetlands and surface water resources outside the Lake Superior basin and the St. Louis River

³⁴ SDEIS, p. 5-616

³⁵ SDEIS, pp. ES-31, 4-429

³⁶ Minnesota Biological Survey Division of Ecological Services Department of Natural Resources, *An Evaluation of the Ecological Significance of the Headwaters Site*, March 2007.

³⁷ See SDEIS Table 5.3.4-1

³⁸ 30 CFR Part 60.4(b)

³⁹ Lancaster, D., John Beargrease: Legend of Minnesota’s North Shore

⁴⁰ Bardon, John A., Superior Wisconsin Papers, <http://digital.library.wisc.edu/1711.dl/WI.Hayes1j>

⁴¹ Vennum, Thomas Jr., *Wild Rice and the Ojibway People*, 1988

⁴² Rose Berens, Bois Forte Tribal Historic Preservation Officer, 2010.

watershed, although still within the 1854 Ceded Territory. Federal lands include 4,164 acres of wetlands within the Lake Superior basin; non-federal lands contain 4,669 acres of wetlands, of which only 373 acres are within the Lake Superior Basin, demonstrating there would be a permanent loss of 3,791 acres of federally managed wetlands within the Lake Superior Basin.⁴³ It is well known that wetlands play an important role in protecting the quality and condition of downstream waters by retaining floodwaters, sediment, nutrients, and other pollutants. Wetlands also function as thermal refuge for moose when summertime temperatures exceed 14°C, the point at which moose become thermally stressed,⁴⁴ and wetlands provide an important forage resource for moose during the open water season.

The Superior National Forest Plan clearly states “Lands within the Forest serve to help sustain American Indians’ way of life, cultural integrity, social cohesion, and economic well-being. Superior National Forest facilitates the exercise of the right to hunt, fish and gather as retained by Ojibwe whose homelands were subject to treaty in 1854 and 1866 (10 Stat. 1109 and 14 Stat. 765). Ongoing opportunities for such use and constraints necessary for resource protection are determined in consultation with the following Ojibwe Bands: Fond du Lac, Grand Portage, and Bois Forte. Forest management activities will be conducted in a manner to minimize impacts to the ability of Tribal members to hunt, fish, and gather plants and animals on Forest Service administered lands.”⁴⁵ However, the SDEIS concedes that the land exchange will cause irretrievable losses of resources for the Bands: “The federal lands may contain natural resources culturally important to tribal entities, including access to the land itself, which would be irreversibly lost following the Land Exchange Proposed Action and conversion of the land from public to private ownership.”⁴⁶ Additionally, the SDEIS concludes that the land exchange proposal could have direct and indirect effects on tribal cultural resources by creating noise, impeding access to area that are traditionally or culturally important to the bands and affecting species of importance to the Bands... and that no known cultural resources exist on the non-federal lands.⁴⁷

The SDEIS states, “The Land Exchange Proposed Action would result in additional wild rice beds by the acquisition of Tract 1. Tract 1 contains Little Rice Lake, which supports a continuous population of wild rice. Wild rice also grows along the Pike River south of Little Rice Lake and in isolated populations on Hay Lake.” However, the wild rice waters in Tract 1 are already accessible to the Bands via the Pike River; adding Tract 1 to the federal estate does not provide additional wild rice harvesting opportunities to Band members in the 1854 Ceded Territories even though it would add an additional 126 acres of wild rice beds to the federal estate.

From SDEIS 3.3.1.1, Development of Land Exchange Proposal:

*The boundaries of the federal tract were proposed by the USFS so that any federal lands that PolyMet proposed to surface mine at the NorthMet Project Mine Site would be conveyed to PolyMet. In addition, all federal lands within the same Township to the west of the NorthMet Project Mine Site and north of the LTVSMC Railroad Grade were proposed for exchange. **The additional lands were included to avoid intermingled and inefficient ownership patterns that would result by retaining isolated federal lands without legal access immediately south of the Superior National Forest Proclamation Boundary.** The additional proposed lands are also impacted by past and ongoing mining activities including being subject to special use permits.*

⁴³ SDEIS Table 5.3.3-4, p. 5-598

⁴⁴ Karns, P. D., Ecology and Management of the North American Moose, 1997.

⁴⁵ USFS, Superior National Forest Plan, pp. 2-37 and 2-38

⁴⁶ SDEIS, 7-10

⁴⁷ SDEIS, pp. 5-661, 5-674

The recommendation for the boundaries of the federal lands was based on the following standards and guidelines in the Forest Plan.

This is the essential argument against Alternative B, from the Bands' perspective. The additional lands would essentially be permanently removed from tribal access, habitat and resources would be degraded, and there would be no compensation via conveyance of lands to the federal estate.

The desire to resolve "conflict" between the USFS and the Project proponent, whose goal to develop an open pit mine is barred due to deed restrictions on the federal estate, should not prevail over the federal fiduciary responsibility to the Bands. The potential for more roads and hiking trails may provide more access to the public, but does nothing to promote habitat diversity and long-term ecosystem sustainability that are requirements for the preservation of tribal usufructuary rights. Although the Land Exchange Proposed Action may increase acreage in the federal estate, the countervailing permanent loss of critical wildlife corridors, high quality and diverse land and water resources that would result is simply not in the public interest.

In summary, federal land exchanges are **discretionary**, and federal agencies cannot approve permits that will have impacts to treaty resources without additional evaluation and mitigation.⁴⁸ No mitigation has been identified in the SDEIS for this permanent loss of lands and resources (natural and cultural) to the 1854 Ceded Territory. The public interest determination must include a specific finding that "The intended use of the conveyed Federal land will not substantially conflict with established management objectives on adjacent Federal lands, including Indian Trust lands" (36 C.F.R. 254.3(b)(2)(ii)). This threshold has not been met, and the Fond du Lac Band objects to the implementation of the Land Exchange Proposed Action.

Financial Assurance

There is a growing awareness among Minnesota citizens of the need for sufficient financial assurance for the Proposed Project, as evidenced by testimony at the Legislative Committee⁴⁹, numerous comments made by citizens at the three public hearings, and a recent public statement by the Minnesota State Auditor⁵⁰. The General Accounting Office ("GAO"), in testimony before the US Senate Committee on Energy and Natural Resources entitled *HARDROCK MINING: Information on Abandoned Mines and Value and Coverage of Financial Assurances on BLM Land*, presented findings that in total, the federal government had spent at least \$2.6 billion to remediate hardrock mine sites from 1998 to 2007.⁵¹ The USEPA has recently identified mines as a priority class of facilities for which to develop financial responsibility requirements.⁵² In 2009, as part of the largest environmental damage bankruptcy case in U.S. history, the mining company ASARCO was ordered to pay \$194 million to resolve environmental liabilities from operations that contaminated land, water, and wildlife resources on federal, state, tribal,

⁴⁸ See, e.g., Exec. Order 13175—Consultation and Coordination With Indian Tribal Governments (Nov. 6, 2000), available at <http://ceq.hss.doe.gov/nepa/regs/eos/eo13175.html> (last visited Feb. 1, 2010).

⁴⁹ See <http://www.house.leg.state.mn.us/comm/docs/PolyMet-MWatkins.pdf>

⁵⁰ <http://www.startribune.com/opinion/commentaries/232745641.html> "State Auditor on Mining: Long Term Risk Too Hard to Quantify", Nov. 20, 2013 (last visited March 10, 2013)

⁵¹ GAO-08-574T (March 12, 2008), available on-line at <http://www.gao.gov/new.items/d08574t.pdf> (last visited Feb. 1, 2010).

⁵² EPA Advance Notice of Proposed Rulemaking, Priority Classes of Facilities for Development of CERCLA Section 108(b) Financial Responsibility Requirements, 75 Fed. Reg. 816 (Jan. 6, 2010).

and private land.⁵³ The State of Minnesota has spent millions of dollars remediating mine sites (e.g. Reserve Mining).⁵⁴

In order to determine the impacts of a mine, the effectiveness of closure and reclamation after the mine is no longer in use must be assessed.⁵⁵ But in the SDEIS, no detail is provided regarding the estimated amount of financial assurance that would be sufficient for reclamation, closure, mitigation, and remediation of adverse effects from the Project. Even though the DNR has stated that PolyMet financial assurance will include clean-up costs for contamination resulting from LTV operations⁵⁶, the SDEIS provides neither a timeline nor a discussion regarding financial assurance for the existing contamination associated with previous mining activities at the site. This is of particular concern because the hardrock mining industry has a pattern of failed operations, which often require significant environmental responses that cannot be financed by industry.⁵⁷

In the co-lead agency evaluation of the underground mining alternative, the North Met Deposit is described as a “low- to medium-grade mineral resource”⁵⁸ which is somewhat at odds with its description as “one of the largest untapped deposits of copper and nickel, and other precious metals” or “world class resource” as it is represented throughout the SDEIS and in continual media coverage. From the SDEIS, we are not able to determine whether mining this mineral deposit in accordance with environmental standards will be profitable enough to provide adequate environmental protections and financial assurance. The financial assurance costs for long-term treatment identified in the SDEIS range from \$3.5 to \$6 million, but appears to be an estimate for monitoring activities only⁵⁹ *without any long-term wastewater treatment costs*. At another mine site on the same property, the estimate of annual operation and maintenance costs for the same type of wastewater treatment the Project proposes to use (reverse osmosis/nano-filtration) was \$2.6 million.⁶⁰ Perpetual operation and maintenance of mechanical wastewater treatment is an additional cost that must be represented in the estimate of financial assurance. The cursory estimate of financial assurance provides little detail about how the cost estimates were derived. Instead, specific discussions about the scale and appropriate instruments for financial assurance have been postponed until the permitting phase of this Project. This approach fundamentally contradicts federal and state environmental policy and the SDEIS must be revised, with significant additional study, to appropriately evaluate closure, mitigation, reclamation, and perpetual

⁵³ Dept. of Interior News Release, “ASARCO Settlement Provides \$194 Million for Federal, State and Tribal Wildlife and Habitat Resource Restoration” (Dec. 10, 2009), available on-line at: <http://www.fws.gov/pacific/news/2009/ASARCOSettlementNR.pdf> (last visited Feb. 1, 2010).

⁵⁴ See, e.g., Greg Vandegrift, KARE 11 News, “The Dirty Legacy of Reserve Mining” (Nov. 29, 2006), available on-line at: http://www.greatlakesdirectory.org/mn/121406_great_lakes.htm (last visited Feb. 1, 2010).

⁵⁵ EPA, Office of Solid Waste and Emergency Response, Financial Assurance for Hardrock Mine Cleanup (2007), Training Doc., Ex. E; see also EPA Advance Notice of Proposed Rulemaking, Priority Classes of Facilities for Development of CERCLA Section 108(b) Financial Responsibility Requirements, 75 Fed. Reg. 816 (Jan. 6, 2010).

⁵⁶ SDEIS, 4-11.

⁵⁷ See 40 C.F.R. § 320.

⁵⁸ See DNR, US ACE, USFS, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, September 27, 2013.

⁵⁹ Foth Infrastructure & Environment, LLC, Memo to PolyMet Mining Inc., March 11, 2013. Ex. A.

⁶⁰ Barr Engineering, Area Pit 1 Evaluation in Support of Non-Degradation Analysis Mesabi NuggetPhase II, Nov. 30, 2009.

treatment cost estimates. As Minnesota State Auditor Rebecca Otto stated in her November 20, 2013 opinion piece in the *Minneapolis Star Tribune*:

“Finally, a financial assurance review should be included in every environmental impact statement. Annual reviews of financial assurances should be required and made available to taxpayers upon request, not just when the Department of Natural Resources decides to make them public.”

Long-term treatment of contaminated water; consistency with maintenance-free closure goals

The SDEIS lists the sulfur concentrations of Project waste rock ranging between 0.01 - 5.0%⁶¹ with an average mass-weighted concentration of 0.15%. The Virginia Formation has the highest concentrations of sulfur at 0.4 - 5.0%, and the Duluth Complex 0.13 – 0.6% sulfur. These concentrations are at least equal to, or in some instances significantly higher than the Zortman-Landusky mine waste rock (0.2% sulfur)⁶² that requires perpetual wastewater treatment. Just as Zortman-Landusky predicted for their mine project, PolyMet has suggested that “most (70%) of the NorthMet waste rock would be the low-sulfur, non-acid-generating” and will never cause acid mine drainage.

Yet the SDEIS speaks to the need for at least centuries of wastewater treatment at both the Mine Site and Plant Site:

“Once the West Pit is full (approximately year 40), discharge of treated water from the WWTF to the West Pit would be terminated. The WWTF would be upgraded to RO and include evaporator/crystalizers to convert the RO reject concentrate to residual solids, which would be disposed of at appropriate off-site facilities.”...Based on current GoldSim P90 model predictions, treatment activities could be required for a minimum of 200 years at the Mine Site...⁶³

...Mechanical water treatment is part of the modeled NorthMet Project Proposed Action for the duration of the simulations (200 years at the Mine Site, and 500 years at the Plant Site). The duration of the simulations was determined based on capturing the highest predicted concentrations of the modeled NorthMet Project Proposed Action. It is uncertain how long the NorthMet Project Proposed Action would require water treatment, but it is expected to be long term; actual treatment requirements would be based on measured, rather than modeled, NorthMet Project water quality performance, as determined through monitoring requirements.⁶⁴

The tribal cooperating agencies have provided substantial evidence that the modeling for the NorthMet Project Proposed Action potentially underestimates those ‘highest predicted concentrations.’ This will affect both volumes of water requiring treatment and duration of the need for mechanical treatment.

...After refill, the West Pit water level would be controlled by pumping to the WWTF to prevent surface water overflow from the pit lake. However, release of pit lake water to the West Pit

⁶¹ SDEIS, 5-52

⁶² US EPA Office of Solid Waste and Emergency Response, Financial Assurance for Hardrock Mine Cleanup, March 2007.

⁶³ SDEIS 3.2.2.1.10 Reclamation and Long-term Closure Management

⁶⁴ SDEIS 5-7

Surficial Flowpath would continue. The WWTF would also receive low flow rates from the Category 1 Stockpile groundwater containment system. The WWTF effluent would be discharged into a tributary channel that flows into the Partridge River at the location shown on Figure 5.2.2-15.⁶⁵

*Mine site: The WWTF would continue to operate during long-term closure, treating excess water from the West Pit and discharging the effluent to the small Partridge River tributary. The typical discharge rate from the WWTF is predicted to be 285 gpm. The water balance model predicts **periodic temporary higher treatment/discharge rates to account for conditions when the freeboard in the pit becomes too small.** By pumping pit lake water to the WWTF, the pit water level would be managed to always provide sufficient freeboard to absorb extreme precipitation events without overflowing. The estimated discharge for this condition is 570 gpm. In the water balance model, the occasional switch to the “high” treatment flow pushes the long-term average discharge rate to 290 gpm.⁶⁶*

Plant Site: During long-term closure, the WWTP would continue to treat water collected by the Tailings Basin containment systems. Some of the treated effluent would be used for flow augmentation to Unnamed Creek, Mud Lake Creek, Trimble Creek, and Second Creek. It is predicted that Colby Lake water would no longer be needed for augmentation (Barr 2013a). Tailings seepage bypassing the containment system (approximately 19.4 gpm) would continue to enter the North, Northwest, and West Surficial flowpaths, and migrate slowly toward the Embarrass River.⁶⁷

***By year 200 in closure, which reflects when effects would have peaked and would be decreasing,** the WWTF would be discharging and all groundwater contaminant loads would have reached the Partridge River (except negligible contributions from the bedrock flowpaths).⁶⁸*

Whatever the long-term goals to transition to non-mechanical treatment, this acknowledges a minimum of 200 years of operation of the WWTF. It is clear that the NorthMet Project Proposed Action would require long term treatment of water at both the Plant and Mine Sites. The minimum duration of this treatment is on the order of centuries, but the SDEIS does not provide an estimate of when mechanical treatment would no longer be needed to meet MN WQS. Therefore, as provided in multiple comments on the preliminary SDEIS, Fond du Lac conservatively assumes that water treatment for the proposed PolyMet mine is perpetual **and the SDEIS should be clear on this issue.**

However, instead of clarifying this factor, it appears that the co-lead agencies are attempting to minimize the significance of the necessity for long term/perpetual treatment by using vague and confusing language in the SDEIS. The specific language describing long term water treatment has changed during the development of the document, even though the model results have not. The co-lead agencies use creative wording to obscure the results of the modeling; this is misdirection at best and highly inappropriate for the co-lead agencies to present to the public.

In addition to water treatment, there will also need to be a substantial investment in long-term or

⁶⁵ SDEIS 5.2.2.3 NorthMet Project Proposed Action, Closure (After year 40)

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.*

perpetual operation, maintenance and replacement of other environmental controls for the Project, including seepage capture and pumping at multiple locations at both the mine site and plant site, repair and replacement of liners, managing appropriate stream augmentation and Tailings Basin pond elevation, and pumping, treating, and disposal of seepage from the HRF:

*The Tailings Basin pond would primarily receive solute loadings from the tailings, treated Mine Site process water (primarily during years 1 to 11, and possibly through year 20, depending on the NorthMet Project Proposed Action water budget), and captured seepage from the groundwater containment system. The Tailings Basin pond, in turn, would become a primary source of contaminants as its water seeps into the tailings. Therefore, the composition of the Tailings Basin pond, which would be a **permanent feature of the Tailings Basin**, would be an important component in the quality of water that would be discharged from the Tailings Basin. Thus, PolyMet proposes to **use the WWTP to treat the pond water during reclamation, and as necessary during closure, to maintain the design water level and prevent overflow**. The presence of the pond in closure would provide benefits as it would create a saturated layer that would permanently reduce the oxygen flux and associated solute release in the underlying tailings.⁶⁹*

*The groundwater containment system would **continue to operate during reclamation and closure**, although in those phases, the seepage could not be reused as process water, but would be treated at the WWTP and used to accelerate filling of the West Pit (during reclamation) and **for streamflow augmentation (during closure)**. Although it is designed to capture all of the Tailings Basin seepage, the groundwater containment system is assumed to capture 90 percent of the groundwater flow that approaches the system (PolyMet 2013g).⁷⁰*

*During reclamation, all WWTP effluent would be used to help flood the West Pit; therefore, during this phase, all augmentation water would come from Colby Lake (approximately 1,600 gpm). In closure, it is expected that **effluent from the WWTP alone (estimated at approximately 2,000 gpm)** would be sufficient to meet the minimum flow augmentation requirements of the tributaries without requiring additional water from Colby Lake.⁷¹*

These statements indicate the need for perpetual WWTP operation, if for no other reason than needing clean water for stream augmentation, which will be required in perpetuity to compensate for the hydrologic impacts of the Tailings Basin.

*The rate of drainage would decrease over time as the pore water within the hydrometallurgical residue is collected and removed. Once the entire facility is closed, the volume of water from the drainage collection systems would decline. In the long term, the volume of water requiring treatment would decline to the point that the **remaining reclamation activity may consist of periodic pumping of remaining drainage into tank trucks for transportation, treatment, and disposal, as appropriate, and of inspection of the closed cells to verify integrity of the reclamation systems.**⁷²*

⁶⁹ SDEIS 5-161

⁷⁰ SDEIS 5-161, Engineering Controls

⁷¹ SDEIS 5-178

⁷² SDEIS 3.2.2.2.3.11, Water Management: Hydrometallurgical Residue Facility Reclamation

...The water quality of both mine pits, however, is predicted to improve over time as the pits become flooded, thereby effectively eliminating oxidation of the pit walls, the primary source of solutes, except for the upper few feet where water levels may fluctuate. Figures 5.2.2-37, 5.2.2-38, and 5.2.2-39 show how the water quality in the West Pit is predicted to improve over time for three representative solutes: cobalt, nickel, and sulfate. **It is expected that eventually the solute concentrations in the pits would stabilize to more or less steady-state values, although the timeframe for this would likely be greater than 200 years** as indicated by Figures 5.2.2-37 to 5.2.2-39, which show solute concentrations continuing to decrease at year 200, although **still above water quality standards**. These predicted improvements in water quality suggest that the WWTF may not need to operate permanently, but that at some point, non-mechanical treatment systems may be sufficient to meet water quality standards.⁷³

The SDEIS frequently states the long-term goal is to transition to non-mechanical treatment, but there is little evidence to suggest that current treatment technologies can consistently treat large volumes of water to meet WQS. Furthermore, constructed wetlands would require substantial acreage to handle the volume of wastewater that will perpetually be collected, and do not function well in our cold climate for at least half of the year (when vegetation is not actively growing).⁷⁴ They are not likely to be able to treat wastewater sufficiently to consistently meet water quality standards, including the wild rice sulfate criterion.⁷⁵ But perhaps most the most significant factor to consider for the likelihood of successfully transitioning is that non-mechanical treatment, at least at the Mine Site, necessitates the seasonal application of the wild rice sulfate criterion:

*“...However, the non-mechanical system will be designed to discharge only during a portion of the year, **to comply with the seasonal discharge criterion** for wild rice downstream of the Mine Site. The design of the West Pit Overflow Non-Mechanical Treatment System is based on a discharge period of two months, September and October.”⁷⁶*

As described in the AWMP, this type of non-mechanical treatment system cannot meet the 10mg/l sulfate criterion. At this time, the continued implementation of the seasonal application of that criterion is highly questionable as recent research conducted by the University of Minnesota on behalf of the MPCA indicates excess sulfate loading is detrimental to wild rice regardless of the time of year.⁷⁷

The SDEIS requires substantially more public transparency and less equivocation on what is arguably one of the most fundamental issues at stake for this project: how long will the company be required to flawlessly operate and maintain expensive mechanical treatment to comply with MN WQS? Clearly there are other engineering controls and management actions that will absolutely have to flawlessly operate and require maintenance in perpetuity (seepage collection, liners, pumps, waste rock stockpile cover systems, waste disposal, stream augmentation, Tailings Basin pond elevation management). This

⁷³ SDEIS 5-155

⁷⁴ See http://www.itrcweb.org/miningwaste-guidance/cs_dunka_mine.htm, Case Study as part of a Web-based Technical and Regulatory Guidance, Dunka Mine Minnesota

⁷⁵ Id.

⁷⁶ Adaptive Water Management Plan 6.3.2, West Pit Overflow Non-Mechanical Treatment System

⁷⁷ See *Temperature Dependent Diffusion Rates of Sulfate in Aquatic Sediments*, W. Derocher and N. Johnson, ftp://files.pca.state.mn.us/pub/tmp/wildRice/Sediment_Incubation_Experiments/Temperature_Dependent_Diffusion_Rates_of_Sulfate_in_Aquatic_Sediments_final.pdf

singular issue has significant repercussions for the public interest determinations and the scale of required financial assurance."

Clear discussion of PolyMet liabilities for legacy contamination

The tribal cooperating agencies have repeatedly requested a clear answer to our question regarding remedial action requirements for the legacy contamination at the portion of the former LTV site that PolyMet has acquired and proposed to use for their processing operations. While the co-lead agencies stipulate in the SDEIS that PolyMet will bear liability through financial assurance, it is troubling to see that apparently, they will not be required to complete remedial activities until closure, many decades from now:

All historic and any potentially operational AOCs not already addressed by the start of mine closure would be investigated and remediated as necessary. The MDNR has indicated that any associated cleanup costs for the legacy AOCs would be included in the financial assurance requirements for any Permit to Mine issued to PolyMet for the NorthMet Project Proposed Action (Watkins, Pers. Comm., April 13, 2009).⁷⁸

The SDEIS identifies 29 Areas of Concern (AOCs) that are now PolyMet's legal responsibility, but still does not provide the necessary clarity about the status of remedial investigations and/or actions necessary to clean up the contamination that occurred over decades of taconite mining and processing.

*Upon the purchase of a portion of the site, PolyMet became responsible for 29 AOCs (see legacy contamination discussion in Section 4.2.1.4.2). Of these, five have already been closed or have received a No Further Action letter from the MPCA (see Table 4.2.1-2). **Additional investigation would be required to determine whether the remaining AOCs require further action.** The NorthMet Project Proposed Action offers no direct resolution for the 33 AOCs that are designated as the responsibility of parties other than PolyMet (see Table 4.2.1-2). The MPCA VIC program would be utilized to facilitate and oversee remediation activity for any remaining potential historical releases on the 29 AOCs under the NorthMet Project Proposed Action.⁷⁹*

In particular, some of the AOCs identified as PolyMet's responsibility are key components in their NorthMet Project Proposed Action:

*The Area 1 Shop is an existing fully enclosed maintenance facility built specifically to handle maintenance and repair work on large mining equipment....
The former LTVSMC Area 2 Shop, located about 7 miles west of the Mine Site, would be reactivated to provide office space for mining and railroad operations supervision and management, as well as change house facilities, toilets, lunch rooms, first aid facility, emergency response center and training, and meeting rooms for mining and railroad crews. The Area 2 Shop facilities would include the Locomotive Fueling Station, Locomotive Service Building, and Mine Reporting Building...⁸⁰*

⁷⁸ SDEIS 4.2.1.4.2 Legacy Contamination

⁷⁹ SDEIS 5.2.1.2.3 Areas of Concern

⁸⁰ SDEIS 3.2.2.3.8 Required Process Services

and

*The NorthMet Project Proposed Action would utilize the existing general shop facility previously used by LTVSMC for re-fueling, routine inspection, and maintenance of locomotives and ore cars. Locomotives needing major repair would either be sent off site or repaired by a contractor in the general shop facility.*⁸¹

Despite repeated requests for a clear response from the co-lead agencies, the tribal cooperating agencies still do not know what PolyMet will be required to do, or when they will be required to do it, regarding their legacy contamination liabilities. The SDEIS does not provide sufficient information for the public to understand whether the NorthMet Project Proposed Action will be required to remediate these and other AOCs before commencing project operations, or be allowed to defer remediation until closure. It is not clear in the SDEIS how the Voluntary Investigation and Cleanup (“VIC”) program requirements will be applied to PolyMet:

“As per Minnesota statute, voluntary parties and their contractors who are not otherwise responsible parties do not incur liability for investigation (Minn. Stat. § 115B.17, subd. 14) or response actions (Minn. Stat. § 115B.175, subd. 1) as long as those actions are conducted in accordance with a work plan or response action plan reviewed and approved by the VIC Program.”⁸²

Cliffs Erie (now Cliffs Natural Resources) was party to a Consent Decree⁸³ and approved work plan(s) with MPCA regarding their remedial responsibilities, but there is little information in the SDEIS for the public to be assured regarding the need for PolyMet to enter into a legally binding agreement and develop approvable work plans to address their responsibilities. We understand that PolyMet has been coordinating with Cliffs on the reissuance of the Tailings Basin NPDES permit (and variance too, apparently), and incorporating corrective actions in their project design, but the SDEIS is virtually silent on the other AOCs. It seems reasonable to expect PolyMet to clean up *all* legacy contamination as quickly as possible; in fact, remedial actions should be integrated with the ‘refurbishing’ actions they plan to do to re-tool the taconite processing facilities to accommodate their processing needs. The Project Proponent has frequently touted the redevelopment of a ‘brownfield site’ as evidence of its environmental sensitivity, but the public may not realize that the actual cleanup of LTV’s legacy contamination may be deferred until reclamation and closure of the NorthMet Project. This timeline is not acceptable, and the SDEIS should not be vague about the pace of fulfilling remedial requirements.

Inadequate hydrologic and geochemical characterizations using all existing data; insufficient new data to support modeling and assumptions

Many of the deficiencies in site characterization and water modeling from the 2009 DEIS persist in the 2013 SDEIS despite some new data collection (not all of which was used) and new modeling (using unrealistic or unsupported assumptions and neglecting to consider critical features). As detailed in extensive comments submitted by tribal cooperating agencies to the co-lead agencies over the past seven years, water quality analyses for the Partridge and Embarrass Rivers are inadequate. Water modeling results, whether deterministic (DEIS) or in the form of probability

⁸¹ SDEIS 3.2.2.3.9 Transport of Consumables and Product

⁸² See <http://www.pca.state.mn.us/index.php/view-document.html?gid=18603> (MPCA Brownfield Program Services)

⁸³ See MPCA v. Cliffs Erie Court File No. 62CV-IO-2807

distributions (SDEIS) are based on flawed understanding of hydrology at both the mine site and plant site. One example of this flawed understanding is the error in baseflow calculations, which is carried forward in the MODFLOW hydrologic modeling.⁸⁴ At the mine site, MODFLOW under-predicts the amount of water that would flow into the mine pits and thus under-predicts the amount of water treatment needed for both short and long term closure. At the plant site, the MODFLOW model is constructed in a way that is not representative of the site's physical conditions and therefore yields results that are not logical.

“Hard rock mining affects fresh water through heavy use of water in processing ore, and through water pollution from discharged mine effluent and seepage from tailings and waste rock impoundments.”⁸⁵ Acid mine drainage (“AMD”) is one of the greatest environmental liabilities associated with mining, especially in pristine, water-rich environments like the Project mine site, that have economically and ecologically valuable natural resources.⁸⁶ There are no hard rock surface mines that exist today that can demonstrate that AMD can be stopped once it occurs on a large scale.⁸⁷ Inaccurate pre-mining characterization and interpretation often results in a failure to recognize or predict impacts to water quality and aquatic life.⁸⁸ Evidence from literature and field observations suggests that permitting large scale surface mining in sulfide-hosted rock with the expectation that no degradation of surface water will result due to acid generation imparts a substantial and unquantifiable risk to water quality and fisheries.⁸⁹

In a report comparing predicted and actual water quality at hard rock mines, two types of **characterization failures** were identified that led to differences between the predicted water quality in EIS documents and the actual water quality either during or after mining began.⁹⁰ These included:

- (1) insufficient or inaccurate characterization of the hydrology
The authors reported primary causes of hydrologic characterization failures as overestimations of dilution, lack of hydrological characterization, overestimations of discharge volumes, and underestimations of storm size.⁹¹
- (2) insufficient or inaccurate geochemical characterization of the proposed mine.⁹² The primary causes of geochemical characterization failures were identified as lack of adequate geochemical characterization, in terms of sample representativeness and sample adequacy.⁹³

⁸⁴ See John Coleman (GLIFWC) memo to Tom Hingsberger (USACE), Erik Carlson (DNR): “PolyMet model calibration to Partridge River Low Flows, March 2, 2012

⁸⁵ Safe Drinking Water Foundation, Mining and Water Pollution, (<http://www.safewater.org/PDFS/resourcesknowthefacts/Mining+and+Water+Pollution.pdf> last visited March 1, 2014)

⁸⁶ Reclamation Research Group (Bozeman, MT) for USFWS Anchorage, Alaska, “Acid Mine Drainage and Effects on Fish Health and Ecology: A Review” (2004), Ex. G.

⁸⁷ Earthworks Factsheet, “Hardrock Mining: Acid Mine Drainage,” available on-line at http://www.earthworksaction.org/pubs/FS_AMD.pdf(last visited Feb. 1, 2010).

⁸⁸ Reclamation Research Group, “Acid Mine Drainage...,” Ex. G.

⁸⁹ *Id.*

⁹⁰ Kuipers & Assocs., “Comparison of Predicted and Actual Water Quality at Hardrock Mines,” at ES-11 (2006), attached at Ex. H.

⁹¹ *Id.* at ES-14.

⁹² *Id.* at ES-13

The primary causes of **mitigation failures** were that mitigation measures were not identified, were inadequate, or were not implemented; waste rock mixing and segregation was not effective; liners leaked; tailings were spilled; or embankments failed, and land application discharge was not effective.

The NorthMet Project Proposed Action, as defined in the SDEIS includes **all** of these characterization failures.

The Project **overestimates dilution** of polluted water by underestimating baseflow in the bedrock surficial aquifer at both the mine and plant sites.

A fundamental **lack of hydrologic characterization** enables PolyMet to reach a fictitious conclusion that there will be no water pollution resulting from the Project. No bedrock monitoring wells were installed near the tailings basin. The number of groundwater samples used to model the Mine Site included 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).⁹⁴ 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.⁹⁵ 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.⁹⁶ 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 from that station are twenty years old⁹⁷; and stream gauging data for the Embarrass River that is based in data that is more than fifty years old from eleven miles downstream.⁹⁸ 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.

The tribal cooperating agencies have long urged the co-lead agencies to require a more rigorous modeling effort before any confidence can be placed in predictions of Project impacts. From the March 2, 2012 Coleman memo to the co-lead agencies:

“The calibration of the Modflow model to a Partridge River baseflow of 0.76 cfs predicted by XP-SWMM results in a model that moves very little water through the groundwater system. This can result in low predicted rates of inflow to the mine pit and slow movement of contaminants from sources (stockpiles or reflooded pits) to points of evaluation. More generally, an incorrect baseflow calibration target results in excessively low estimates of recharge and likely incorrect estimates of horizontal and vertical conductivity. These hydrologic parameters are interrelated and getting one wrong, as appears to be the case with baseflow, will almost certainly result in the other parameters being incorrectly estimated.

⁹³ *Id.*

⁹⁴ SDEIS 4-42

⁹⁵ Co-Lead Agencies, Water Modeling Teleconference and Web-Ex, February 20, 2014.

⁹⁶ Barr Engineering, Water Modeling Data Package Vol.1 Mine Site v12 and Vol. 2 Plant Site v9, March 2013.

⁹⁷ *Id.*

⁹⁸ *Id.*

...Our long standing concern that the mine site hydrologic models incorporate incorrect assumptions about recharge are supported by Fred Marinelli's comment on line 39 and elsewhere of: "Agency Responses MS and PS WP and Waste Characterization Data package V7 2-7-12.xls". His comment states that "A net infiltration (recharge) range of 0.3 to 1.5 in/yr represents 1.1 to 5.4 percent of mean annual precipitation (MAP). This range for local net infiltration is unrealistically low for this area of the US." These low recharge values and the low vertical K values are related to calibration of the Modflow model to low baseflow. Until Modflow, and by extension the other related models XP-SWIMM and GoldSim, are calibrated to data from the site (e.g. observed baseflow and an adequate number of observed heads) and incorporate reasonable recharge rates, the results from the models are unlikely to accurately simulate current or future conditions...

... The Modflow model, in particular, needs to be calibrated with targets based on observed baseflow and observed well water heads. Calibration to projections by XP-SWMM, that appear to be incorrect, means that the fundamental characterization of the site hydrology is likely to be faulty.... The focus on water quality parameters to the near exclusion of hydrologic flow parameters is reflected in the Groundwater IAP summary memo of June 2011. Groundwater flow modeling underpins contaminant transport modeling and is interrelated to surface flow models. Without adequate vetting of flow model parameters and predictions, it is impossible to have confidence in predictions of contaminant movement and water quality."

Underestimation of storm size and frequency is a serious problem for capture and treatment of polluted water from the Category 1 waste rock stockpile and tailings basin, tailings basin stability, and stormwater run-off from the Overburden Storage and Layout Area (OSLA). Project estimates were based on one-hundred-year storm events. Before recognition of climate change impacts, this would have been a reasonable assumption. Now, storm severity and frequency suggest that what was previously considered a one-hundred-year storm event may occur once every ten years.

Many **mitigation measures were not identified or evaluated** using the required NEPA "hard look". Those mitigation measures that have been identified and carried forward as the Proposed Project are **inadequate**, especially the tailings basin seepage capture system. The tailings basin is unlined, and the seepage capture system has not been designed to collect any seepage from the east side of the tailings basin. This flow path for project pollutants to reach surface and ground water has not been addressed at all. The **waste rock mixing and segregation** has not been demonstrated to be effective at other similar projects. **Liner leakage** rates are very optimistically estimated using solid waste landfill average leakage rates (lined solid waste landfills are much smaller). There are no predictions or contingency plans addressing the potential for tailings piped from the processing plant to the **tailings basin could be spilled**, or that **tailings embankments may fail**. The Hydrometallurgical Residue Facility (HRF) is proposed to be constructed in an area that is currently under water, and has a prominent historic drainage channel that has not been accounted for in project design or water modeling.

Project baseline data used for both the Mine Site and the Tailings Basin are still insufficient, even though this deficiency was highly criticized by many commenters on the 2009 DEIS. A comparison of hydrologic data that was collected for two other projects in the region demonstrates that the PolyMet project is

data-poor in the area of basic hydrology, much less mitigation.⁹⁹ Given the availability of the many existing studies of area hydrology, it is mystifying that the SDEIS preparers have continually neglected to use them, even as tribal cooperating agencies have repeatedly requested and recommended that they be used. A few examples of publicly available studies include: the Minnamax Project;¹⁰⁰ the LTVSMC Dunka Pit,¹⁰¹ historic DNR fisheries documents¹⁰²; and data collected under the Cliffs Consent Decree¹⁰³.

For example, there is no explanation for the failure to use pre-mining flow and sulfate data available through DNR fisheries reports to determine potential water quality and quantity impacts, or cumulative effects to flow and water quality in the Embarrass, Partridge, or St. Louis Rivers. In fact, decades-old flow data (1942 – 1964) was used instead of recently collected data in the Embarrass River watershed even though that historic flow data *precedes* any mining. Surface water and groundwater quality and quantity data collected for the Minnamax Project, LTVSMC Dunka Pit, and the VIC program were listed in SDEIS, but largely ignored in water quality and quantity predictions.

The cumulative body of data and public information regarding clear risks to area hydrology from mining at the PolyMet site cannot be ignored, with only new, favorable data be inserted into the SDEIS instead. Extensive experience from other hard rock mines and their faulty predictions of water quality impacts should compel the co-lead agencies to recognize the need for significant improvements to the modeling evaluations.

Inadequate water quality impacts analysis

From SDEIS 5.2.2, Water Resources:

With the proposed design modifications and engineering controls, the water quality model predicts that the NorthMet Project Proposed Action would not cause or increase the magnitude of an exceedance of the groundwater and surface water quality evaluation criteria at the P90 level for any of 28 solutes at 29 groundwater or surface water evaluation locations within the Partridge River and Embarrass River watersheds, with two exceptions:

- *Aluminum – Water quality model results predict that aluminum concentrations would increase the existing surface water exceedances at Unnamed Creek (PM-11), Trimble Creek (TC-1 and PM-19), and Mud Lake Creek (MLC-2 and MLC-3). This increase in aluminum concentrations is a side effect of the NorthMet Project Proposed Action due to the reduction in low aluminum*

⁹⁹ Letter of GLIFWC to Jon Ahlness and Stuart Arkley (USACE) (Feb. 6, 2009) (discussing need for additional hydrology analysis).

¹⁰⁰ See NPDES Permit No. MNC047333; MPCA Office Memo, AMAX Exploration Unauthorized Discharge (Sept. 2, 1976); MPCA Office Memo regarding Potential Groundwater Plumes at Old AMAX Site (Dec. 13, 1989), Review of the Leaching Tests Carried Out by AMAX Extractive Metallurgy Laboratory (Apr. 29, 1975), AMAX Exploration, Inc., Minnamax Project, Report of Laboratory Analysis of Water Quality Samples (Nov. 15, 1974)

¹⁰¹ EPA Office of Solid Waste, Tech. Doc.: Acid Mine Drainage Prediction (Dec. 1994); MPCA Office Memo re. LTV Dunka Mine NPDES Permit MN0042579 (Apr. 14, 1988); Status Report, Erie Mining Company Permit (Feb. 1985); Letter from MPCA to Picklands Mather and Company regarding reclassification of Bob's Bay in Birch Lake and Unnamed Creek to Class 7 Waters (March 29, 1985)

¹⁰² DNR Fisheries Investigational Reports: Report on MN Wild Rice (1940); 1941 MN Wild Rice Crop; A Biological Survey and Fishery Management Plan for the Streams of the St. Louis River Basin; Some Aspects of the Chemistry of MN Surface Waters; Limnological Characteristics of Mine Pit Lakes

¹⁰³ See MPCA v. Cliffs Erie Court File No. 62CV-IO-2807

concentration Tailings Basin seepage (approximately 5 to 20 µg/L) reaching these tributaries as a result of the proposed groundwater containment system, which would result in an increase in the proportion of non-contact stormwater runoff with higher natural aluminum concentrations (approximately 70 to 150 µg/L). In other words, the capture of the seepage would result in less dilution, which would increase the proportion of non-contact stormwater runoff with higher natural aluminum concentrations reaching the streams. The greatest increases in aluminum concentrations for all of these evaluation locations would occur during reclamation when water from Colby Lake with high aluminum concentrations (approximately 70 to 160 µg/L) would be used for flow augmentation. Therefore, the increase in the magnitude of the aluminum exceedance at these Plant Site evaluation locations is not attributable to process water from the NorthMet Project Proposed Action (i.e., is attributable to non-contact stormwater runoff and Colby Lake water).

- *Lead – Water quality model results predict an exceedance of the lead surface water evaluation criterion in Unnamed Creek (PM-11) and Trimble Creek (TC-1 and PM-19) north of the Tailings Basin. These exceedances are a side effect of the NorthMet Project Proposed Action due the reduction in surface water hardness that results from the capture and removal of dissolved solids by the WWTP and the associated decrease in the hardness-based lead evaluation criterion. The WWTP effluent would meet the water quality evaluation criteria, but exceedances would infrequently occur when stormwater runoff mixes with the WWTP effluent and lowers hardness more than it dilutes lead concentrations.*

Evidently, the public is expected to uncritically accept the project proponent's assertion that a 700-ft deep open pit sulfide mine, a 526-acre permanent reactive waste rock stockpile, a pit lake requiring water treatment in perpetuity, a tailings basin that has already contaminated ground and surface water that now will host reactive sulfide tailings, and a permanent hazardous waste facility constructed within a wetland, will collectively result in only two exceedances of water quality standards – and they are not even directly attributable to the Project Proposed Action! This stunning conclusion is a result of flawed modeling assumptions (baseflow, hydraulic connectivity, etc.), dubious decisions on data usage (omitting 'outliers', concentration caps, etc.), fuzzy compliance thresholds, and inordinate reliance on engineering controls that must perform flawlessly, most of them in perpetuity.

*The NorthMet Project Proposed Action is also not predicted to result in any significant changes to groundwater and surface water flows when compared to existing conditions.*¹⁰⁴

Again, a remarkable conclusion grounded in the assumption that all seepage capture systems will operate at unrealistic performance rates in perpetuity, and dismissing the significant error in the baseflow value used to model project impacts.

Surface water quality remains insufficiently characterized or left uncharacterized, and the defects in analysis are profound in this area. The limited data used indicates that surface waters have already been adversely impacted by mining activity, which should give rise to more scrutiny, not less.¹⁰⁵ Contaminant transport modeling suggests that the Project will cause manganese, aluminum, and sulfate

¹⁰⁴ SDEIS 5-8

¹⁰⁵ Tech. Docs. RS22, RS63, RS74.

to exceed Minnesota Water Quality Standards (“MN WQS”).¹⁰⁶ Mercury, sulfate, and specific conductance already exceed surface water criteria in surface water samples collected near the tailings basin at nearby Area Pit 5, and mercury and aluminum exceed surface water criteria in the Partridge River downstream of Colby Lake.¹⁰⁷ Aluminum, iron, manganese, and mercury all exceed MN WQS in Colby Lake.¹⁰⁸ Contaminants from the Project will likely contribute additional loading to these existing exceedances of MN WQS in the Embarrass River, Colby Lake, and the Partridge River. There have not been any water samples collected from lakes in proximity to the tailings basin (Hiekillia, Mud, Kaunonen, or Hay Lakes) to determine if the pollutants found in the surface and groundwater at the existing tailings basin have caused contamination of those waterbodies.

Groundwater contamination from previous mining activities persists near the LTVSMC tailings basin, more than twelve years after operations ceased. Over the decades of operations at the LTVSMC tailings basin, thousands of gallons per minute of tailings basin water were discharged through the bottom of the basin into groundwater.¹⁰⁹ This plume of contaminated water has been slowly moving down gradient into surrounding wetlands and the Embarrass River.¹¹⁰ The monitoring wells that do exist near the tailings basin have concentrations of pollutants including iron, sulfate, manganese, aluminum, and fluoride that exceeded drinking water standards.¹¹¹ But because of the limited distribution of monitoring wells, the extent of the existing contaminant plume is not known. No bedrock monitoring wells have been drilled in the vicinity of the tailings basin. However, domestic wells near the northern property line show substantial contamination of the groundwater aquifer.¹¹² Regardless, modeling of PolyMet contaminants at the tailings basin did not take existing pollutant concentrations into account, and pretends that existing contamination is an acceptable “baseline” from which only *new* contamination should be measured.

Plant Site

The assumption that 93% of the seepage from the tailings basin can be captured is unrealistic. Tribes requested the co-lead agencies or their contractor to provide any references for the 90% or greater capture efficiency rate they were confident could be achieved; they were not able to provide a single example from anywhere in the world¹¹³. The co-lead agencies provided a single citation from a USEPA guidance document (generally intended to inform solid waste sites) that revealed:

- [M]ost barriers in the study have been in place for fewer than 10 years; therefore, long-term performance can only be extrapolated...
- All sites included in the study were existing sites that had vertical barriers and, in many cases, caps.

¹⁰⁶See, e.g., Minn. R. §§ 7050.0220; 7050.0221 (Class 1 waters (domestic consumption): manganese 50 ug/l, aluminum 200 ug/l); 7050.0222 (WQS for Class 2 waters (aquatic life and recreation): mercury 1.3 ng/l, aluminum 87 ug/l); 7050.0224 (Class 4 waters (agriculture and wildlife): wild rice present sulfate 10 mg/l)).

¹⁰⁷ Tech. Docs. RS63, RS64.

¹⁰⁸ *Id.*

¹⁰⁹ Tech. Doc. RS74B.

¹¹⁰ *Id.*

¹¹¹ MPCA Memo: Compliance Schedule Report, Cliffs Erie, LLC/HoytLakesTailingsBasin Area NPDES Permit #MN0054089 (Dec. 19, 2002)

¹¹²See DEIS at 4.1-14 (citing Barr Engineering Memo: Results of Tailings Basin Hydrogeological Investigation. (June 2, 2009).

¹¹³ ERM Responses to Action Items From January 27 Cooperating Agency Meeting, Feb. 11, 2014

- None of the sites has an engineered bottom barrier. Therefore, the effect of leakage through aquitards was not evaluated in this study.¹¹⁴

Regardless of this study's applicability (or lack thereof) to seepage capture systems proposed for the PolyMet project, the EPA found that

- 10% of the reviewed containment systems failed to meet the desired performance objectives and required corrective action.
- An additional 19% of the evaluated facilities did not have sufficient data to conclude whether the containment system was operating successfully or not.
- There is no information on the effectiveness of any of these facilities at timeframes remotely comparable to what will be required for PolyMet. In the EPA study, 'long term' is considered 30 years, whereas the seepage capture requirements for PolyMet facilities are on the order of centuries for the flotation tailings basin and category 1 stockpile, and in perpetuity for the hydrometallurgical residue facility.

A search for examples similar to the Project Proposed Action identified the Zortman-Landusky mine in Montana, which installed containment and pumpback systems to be used in conjunction with a wastewater treatment facility. However, they "did not capture all surface and subsurface drainage"¹¹⁵. At the MolyCorp, Inc., mine site in New Mexico, "The pathway for contaminant migration is the leaching of tailing seepage downward from the tailing facility to ground water that migrates through fractures to surface water"¹¹⁶.

Examples of similar seepage capture systems installed and operating in northeastern Minnesota are at the US Steel-MINNTAC tailings basin,¹¹⁷ and the former LTV tailings basin seep SD0026¹¹⁸ (the same tailings basin PolyMet proposes to re-use), and demonstrate capture rates of **less than 60%**. The US Steel -MINNTAC tailings basin is of similar age and design as the former LTV tailings basin that PolyMet proposes to reuse. Both are large, unlined facilities that are designed to allow massive volumes of water to seep to surface and groundwater in order to maintain structural stability. Both facilities have been discharging many thousands of gallons per day of high sulfate wastewater into the environment for decades. US Steel-MINNTAC, as required under a schedule of compliance for their long-outdated NPDES permit, has begun constructing a multi-phase seepage capture system that is intended to bring the facility into compliance with applicable water quality standards. The capture system is similar to the one proposed by PolyMet, in that it consists of a trench for capturing seepage and a pumping system that would return tailings effluent back into the facility.

The US Steel-MINNTAC system was originally intended to extend to bedrock, but that proved impossible in some locations because of the presence of large boulders within the glacial till that hindered construction. Because the surficial geology is similar at the LTV facility, it is likely that similar difficulties will be encountered by PolyMet, which will significantly decrease expected seepage capture efficiency. It

¹¹⁴ US EPA, Evaluation of Subsurface Engineered Barriers at Waste Sites, Aug. 1998.

¹¹⁵ U.S. EPA, Costs of Remediation at Mine Sites (January 1997), 4.2.12 Case Study No. 12, p. 34, describing the Zortman-Landusky Mine, Montana, available on-line at

<http://www.epa.gov/wastes/hazard/tsd/ldr/mine/costs.pdf> (last visited March 3, 2014)

¹¹⁶ US EPA, MolyCorp, Inc. Site Proposed Cleanup Plan (December 2009), p.

17, http://www.epa.gov/region6/6sf/newmexico/molycorp/nm_molycorp_proposed_cleanup_plan.pdf

¹¹⁷ Letter, from J. Thomas, MPCA to T. Moe, U.S. Steel Corp., Jan. 8, 2008

¹¹⁸ Telephone and email communications with John Thomas, MPCA, Feb. 7, 2014.

is important to note that seepage capture of greater than 95% would be required at MINNTAC in order to achieve compliance with applicable water quality standards.¹¹⁹ However, at this facility, this high capture efficiency was concluded to be infeasible, and MINNTAC predicted that their capture efficiencies would not exceed 60%; actual performance of the capture system is **below 50%**. The primary purpose of this system was to achieve compliance with MN WQS, yet the capture system alone will not be able to achieve that goal. The primary purpose of the seepage capture at the Proposed Project is to achieve compliance with MN WQS, but it is not likely to be successful, based upon limited but relevant regional experience.

The SDEIS acknowledges that seepage from the existing LTV tailings basin continues to drain south to Second Creek long after LTV operations have ceased (SDEIS p. 4-99). Because that seepage will need to continue to be pumped back under the PolyMet Proposed Action, it “is not considered further in this discussion” (SDEIS p. 5-89). On pages 5-121 and 5-158, the SDEIS maintains that the seepage collection system installed at the south side of the existing tailings basin has “essentially eliminated the flow of Tailings Basin seepage into Second Creek”. This statement is clearly not supported by the facts. PolyMet and the state regulatory agencies are fully aware that that this seepage pumpback system is not nearly as effective as claimed in the SDEIS¹²⁰. According to MPCA staff, the pumpback system has not resulted in the water quality improvements required under the Consent Decree, so there are two modifications currently proposed by Cliffs Natural Resources: 1) dewater the pond that is an additional source of water contributing to water quality concerns (pending a US EPA wetlands determination); or 2) create an additional barrier (dam) for seepage collection and pumpback between the existing dam and monitoring station SD026¹²¹.

There is simply no evidence to support the rosy scenario that PolyMet will be able to capture 97% of the shallow seepage and 90% of the deep seepage from an unlined, purposefully ‘leaky’ tailings basin, despite the co-lead agencies’ assurances. The SDEIS must be revised to accurately describe the ineffectiveness of the current seepage collection system, and the need for a redesigned system or additional mitigation must be clearly stated. The SDEIS must evaluate the impacts of polluted tailings basin seepage to Second Creek and the Partridge River.

The unsupported prediction of 90% or better seepage capture efficiency is unfortunately carried forward into other critical analyses. The SDEIS claims that construction of a groundwater containment system along the north, northwest and west sides of its unlined tailings basin “would capture virtually all of the Tailings Basin seepage presently flowing in those directions to restore water quality” (SDEIS p. 5-174). Without even a single bedrock monitoring well installed to confirm or deny this assumption, the SDEIS maintains that this prediction is “conservative”, because the modeling done by PolyMet assumes that bedrock hydraulic conductivity is “negligible” (SDEIS, pp. 5-68 - 5-69). Disturbingly, the tailings basin model uses storage coefficients that are not found anywhere in peer reviewed scientific literature¹²².

¹¹⁹ Subsurface Evaluation and Seepage Evaluation Report, MINNTAC Tailings Basin, Mountain Iron Minnesota, US Steel Corp., 2008

¹²⁰ Letter of Cliffs to John Thomas, MPCA, Compliance and Enforcement, May 7, 2013, regarding planned improvements to SD026 pump-back system, copying Kevin Pylka, PolyMet Mining, Inc.

¹²¹ Telephone conversation between John Thomas, MPCA, and Margaret Watkins, Grand Portage

¹²² USGS, Trainer, F.W. and Watkins, Base-flow Characteristics of Streams, Water Supply Paper 2457 (1975)

These parameters are highly critical for establishing a reliable model, because the volume of groundwater that a geologic formation can contain (storativity or storage coefficient) and the rate of flow (hydraulic conductivity) are functions of the amount of open pore spaces or fractures/faults in rock, the quantity of water that infiltrates from the surface, and the groundwater gradient. The storage coefficient incorporated in the plant site model (including the tailings basin) for bedrock is 0.20, and for the surficial deposits 0.0002 (SDEIS p.5-41), suggesting that the bedrock contains several orders of magnitude more water than the surficial deposits. When questioned about these extraordinary storage coefficients, the co-lead agencies' explanation was that the model was "calibrated to match predicted and measured groundwater levels"¹²³. Essentially, this model simulates a bedrock 'storage tank' where large volumes of water go in but virtually nothing comes out. Since this is not conceptually accurate, the modeled hydraulic conductivity and/or modeled storage coefficients cannot be relied upon to estimate the amount of seepage that will bypass the seepage capture system, or the amount of time before seepage upwells to surface waters in adjacent wetlands and the Embarrass River, *where MN WQS must be met*.

Another major deficiency in the plant site model is that seepage capture at the flotation tailings basin, as modeled with MODFLOW and GoldSim, does not account for any seepage out of the east side of the basin. SDEIS Figure 3.2-27, that indicates continuous bedrock on the east side of the tailings basin, is incorrect and must be corrected.

Baseline groundwater elevations, depths to bedrock, and surface water drainage locations have been used to identify four flowpaths (West, Northwest, North, and South) that represent the most direct paths between Tailings Basin facilities and evaluation locations (i.e., property boundaries and surface waters of the state) (MDNR 2011L).¹²⁴

The modeling approach used by PolyMet has placed an artificial and unrealistic no-flow boundary on the east side of the tailings basin, when a critical evaluation of hydraulic head clearly shows the potential for substantial groundwater movement to east.¹²⁵ Because of this this flawed assumption, there has been no contaminant transport modeling or water quality impacts analysis for seepage leaving the east side of the tailings basin. Also, according to the plant site surficial geology¹²⁶ and depth to bedrock figures¹²⁷, the thickest layer of glacial till for the entire Proposed Project occurs around the tailings basin, representing, essentially, the biggest "pipe" for conducting contaminated tailings basin seepage to downgradient wetlands and eventually the Embarrass River. Tribal agency re-analysis using MODFLOW for the east side of the tailings basin reveals that this is likely the *most significant discharge area* for the entire tailings basin.

Mine Site

The SDEIS maintains that mine pit dewatering impacts will be very limited or non-existent based on an assumption carried forward from the DEIS that there is little or no connection between the bedrock and surficial aquifers.¹²⁸ This assumption is based solely on an unsupported "professional opinion,"¹²⁹ when

¹²³ ERM Responses to Action Items From January 27 Cooperating Agency Meeting Feb. 11, 2014.

¹²⁴ SDEIS 4.2.2.3 Embarrass River Watershed

¹²⁵ See GLIFWC March 2013 comments on SDEIS

¹²⁶ See Large Figure 3 Water Modeling Data Package, PolyMet 2013j

¹²⁷ See Large Figure 4 Water Modeling Data Package, PolyMet 2013j

¹²⁸ DEIS § 4.1.

in fact there is ample evidence that there may be substantial connection between the bedrock and surficial aquifers.¹³⁰ Such a connection indicates that dewatering the mine pits could cause significant drawdown of the water table in the surficial aquifer, potentially dewatering wetlands and ephemeral streams.

Tritium and unionized ammonia nitrogen were found in water samples collected from two deep boreholes in the area where the Project mine pits will be located. Both tritium and unionized ammonia are classic indicators for a strong connection with surface water. Tritium indicates water found in the deep boreholes was surface water that originated post-1952, during or after nuclear testing.¹³¹ The boreholes are approximately one mile southwest of the Peter Mitchell Pit, which is the closest and most likely source of this pollution. Production at the Northshore mine started in 1955. Review of the Peter Mitchell Pit discharge monitoring data for SD001¹³² from 2006 and 2008 shows the average concentration of unionized ammonia exceeded their 0.04 mg/l NPDES permit limit. Unionized ammonia and tritium in the deep boreholes suggest that travel time of contaminants through bedrock fractures will be on the order of decades, not the hundreds or thousands of years that are assumed in the SDEIS. Impacts to surface waters, groundwater, and wetlands for a project of this size and complexity demand a scientific, data-driven approach rather than one based on opinion and scant, selectively used data.

“Hydrogeologic characterization studies should include geological descriptions of the site, including descriptions of rock types, intensity and depth of weathering, and the abundance and orientation of faults, fractures, and joints. Although difficult to evaluate, the hydrologic effects of fractures, joints, and faults are especially important to distinguish and characterize. Water moves more easily through faults, fractures, and dissolution zones, collectively termed secondary permeability, than through rock matrices. Secondary permeability can present significant problems for a mining facility because it can result in a greater amount of ground water discharge to a mine than originally predicted.”¹³³

The lack of fracture and fault analysis is a major deficiency of this SDEIS. The map provided by GLIFWC in their SDEIS comments, *Geologic Faults at the PolyMet Mine and Plant Site*¹³⁴, indicates:

1. There are several faults extending from Northshore pits to the PolyMet mine site. This may explain why there is ammonia and tritium in the deep borehole samples.
2. There is an inferred fault running right through the area of the Hydrometallurgic Residue Facility. (Not only is the HRF proposed to be constructed within wetland, with a buried stream and springs, but it will also be receiving seepage from the tailings basin and it could be geologically predisposed to facilitate groundwater movement.

¹²⁹ E-mail from John Adams and Michael Liljegren (DNR) to Stuart Arkley (USACE), Op. concerning modeled groundwater drawdown impacts to surface features in the PolyMet CPDEIS, Additional PolyMet Peatland Data/Information (Feb. 1, 2009), Ex. Y.

¹³⁰ Tech. Docs. RS02, RS10, RS10A, RS74A.

¹³¹ USGS, Tracing and Dating Young Groundwater, 1999. <http://pubs.usgs.gov/fs/FS-134-99/> (last visited March 3, 2014)

¹³² MPCA What's in My Neighborhood, DMR data for MN0046981-SD-1, 2006 – 2010, last visited 8/16/2013. (<http://www.pca.state.mn.us/customPHP/eda/stationInfo.php?ID=MN0046981-SD-1&ORG=WQDELTA>)

¹³³ EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska, Appendix D, Effluent Quality, January, 2003.

¹³⁴ Map derived from Morey, G.B., and Meints, Joyce, compilers, 2000, Geologic Map of Minnesota, bedrock geology (3rd edition): Minnesota Geological Survey State Map Series S-20

3. There is a fault system right where water would exit the tailings basin on the east side. Notice that the inferred fault may connect to other fault systems running east-west to the south of the facility.

The SDEIS also diminishes the lessons learned from the Dunka Pit, located on the former LTVSMC site approximately five miles north and east of the PolyMet Project mine site. Within the Dunka Pit, LTVSMC contacted the Duluth Complex and the Virginia Formation while mining for taconite in the Biwabik Iron Formation.¹³⁵ By 1991, LTVSMC had removed about 50 million tons of Duluth Complex material from the Dunka pit and placed it in “gabbro” stockpiles.¹³⁶ Monitoring of the drainage from these stockpiles beginning in 1976 revealed a decrease in pH and an increase in trace metals.¹³⁷ Copper and nickel concentrations as high as 1.7 and 40 mg/l respectively were observed in seepage/run-off from the Duluth Complex waste rock stockpiles and pH was observed as low as 5.0 at seep 1 between 1976 and 1980.¹³⁸ Most of the seepage from waste rock piles at the Dunka site was discharged to Bob’s Bay in Birch Lake via Unnamed Creek.¹³⁹ A 1976-1977 study of trace metals in Bob’s Bay found that concentrations of copper, nickel, cobalt, and zinc in the water of the Bay were higher than regional average concentrations and decreased with distance from the mouth of Unnamed Creek.¹⁴⁰ Additionally, it was determined that Unnamed Creek contributed more than 90% of the trace metals load to Bob's Bay.¹⁴¹ The NPDES permit for this discharge expired in 2005¹⁴² and another variance request is expected. A WWTF located at the site has been inactive because Cliffs Erie, LLC, the owner who acquired the property from LTVSMC, declared bankruptcy and claims it is simply too expensive to continue running.¹⁴³ Unfortunately, the passive wetland treatment system did not function well enough to remove nickel and copper in waters still discharging from the mine pit and stockpiles to a concentration that complies with MN WQS.¹⁴⁴

The potential for water quality impacts from prospecting and mining operations that have contacted the Duluth Complex have long been known to the MNDNR and MPCA.¹⁴⁵ The State of Minnesota spent \$4.3 million over three years in the late 1970s to produce the Regional Copper-Nickel Study, a 5-volume compilation of technical information regarding the potential impacts of copper-nickel mining in the Duluth Complex.¹⁴⁶ Nevertheless, predicted water quality impacts and ineffective mitigation methods referenced in the Study were ignored when the technical documents and SDEIS were drafted for PolyMet.

¹³⁵ EPA Office of Solid Waste: Tech. Doc.: Acid Mine Drainage Prediction, EPA 530-R-94-036 (Dec. 1994), available on-line at <http://www.epa.gov/waste/nonhaz/industrial/special/mining/techdocs/amd.pdf> (last visited Feb. 1, 2010).

¹³⁶ *Id.*

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ *Id.*

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² NPDES Permit MN0042579.

¹⁴³ Cliffs Erie Variance Request for NPDES Permit MN0042579.

¹⁴⁴ *Id.*

¹⁴⁵ MN Environmental Quality Board, The Minnesota Regional Copper-Nickel Study at Executive Summary (1979)

¹⁴⁶ *Id.*

Similarly, the Mining Simulation Project (funded in part by a Minnesota Legislative appropriation of \$185,000 to the MNDNR and MPCA) was a cooperative study to identify and resolve environmental issues associated with non-ferrous mining and to anticipate industry and government data needs to address those issues before commercial development occurred in Minnesota.¹⁴⁷ The study clearly identified those state ground and surface water quality regulations that would apply to copper-nickel mining operations in Minnesota, including applying the 10 mg/l sulfate criterion to effluent discharges where wild rice is present; it prioritized nondegradation of both surface and groundwater and protection of groundwater as a drinking water source; and it rejected using natural wetlands for mine effluent treatment (“as a toxic metals dumping ground”).¹⁴⁸

The tribal cooperating agencies have also consistently elevated our concerns for the Proposed Project’s potential to adversely impact groundwater quality and quantity. “Groundwater maintains stream flows and wetlands during dry periods, supporting significant ecosystem functions. Groundwater is an important source of drinking water in the Great Lakes Basin, where 8.2 million people, or 82% of the rural population, rely on groundwater for their drinking water.”¹⁴⁹ In Minnesota, all groundwater is protected for drinking water supplies, “constituting the highest priority use, and as such, to provide maximum protection to all underground waters.”¹⁵⁰ When considering water allocations, drinking water is supposed to be considered the highest priority by the MN DNR.¹⁵¹ According to MPCA’s groundwater profile for Northeastern MN including the Project area: “Glacial aquifers are commonly thin and limited in their extent and yield. Bedrock aquifers have limited yield, generally from fractures; groundwater movement is difficult to define. There are no large-scale regional aquifers. The Biwabik Iron Formation is the only source of groundwater for many Iron Range cities.”¹⁵² The SDEIS has not adequately evaluated the potential for impacting drinking water sources, and it is clear from the state regulatory agencies’ uncertainties about the frequency, volume, and water quality of other mine discharges (i.e., the Peter Mitchell Pit) *even while regulated under permits*, that this issue remains a significant deficiency in the SDEIS analysis.

The tribal cooperating agencies have consistently raised concerns about reactive dust and ore fines along the Transportation and Utility Corridor, and potential for water quality impacts to the three streams and wetlands that are crossed within the corridor. Yet these concerns have been repeatedly kicked back and forth between the Air IAP and Water Quality IAP work groups, with neither group ultimately resolving the information and risk analysis gap. The end result of this ‘oversight’ in the SDEIS is that no consideration, discussion, or proposed management of this potential water and wetland quality impact is provided for the public to review.

The only potential solute sources along the Transportation and Utility Corridor or at the processing plant (both within the Partridge River Watershed) would be from spills, as there

¹⁴⁷ MNDNR, MPCA, E.K. Lehmann and Associates and the Project Environment Foundation, Report on the Mining Simulation Project (1990)

¹⁴⁸ *Id.*

¹⁴⁹ Great Lakes Science Advisory Board to the International Joint Commission, Groundwater in the Great Lakes, February 2010.

¹⁵⁰ SDEIS, 4-23

¹⁵¹ *Id.*

¹⁵² MPCA, Groundwater Profile Arrowhead Region <http://www.pca.state.mn.us/index.php/view-document.html?gid=6482> (last visited March 3, 2014)

would be no surface stockpiles of waste rock, ore, or other potential solute sources in these areas.¹⁵³

*There is the potential, however, for ore spillage from rail cars in transport from the Mine Site to the processing plant during operations. Based on observations at other mining operations using similar side-dump rail cars, it is assumed that spillage could occur along the first 1,000 meters of rail from the Rail Transfer Hopper (PolyMet 2013I). It is estimated that 55.7 kg ore per m² track could spill from rail cars within the first 1,000 meters of the Transportation and Utility Corridor over the 20-year life of the NorthMet Project Proposed Action. This is equivalent to 1.25 inches of spilled material over a 2,000-m² area. Rainfall contacting the spilled ore material has the potential to release solutes, but with the small volume of ore and dilution from other sources, water quality is expected to meet the evaluation criteria (PolyMet 2013I).*¹⁵⁴

This is not a trifling mass of ore, nor is it an insignificant quantity of reactive dust and fines, deposited directly into the watershed. It is unacceptable to dismiss the **likely** water quality impacts of twenty years of ore spillage and dust/fine deposition with a casual statement and zero analysis. It is especially disheartening to the tribal cooperating agencies that have attempted to elevate this issue for so many years, that the co-leads have been completely unwilling to consider giving it the analysis it requires, or to even provide examples from other sulfide mines where this has not proven to be a concern.¹⁵⁵

Finally, the Band raises concerns about potentially significant underestimation of groundwater contamination from the equalization basins at the WWTF.

*The WWTF would treat influent water from a variety of sources (e.g., pit dewatering, stockpile leachate collection, contact surface water). The only potential source of groundwater contamination at the WWTF would be influent leaking from the two equalization basins and effluent leaking from the Central Pumping Station. The equalization basin would have a geomembrane liner system and would be designed to have a minimum of 3 feet of freeboard, in accordance with the MPCA guidance (Meyer et al. 2009). Leakage from these basins through the liner system is calculated differently than for the waste rock stockpile liner systems in that these systems are intended to store water and do not have positive drainage. Therefore, the hydraulic pressure on the liners would be greater, and, in turn, more water would be expected to leak on a per-acre basis (i.e., **approximately 5 gallons per acre per day**) (PolyMet 2013i). The total volume of leakage from the equalization basins, however, would be less than from the stockpiles, as the footprint of the equalization basins would be much less. This leakage would reach the groundwater table and follow what is referred to as the WWTF Flowpath ultimately to the Partridge River.*¹⁵⁶

Regardless of the ‘footprint’ of the equalization basins, the liner leakage estimate of 5 gallons per acre per day (gpac) is not consistent with what we have found in the literature for the maximum allowable, or “Action Leak Rate”, above which a leak must be found and repaired. USEPA terms this the ‘de minimis’ leak flow rate, which for a reference evaporation pond 70 acres in area and with an average

¹⁵³ SDEIS 5-98

¹⁵⁴ SDEIS 5-98

¹⁵⁵ See, e.g., “Fugitive Dust Risk Management Plan 2012 Annual Report”, Teck Alaska Inc., March 2013 at: <http://www.reddogalaska.com/DocumentViewer.aspx?elementId=209271&portalName=tc>

¹⁵⁶ SDEIS 5-105

depth of 30 feet is 28 gpad , or a total of 840 gallons per day for a 0.040-inch thick HDPE geomembrane.¹⁵⁷ The Band was unable to find detailed designs for the equalization basins in either the Adaptive Water Management Plan or the Water Management Plan – Mine (PolyMet 2013i), to determine the size of the basins or specifications for the proposed geomembrane liner system, but it is fundamentally understood that all liners leak. Some liners are damaged during installation, but most damage occurs when the liner is covered by drainage or protective soil.¹⁵⁸ The relevance to water quality predictions is again linked to model inputs. The west equalization basin receives highly contaminated process water from stockpile liner drainage, OSP liner and reject concentrate (brine) from the WWTP, all with high levels of sulfate and metals. The east equalization basin receives drainage from the haul roads, the RTH, pit dewatering and the Category 1 Waste Rock Stockpile drainage, with relatively lower sulfate and metals concentrations but still requiring ultrafiltration/nanofiltration.¹⁵⁹ If a substantially higher (and more realistic) rate of concentrated contaminant leakage to groundwater is incorporated into the mine site water model, it could result in significantly different water quality model predictions.

Project effects on existing water quality impairment (mercury bioaccumulation); downstream WQS

All NorthMet Project area waters are also designated Outstanding International Resource Waters (Minnesota Rules, parts 7050.0460 and 7052.0300), which prohibits any new or expanded point source discharges of bioaccumulative substances of immediate concern (i.e., mercury) unless a nondegradation demonstration is completed and approved by the MPCA.¹⁶⁰

The Band has consistently raised concerns for the NorthMet Project potential to increase mercury concentrations in fish within the St. Louis River watershed, where we exercise water quality jurisdiction, and within the 1854 Ceded Territory where Band members can exercise treaty fishing rights¹⁶¹

Mercury is a potent neurotoxin, with the primary human and wildlife route of exposure through consumption of fish. The Embarrass River, Wyman Creek, Whiteface Reservoir, Stony Creek, West Two River, numerous lakes, and the entire St. Louis River all have fish consumption advisories in place for recreational fishing. These advisories do not consider subsistence fishing. Mercury concentrations in fish from these impaired waters will require additional load reductions beyond the emissions reductions required by the statewide mercury TMDL.

Mercury levels in Lake Superior lake trout remain higher than the other Great Lakes, despite significant reductions in the amount of mercury being released from sources around the lake. The largest source of

¹⁵⁷ *Geomembrane Liner Action Leakage Rates: What is Practical and What is Not?*, Ian D. Peggs, Land and Water, July/August 2009 p. 47

¹⁵⁸ Nosko et al, 1996. "SENSOR Damage Detection System (DDS) – The Unique Geomembrane Testing Method", Proceedings of the First European Geosynthetics Conference, Rotterdam, The Netherlands, pp743-748

¹⁵⁹ NorthMet Project Description v. 5, March 2013, p. 42

¹⁶⁰ SDEIS 4-24

¹⁶¹ See Band plans to spear walleyes in the treaty area, March 7, 2014 at <http://www.duluthnewtribune.com/event/article/id/293320/group/Outdoors/>

mercury from within the Lake Superior basin is the mining sector, at 63% of total emissions.¹⁶² There has not been significant “ground-truthing” of mercury deposition rates that were used in the modeling assessment. Tribal cooperating agencies note that no studies have been conducted within this region of active mining to determine why fish tissue mercury concentrations are so high if the local sources mainly emit ‘non-locally polluting’ forms of mercury.

A 2011 Minnesota Department of Health study¹⁶³ of infants in the Lake Superior basin found that 1 in 10 infants are born with unsafe mercury levels in blood. Blood spot mercury concentrations in infants from Minnesota were significantly higher than infants born in the Lake Superior basin in Wisconsin and Michigan. Finally, The Band concurs with the letter recently signed by 19 Duluth health care professionals expressing concerns that the SDEIS fails to define the human health effects of increased mercury emissions, exposure to asbestos-like mineral fibers, and arsenic.

The SDEIS states that the current fish tissue concentrations in the five local lakes that were studied result in Hazard Quotients (HQs) that exceed 1 (page 6-63), but gives no further information. The *Cumulative Impacts Analysis, Local Mercury Deposition and Bioaccumulation in Fish (July 2012)* (Barr report) showed modeled contributions from both the Mesabi Nugget LDSP and PolyMet; this information should be included in the SDEIS for public review. The Barr report provides the actual HQs, rather than just saying “they exceed 1”. The SDEIS should state clearly that in one case, the existing HQ equals 46.2, which is 46 times as high as the number where action is recommended. This is an unacceptable situation.

The Barr report also states that “the existing health risk under Scenario 1 and 2 to subsistence/tribal and subsistence anglers eating three pounds or more per week of fish from these lakes would be significantly higher – up to fifteen times the EPA assumed safe risk intake level for a pregnant mother or child under the age of 15”. While the incremental risk from the project may be small, the existing risk is large and has not yet been addressed through a total maximum daily load (TMDL) or other reduction program. Table 5 and Figure 9 from the Barr report should be included to give the public a clear idea of the existing condition of the local waters and why the tribes believe that no additional mercury should be added at this time. The SDEIS does not provide any rationale for more mercury to be added to a system that is already so high in mercury, but rather only suggests that the TMDL should take care of this. The Band does not believe this will be the case.

Table 4.2.2-4 summarizes total mercury concentrations in the Partridge and Embarrass River watershed near the Mine Site and Plant site, and Figure 4.2.2-9 summarizes past and current NPDES discharges to both watersheds.

*Colby Lake is on the Minnesota 303(d) TMDL List because of mercury concentrations in fish tissue, but is not included in Minnesota’s regional mercury TMDL because the mercury concentrations in the fish are considered too high to be returned to Minnesota’s mercury water quality standard. Similar to other lakes in Minnesota, the main source of the mercury is atmospheric mercury deposition.*¹⁶⁴

¹⁶² Lake Superior Lakewide Management Plan Annual Report 2012, Catalogue No.: En161-9/2012E-PDF

¹⁶³ McCann, P. (2011). *Mercury Levels in Blood from Newborns in the Lake Superior Basin* (Minnesota Department of Health: Environmental Health, pp. 181)

¹⁶⁴ SDEIS Chapter 4

Unlike other lakes in Minnesota, however, Colby Lake receives high mercury discharge from Laskin Energy Center,¹⁶⁵ which has a permitted discharge limit of 19.1 ng/l, despite the Great Lakes Initiative standard of 1.3 ng/l.

*The NorthMet Project Proposed Action is predicted to increase mercury loadings in the Embarrass River, but decrease mercury loadings in the Partridge River. The net effect of these changes would be an overall reduction in mercury loadings to the downstream St. Louis River.*¹⁶⁶

This conclusion is not supported by data. The background site-specific analyses and data presented in the SDEIS for total mercury and methylmercury in surface and groundwater is not sufficient to adequately describe existing conditions or evaluate the potential for impact due to changes in hydrology and water quality as a result of the NorthMet Proposed Project. There is very little methylmercury data included in the analysis for any waterbodies, and there is no sediment mercury or methylmercury data used to evaluate and understanding existing conditions. For the data that is presented, there are numerous inconsistencies in reporting limits and method detection limits, casting doubt on data quality and its utility for critical analysis of project impacts.

The SDEIS also fails to evaluate other scientifically documented factors that affect mercury methylation and bioaccumulation. The SDEIS approach to evaluating mercury impacts of the Proposed Project avoids addressing complex but well-studied environmental processes by modeling,¹⁶⁷ and instead relies upon an incomplete mercury mass balance to predict future conditions. It superficially references some of the large body of literature related to sulfate, pH, dissolved organic carbon, iron, and microbial activity, but in some cases erroneously interprets it. Research in northern Minnesota peatlands by Jeremiason, Swain and others has clearly demonstrated the enhancement of mercury methylation by sulfate¹⁶⁸ It considers sediments in downstream waterbodies to be exclusively 'sinks' for mercury, rather than recognizing that these sediments are also active sources of mercury in the ecosystem. The mass balance does not take into account seepage from the saturated overburden at the OSLA, or the load of mercury from Colby Lake stream augmentation. Given the known concentrations of mercury in Colby Lake, which consistently exceed the GLI standard, this mitigation measure is clearly not permissible as a discharge that would contribute to an existing water quality exceedance.

The SDEIS assumes that existing tailings in the LTV Tailings Basin will indefinitely adsorb mercury. However, Table 4.2.2-34 Summary of Surface Water Quality Monitoring Data for the Tailings Basin Surface Seeps clearly demonstrates that existing seepage exceed the GLI standard, and are higher than many of the data shown for most of the tributary streams. Given the lack of confidence in predicted seepage capture rates, Tailings Basin seepage is another source that has been greatly underestimated in the SDEIS analysis.

The SDEIS evaluation of mercury impacts is deficient, and the conclusion of no mercury impacts downstream in the St. Louis River watershed is not supported by the information presented. This issue remains a significant impact to reservation and treaty resources.

¹⁶⁵ NPDES permit MN000990-SD-2

¹⁶⁶ SDEIS 5-210

¹⁶⁷ SDEIS 5-201

¹⁶⁸ Jeremiason et al, 2006

Project's effect on wild rice waters
sulfate loadings, compliance points, seasonal discharge

The Band has consistently challenged the conclusion that the NorthMet Project will not result in damage to wild rice waters in the Partridge and Embarrass Rivers and their watersheds. Our skepticism arises from growing knowledge of the extent to which state and federal regulatory agencies have consistently failed to enforce standards and regulations on the mining industry that are intended to protect wild rice. We have exhaustively commented on the specific threats of this project from the very beginning of our involvement as a cooperating agency, and our previous concerns are carried forward to the SDEIS, despite new engineering controls and water treatment. It is commendable that PolyMet has committed to constructing wastewater treatment plants that include reverse osmosis, which has the potential to meet the low sulfate effluent limit if designed and operated properly, including at the Mine Site at year 1. But the damage to wild rice will be just as real and just as permanent if it results from inadequate regulatory controls, as if it results from inadequate engineering controls.

In order to effectively apply the standard, the period when wild rice may be susceptible to high sulfate needed to be determined. MPCA produced draft staff recommendations (MPCA 2012b; MPCA 2012a) that included reviews of supporting research findings and related information. The MPCA's recommendations were that the 10 mg/L sulfate standard is applicable for portions of the Partridge River and Embarrass River used for the production of wild rice and that in the portions of the Partridge River, the 10 mg/L sulfate standard is applicable from April 1 through August 31.¹⁶⁹

As stated in earlier comments, recent research does not support seasonal-only restrictions on sulfate loading. There is no time of year when high sulfate discharges do not result in the generation of highly toxic sulfide in the sediments, and consequently, no time of year when wild rice is *not* susceptible to high sulfate.

The results over the 4 years of surveys indicate some variability in the location and density of observed wild rice and in associated water column sulfate concentrations between survey years. The 2012 survey showed generally fewer and less dense stands of wild rice than were observed in the 2009 to 2011 surveys.

and

...To date within the NorthMet Project area, MPCA has reached a draft staff recommendation regarding waters used for the production of wild rice (MPCA 2012b). These waters include:

- *Embarrass Lake,*
- *the northernmost tip of Wynne Lake (Embarrass River inlet),*
- *the segment of the Embarrass River from Sabin Lake to the Highway 135 bridge,*
- *the portion of Upper Partridge River from river mile approximately 22 just upstream of the railroad bridge near Allen Junction to the inlet to Colby Lake,*
- *the portion of Lower Partridge River from the outlet of Colby Lake to its confluence with the St. Louis River, and*
- *the portion of Second Creek from First Creek to the confluence with Partridge River.¹⁷⁰*

¹⁶⁹ SDEIS Chapter 4, Affected Environment

¹⁷⁰ SDEIS Chapter 4, Presence of Wild Rice within the NorthMet Project Area

and

No wild rice was observed in Spring Mine Creek, Trimble Creek, or Unnamed Creek near the Plant Site and they are not recommended as waters used for production of wild rice (Barr 2009b; Barr 2011a; Barr 2012a; MPCA 2012b). Section 4.2.2 provides a discussion on wild rice survey results and water quality standards (see Figure 4.2.2-3).

The co-lead and cooperating agencies are all well aware of the historic flood event this region experienced in June 2012; tribal and state rice harvesters reported widespread resource losses (thousands of acres) across many of the region's wild rice lakes and flowages. It is not surprising that the 2012 surveys of wild rice waters impacted by mine discharges showed fewer, less dense stands of wild rice than in previous years. The MPCA and DNR both understand that natural stands of wild rice exhibit variable population and productivity cycles, are extremely susceptible to hydrologic impacts like flood events, and patches or beds can 'move' from year to year within the same waterbody. These ecological characteristics have been much discussed and studied in recent years as industry has challenged regulatory protections for wild rice, the legislature has attempted to weaken existing standards, and the MPCA was directed to conduct research specifically into water quality standards for wild rice.

Minnesota tribes have engaged in consultation with the MPCA on this culturally vital issue and provided recommendations for better protection of the wild rice that remains across a much-diminished range. The tribal cooperating agencies have engaged in consultation with the federal co-lead agencies under Section 106 of the National Historic Preservation Act, continually elevating the need for protection of all remaining wild rice in the 1854 Ceded Territory. During consultation the Bands have provided information about tribal wild rice harvest in the Embarrass River far upstream of where the MPCA has recommended as 'waters used for the production of wild rice'. The wild rice sulfate standard must apply throughout the Embarrass River watershed. The scant remaining stands in the upper reaches have already been severely impacted by previous mining disturbances and continued releases of high-sulfate water, and are in need of restoration.

*...In MPCA-recommended wild rice waters along the Partridge and Embarrass rivers, the sulfate concentration already exceeds 10 mg/L, so **it must be demonstrated that the NorthMet Project Proposed Action would have an acceptably high probability of not increasing sulfate concentrations in these areas.***¹⁷¹

This contorted interpretation of compliance under the Clean Water Act is not defensible. The NorthMet Project Proposed Action must meet MN WQS, including the sulfate criterion to protect wild rice.

As stated previously, our concerns for protecting wild rice within this region of the 1854 Ceded Territory is based as much upon inadequate implementation of MN WQS protections, as upon the high likelihood that surface and groundwater discharges from the project will exceed MN WQS. We consider the high probability of continued degradation of remaining wild rice stands in the Partridge and Embarrass River watersheds as a result of the NorthMet Project to be an unacceptable environmental impact.

¹⁷¹ SDEIS 5.2.2 Water Resources

Project's effect on wildlife corridors, aquatic species

Tribal staff reviewed the Biological Assessment and the Biological Evaluation, but note that they are limited to discussions of impacts to federally listed species and Regional Forester Sensitive Species. The SDEIS does not adequately discuss impacts to traditional uses such as hunting and trapping, nor does it adequately discuss impacts to traditional game and furbearer populations. This is a major discrepancy in these documents as healthy wildlife populations, particularly game and furbearer species, and access to them is critical for the exercise of treaty rights for tribal members.

Fond du Lac's comments on the DEIS regarding the existing wildlife corridors are still applicable: they are fundamentally inadequate to maintain habitat connectivity across the heavily disturbed Mesabi Iron Range. As evidenced from aerial photographs, they're narrow and often heavily intruded upon by roads, utility corridors, mine pits and urban development. These features serve as barriers to many kinds of wildlife. While the existing corridors may function well enough for large, mobile species like deer or wolves, they are inadequate for smaller, less mobile species.

The SDEIS concedes that increasing development of urban areas alongside the corridors will render some of the existing corridors less suitable for wildlife in the future. Increased urban development and associated transportation and utility infrastructure should be expected if the project provides the economic benefits stated in the SDEIS. Yet there is no mitigation proposed or even evaluated in the SDEIS for this environmental impact. The Band specifically requests that state and federal regulatory agencies work with the tribal agencies to establish dedicated and protected wildlife corridors and enhance reclamation of existing mine lands to mitigate wildlife impacts within the 1854 Ceded Territory.

On February 25, 2009, the USFWS published the Final Rule for Revised Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx (50 CFR 17). Portions of the Mine Site lie within the revised boundaries of federally designated lynx critical habitat, which includes most of northeastern Minnesota. A recovery plan has not yet been issued for the Canada lynx.¹⁷²

This is an identified impact of the NorthMet Project Proposed Action and Land Exchange Proposed Action. But, from the Band's perspective, perhaps the most significant deficiency in the SDEIS analysis of wildlife impacts is its failure to critically analyze potential impacts to moose.

Rulemaking was conducted with the intent to update the list of ETSC species (Minnesota Rules, parts 6134.0100 to 6134.0400), with new listings becoming effective on August 19, 2013. The FEIS will consider any new listings, or changes in the previous listings, associated with the updated list.¹⁷³

Game species such as deer, bear, and moose are found in and near the NorthMet Project area, and are of importance to the Bands...Moose, which have been observed in the NorthMet Project area (ENSR 2005), are a species of specific importance to the Bands. Due to decreased population levels in the state of Minnesota, there will not be a 2013 moose hunting season. In previous years, when moose hunting was open, the NorthMet Project area would have been outside of the hunting zone, though moose zone 30 is located to the south of the Transportation

¹⁷² SDEIS 4-202

¹⁷³ SDEIS 4-201

and Utility Corridor. In 2012, two moose were harvested in zone 3. The overall moose population in Minnesota declined approximately 35 percent from 2012 to 2013 (MDNR 2013d).¹⁷⁴

The tribal cooperating agencies have consistently raised impacts to moose as an issue of critical importance throughout the DEIS, SDEIS, Section 106 consultation, and 'sieve list' meeting processes. It is not acceptable to defer full consideration of this culturally significant species until the FEIS. We have valid concerns about the project's impact on moose habitat at a time when their population is crashing, and they should be addressed immediately. Tribal wildlife biologists have been working alongside DNR biologists and academic researchers to try to understand the relevant factors, and it appears to be a combination of health impacts (winter ticks, brain worm, liver flukes, etc.) exacerbated by global climate change.¹⁷⁵ Wolf predation on calves is also apparently reducing yearling calf recruitment (population effect), but predation on adults often appears to be on the older sicker animals (not a big population effect).¹⁷⁶ Wildlife biologists recognize the importance of thermal refuge when temperatures exceed 70° F.¹⁷⁷ Undisturbed, high-quality wetlands and forests - essentially all of the landscape that will be destroyed at the mine site – represent the type of habitat that serves as thermal refuge, along with shelter and forage.

Hunting pressure has been ruled out as a major contributing factor to population-level declines, but the appearance of holding a hunt does not sit well with the public, so the DNR, 1854 Treaty Authority and Fond du Lac *all* closed the 2013 moose season. However, the Band's concern for project impacts to moose is not simply potential effects to hunting zones and seasons; we are gravely concerned about protecting sustainable moose populations for future generations.

The Band has also previously identified potential impacts to lake sturgeon as a deficiency in the SDEIS analysis.

The species has been classified as threatened in both Canada and the United States by a special committee of the American Fisheries Society (Williams et al. 1989) and is a species of special concern in Minnesota.

...A stocking program was initiated in 1983 to reintroduce lake sturgeon to the St. Louis River; however, stocking was reduced in 1995 and discontinued in 2000 (MDNR 1995). The stocking has resulted in an increase in lake sturgeon abundance in the St. Louis River estuary near Duluth (Schram et al. 1999). Recruitment has not yet been observed (Auer 2003), although MDNR staff recently observed mature sturgeon on the historical spawning grounds at Fond du Lac. Fond du Lac has stocked lake sturgeon into the St. Louis River above the Fond du Lac dam near the confluence with the Cloquet River. There are anecdotal accounts of recaptures by local anglers and Fond du Lac Resource Management personnel have reported occurrences of lake sturgeon upstream of Floodwood, Minnesota (MDNR, Pers. Comm., 2013). Upstream migration of lake sturgeon from the stocking location would be blocked by the dam at Forbes, approximately 14 miles downstream of the Embarrass River confluence with the St. Louis River.¹⁷⁸

¹⁷⁴ SDEIS 4.2.5.1.4 Other Wildlife Species

¹⁷⁵ Plenary presentation to 2014 Tribal Environmental Program Management conference, Seth Moore, PhD., Grand Portage tribal biologist

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

¹⁷⁸ SDEIS 4-234

This discussion contains substantially outdated information regarding sturgeon reintroduction, both in the St. Louis River estuary and upstream of the Minnesota Power dams on the Fond du Lac Reservation. Lake sturgeon have been successfully reproducing in the estuary for several years, and Fond du Lac Resource Management Division's successful reintroduction and tracking efforts in the upper river have been documented.¹⁷⁹ After the construction of hydroelectric facilities on the St. Louis River in the early 1900's, the lake sturgeon population in the upper St. Louis River was isolated from the lower estuary and Lake Superior.¹⁸⁰ The remaining sturgeon population was likely extirpated due to exploitation and pollution from the wood products industry and municipal waste. In addition, many of the upper tributaries were dammed during the extensive white pine logging era (1800's) in order to float logs down during the high water spring runoff. Pollution and degraded water quality has been identified as a factor limiting sturgeon abundance in many locations.¹⁸¹

A dramatic recovery in lake sturgeon abundance in Rainy River and Lake of the Woods followed improvements in water quality in the Rainy River, which resulted from substantial reductions in the amount of wood fiber and untreated chemical wastes discharged by upstream pulp and paper mills.¹⁸² Evidence from hatchery rearing studies show that juvenile sturgeon can only tolerate salinity < 23 ppt.¹⁸³ The Band is concerned about protecting the both the habitat and water quality necessary to support our reintroduction efforts. Uncontrolled contaminant loading from existing mine facilities, along with elevated constituents from the Proposed Project, have the potential to affect the successful establishment of a sustainable lake sturgeon fishery throughout the St. Louis River. This potential impact should be fully evaluated in the SDEIS.

Project's effect on air quality

The Band's consistently expressed concerns for potential air quality impacts from the Proposed Project (a new source of mercury, visibility in a Class 1 airshed, fugitive dust impacts to terrestrial and aquatic resources, asbestos-like mineral fibers) from the Proposed Project remain largely unaddressed in the SDEIS.

The SDEIS states that the property boundaries at both the Plant Site and Mine Site are used to define the maximum extent of NorthMet air impacts that would have the potential to affect historic properties, because the project is predicted to meet ambient air quality standards at those boundaries.¹⁸⁴ The Band asserts that these property boundaries cannot arbitrarily be used for acid dust and metal deposition

¹⁷⁹ *Lake Sturgeon Restoration in the Upper St. Louis River, Minnesota*, poster presented at the Great Lakes Lake Sturgeon Coordination Meeting, 3 – 4 December 2012, Sault Ste Marie, MI

¹⁸⁰ *Id.*

¹⁸¹ Dick, T. A., et al 2006. COSEWIC assessment and update status report on the lake sturgeon (*Acipenser fulvescens*) in Canada. Ottawa, Ontario. 107 p.

¹⁸² Mosindy, T. E. and J. Rusak. 1991. An assessment of the lake sturgeon population in Lake of the Woods and Rainy River. Lake of the Woods Fisheries Assessment Unit Report 1991- 01. Ontario Ministry of Natural Resources. Kenora, Ontario. 66 p.

¹⁸³ *A Review of Lake Sturgeon Habitat Requirements and Strategies to Protect and Enhance Sturgeon Habitat March 2011*. Steven J. Kerr, Michael J. Davison and Emily Funnell, Fisheries Policy Section, Biodiversity Branch Ontario Ministry of Natural Resources.

¹⁸⁴ SDEIS 4-269

boundaries because there are no ambient air quality standards for these pollutants. While secondary ambient air quality standards do exist for vegetation, these are not to be used for deposition. It doesn't make sense to use or reference an **ambient air quality standard** for purposes of studying **deposition** because "ambient air quality" is a concentration of a pollutant found in a unit of air. "Deposition" is a concentration of a pollutant that settles out of the air onto a surface. Therefore, compliance with traditional ambient air quality modeling and the range where such compliance occurs cannot be used with regard to the deposition of these pollutants on the ground, water surfaces, and vegetation.

The SDEIS also states that "Within the property boundary, modeling shows where fugitive dust from the Plant Site, Tailings Basin, and Mine Site stockpiles is predicted to settle. Outside of these areas, modeling does not indicate potential effects on historic properties from dust deposition".¹⁸⁵ Again, it is inappropriate to use areas that show compliance with ambient air quality standards to show "no effects from dust and metal deposition", because ambient air quality and impacts caused by deposition are two separate concepts. Second, and more importantly, it is simply not true that "modeling does not indicate potential effects on historic properties from dust deposition". Figure 4.2.9-4 shows areas where the Fugitive Dust Area of Potential Effect **extends outside both the Plant and Mine Sites**.

The SDEIS states that modeled annual dust deposition rates were compared to an "annual effects-level deposition rate" (background) of 365 g/m²/yr.¹⁸⁶ This same "annual effects-level deposition rate" was given in the PSDEIS in May of 2013, but without providing a reference for how this number was derived. This deficiency was noted in the Band's comments on the PSDEIS, however the SDEIS still does not address this issue. It is impossible for the Band to adequately review and comment on this section without knowing how the value of comparison for effects was derived. Lack of SDEIS citations aside, direct physical effects of mineral dusts on vegetation can be seen at a surface load of 7 g/m² and chemical effects of reactive materials can be seen at 2 g/m².¹⁸⁷ These levels indicate that the proposed "impact" level of 365 g/m²/yr may be too high. Further, as the Band commented on the PSDEIS, the modeled deposition rates do not include the effects of contamination from other sources, such as pit leaks and seepage, **nor are cumulative impacts from all of these sources included in Chapter 6**.

The SDEIS statement that "all of the receptor nodes with the highest model-estimated deposition rates were located within the ambient air boundary"¹⁸⁸ is incorrect, especially given that the following paragraph contradicts this statement by saying "of the 234 acres of wetlands, (that could be potentially indirectly affected) 228 acres would be located within the Mine Site ambient air boundary". While only 3% of the affected acres are outside of the boundary, these two statements should be reconciled. This same comment was made by the Band previously while reviewing the PSDEIS. The inaccuracy serves to diminish consideration of any impacts.

SDEIS Figure 5.2.3-22 depicts receptors outside the plant site that are predicted to receive dust deposition rates higher than 50% of background. Since the SDEIS asserts that only those areas receiving deposition greater than 100% of background will be affected, it is unclear why Figure 5.2.3-22 shows areas receiving more than 50% of this value.

¹⁸⁵ *Id.*

¹⁸⁶ SDEIS 5-274

¹⁸⁷ Prajapatie, Santosh Kumar, "Ecological effect of airborne particulate matter on plants." Environmental Skeptics and Critics, 2012, 1(1):12-22.

¹⁸⁸ SDEIS 5-276

SDEIS Figure 5.2.3-23 depicts receptors outside the plant site that are predicted to receive metal deposition rates higher than 100% of background, but there is no discussion regarding monitoring or management actions to quantify or mitigate affects. Other SDEIS text is confusing or contradictory; from SDEIS 5-302: “all receptors have model-estimated dust deposition of 50% or less of the effects-level background of 365 g/m²/yr”, but the very next sentence states “At the Plant Site, there would be two locations showing model-estimated deposition rates greater than 100% of background deposition”. Later in the same paragraph “...the modeling only indicated those areas that had deposition rates greater than 100% of background deposition”. It appears as though one statement may address dust deposition and the other metals deposition, but this is unclear.

The SDEIS discussion on fugitive dust is quite often confusing. There should be clarification between when the text is referring to *sulfide* dust and when it is talking about *metallic* dust. The text apparently switches between the two without explanation. Also, the text is not clear which air emissions sources were modeled with regard to fugitive dust.

From the SDEIS, “90% of the receptor nodes with the highest model-estimated deposition rates are located within the ambient air quality boundary”.¹⁸⁹ As the Band has commented before, this is impossible to verify, as no map of the location of the receptor nodes has been included. Also, 90% of the *area* predicted to be impacted does not lie within the ambient air quality boundary; it appears to be only about 60% contained to the ambient air quality boundary (SDEIS Figure 5.2.3-22).

As the Band has noted in previous comments on this issue, the co-lead’s only ‘mitigation’ for fugitive sulfide dust is recommending future wetlands monitoring. Additionally, the Proposed Project suggests water spraying for areas of fugitive dust release during dry periods as mitigation.¹⁹⁰ In the case of dust that may have high acidic content, this would be a poor choice for management action, as the addition of water to the dust would likely create or accelerate toxic run-off. The Band does not agree with the statement that “no significant reactive airborne fugitive dust from the rail transport is expected”.¹⁹¹ The SDEIS minimizes the potential adverse impacts from constant rail corridor spillage during the life of the mine project by claiming “Any spillage of the ore fines is expected to be within 2 meters of the rail line, along the path”. The Band is concerned with the effect of any spillage on water run-off, as has been seen with other mines in the US:

“The Fugitive Dust Risk Management Plan (FDRMP) for Red Dog Operations, Alaska (August 2008, draft) states: “Elevated metal concentrations have been identified in tundra in areas surrounding the DMTS, primarily as a result of deposition of fugitive dust originating from the DMTS corridor, which is used to transport zinc and lead ore concentrates from the Red Dog Mine, operated by Teck Cominco Alaska Incorporated (Teck Cominco)”.

There are other invalid and/or inconsistent statements throughout the SDEIS related to air quality. The SDEIS states “The Northmet Project area has been designated by the USEPA as attainment for all air quality pollutants”.¹⁹² To be clear, attainment designations for the new short-term standards for NOx and SO₂ have not yet been completed for the State of Minnesota. Also, 90% control efficiency is

¹⁸⁹ SDEIS 5-302

¹⁹⁰ SDEIS 5-402

¹⁹¹ SDEIS 5-403

¹⁹² SDEIS 5-397

assumed for haul roads at the Mine Site, but only 80% control is assumed for unpaved roads at the Plant Site.¹⁹³

The Band has continually questioned the Page 5-411 states that “The modeling results for the Mine Site receptors...indicate that the highest modeled 24-hour H2H PM-10 concentration was 27 ug/m³ for the year 8 operating scenario and 29 ug/m³ for the year 13 operating scenario”. Yet the 29 ug/m³ result not shown in Table 5.2.7-11, even though this value is nearly the PM-10 24-hour increment limit (30 ug/m³).

On page 5-423, the Mine Site multi-pathway cancer risk for a hypothetical nearby resident was found to be equal to the MDH additional lifetime cancer risk guidance level of 1E-05. Although this level is “guidance” and not a regulatory action level, the Band believes this value indicates the potential for adverse health effects. The major risk drivers for this value were dioxins and dibenzo(a,h)anthracene. Dioxins are very persistent and bioaccumulative in the environment, and can cause an increase in cancers, various immune system alterations, developmental and reproductive disorders, and endocrine disruption. Dibenzo(a,h)anthracene is a probable human carcinogen and can cause respiratory and digestive tract irritation.

In the Human Health Incremental Risk Assessment, the Plant Site multi-pathway cancer risk for a farmer was found to be equal to the MDH additional lifetime cancer risk guidance level of 1E-05.¹⁹⁴ Although this level is considered “guidance” and not a regulatory action level, the Band believes this value clearly indicates the potential for adverse health effects. The same result was found for the off-site worker inhalation additional lifetime cancer risk. The major drivers for these endpoints were cobalt, nickel, and dioxins (farmers only). Exposure to nickel has been linked with increased risk of lung cancer, cardiovascular disease, neurological and developmental deficits, and high blood pressure. Exposure to cobalt can cause lung effects such as asthma and pneumonia. Cobalt can also be radioactive.

As shown in SDEIS Table 6.2-22, cumulative inhalation risks for non-cancer chronic and non-cancer acute effects from both the facility and existing sources are equal to the incremental acute risk guideline value of 1. This shows that the predicted impacts of NorthMet, when added to the toxic releases already prevalent in the area, have reached the level where health authorities begin to be concerned about cancer risks. Although this level is “guidance” and not a regulatory action level, the Band believes this value indicates the potential for adverse health effects.

From Table 6.2-22, cumulative inhalation risks for cancer are four times greater than the guideline of 1E-05. Although much of this risk comes from existing facilities, this number indicates that the area cannot sustain pollution that adds to what is already there without compromising health.

The Band has also continued to raise concerns for amphibole fibers, and what we perceive as insufficient analysis in the SDEIS. According to the SDEIS, the BACT-like fine particulate controls will control the release of more than “99.9% of amphibole fibers that are emitted from controlled sources”, not “99.9% of fibers in the ore”.¹⁹⁵ The second statement is incorrect, because some sources of fibers from the ore are uncontrolled, like blasting operations, or are unable to be controlled up to 99.9%, like haul roads, tailings, crushing and screening, and stockpiles.

¹⁹³ SDEIS 5-402

¹⁹⁴ SDEIS 5-425

¹⁹⁵ SDEIS 5-395

The SDEIS states that the Biwabik Iron Formation (which has been found to contain amphibole fibers) slopes under the Duluth Complex at the Mine Site, coming within 100 feet of the area that is planned to be mined. The Band's previous comments regarding unexamined hydrological connections between geologic layers or formations are also applicable in this instance. With fractured bedrock present, that could establish a hydrological connection, and 100 feet would be an insufficient barrier. Additionally, these types of formations are characteristically not homogeneously distributed, meaning that pockets of fibers could be found unexpectedly. While it is true that some information on the occurrence of amphibole fibers has been gathered from the site, the drill locations were chosen with regard to studying minerals of economic interest, and did not specifically target locations where fibers may be expected to occur.

The SDEIS maintains that the Minnesota Department of Health has reported that males within the area of the taconite mining and milling industry had more than two times the mesothelioma rate than the rest of the state.¹⁹⁶ Actually, the report from the epidemiologic study of Minnesota iron mine workers states that it is **three times the rate found in the rest of the state.**¹⁹⁷

Page 5-443 The SDEIS assures that ambient air monitoring for amphibole fibers would be conducted following facility start-up.¹⁹⁸ While no schedule of frequency or duration for amphibole fibers monitoring has been proposed in the SDEIS, the Band continues to assert, as we have throughout the environmental review process, that monitoring will need to continue over the life of the mine, as no one can predict when fibers might be contacted and released.

A cumulative analysis of fibers expected from the site along with fibers currently being emitted from other sources should be performed. Human health risk assessments should be expanded to include scenarios of worker exposure to amphibole fibers.

Inadequate analysis of geotechnical stability waste rock stockpiles, tailings basin, hydrometallurgical residue cells and performance of engineered controls

The tribal cooperating agencies were not permitted to participate in the Geotechnical Stability IAP workgroup, so we are at a disadvantage for understanding how some of the profound geotechnical stability risks identified for the PolyMet project as defined in the 2009 DEIS were resolved for the 2013 SDEIS. We have noted many design changes, and have attempted to understand how each modification would affect environmental impacts. Earlier comments have addressed some of our concerns, questions, and disagreements with SDEIS conclusions regarding management of waste rock stockpiles, tailings basin seepage, and other engineered controls. But Fond du Lac continues to question the design, location, and performance estimates for the Hydrometallurgical Residue Facility.

The Hydrometallurgical Residue Facility would be double-lined to minimize release of residue leachate. The double liner would consist of a composite liner system utilizing a geomembrane liner above a geosynthetic clay liner, with a second liner placed above the first, separated by a leakage collection system. This would substantially remove hydraulic head from the lower liner

¹⁹⁶ SDEIS 5-439

¹⁹⁷ MDH 2008

¹⁹⁸ SDEIS 5-443

and thereby virtually eliminate leakage to groundwater from the Hydrometallurgical Residue Facility.¹⁹⁹

As previously expressed, we do not share PolyMet's confidence in being able to virtually eliminate leakage to groundwater from any type of containment system. Some leakage must always be assumed, and given the site-specific conditions for the proposed location of the HRF, the risk for highly contaminated seepage to exit the HRF and flow to wetlands in the Embarrass River watershed.

As shown in Figure 4.2.14-2, the Hydrometallurgical Residue Facility is located in a natural low point in the topography adjacent to Cell 2W of the existing LTVSMC Tailings Basin and over the existing LTVSMC Emergency Basin. The southern tip of the existing LTVSMC Emergency Basin begins near the central portion of the Hydrometallurgical Residue Facility, widening and deepening into a former ravine that trended to the north. Drainage of the existing LTVSMC Emergency Basin occurs to the northwest between Cell 2W and a railroad grade located along the western perimeter of the area.²⁰⁰

This statement completely avoids clarifying that this 'natural low point in the topography' is an open water wetland (as prominently displayed in the left photograph on the cover of the SDEIS) with distinct natural drainage channels²⁰¹. The LTV Emergency Basin was purposefully sited in a place where tailings discharges (slimes, fines, coarse tailings) could be gravity-fed and efficiently contained in the event of a power failure or similar incident that would require draining the tailings slurry system. It also contains accidental overflows, spillage and floor drainage from the former LTV Concentrator Building, deposited by gravity and overflow from sumps at a nearby pump house.

*A 0.03-acre area of sedge/wet meadow within the Tailings Basin and a **28.6 acre area of shallow marsh within the Hydrometallurgical Residue Facility** are exempt from state and federal wetland regulations as they are both located within the Cliffs Erie Permit to Mine Ultimate Tailings Basin Limit Boundary.²⁰²*

The significance of the site topography and natural drainage features is more relevant to our concerns than the regulatory status of the wetlands. The SDEIS simply does not address the potential lack of integrity or risk of failure when constructing a hazardous waste facility within a wetland. Assumptions about hydraulic head being removed from the lower liner are not reassuring when the lower liner (geosynthetic clay) has been installed within a wetland and natural drainage ravine. *Any* leakage that escapes from the geomembrane liner has an increased risk of draining to shallow groundwater in this environment as compared to a dry, upland environment. The potential for substantial volumes of **seepage flowing from the Tailings Basin to the HRF** has not been addressed in the SDEIS; this represents a potential structural hazard. We can assume that the HRF has been designed to capture toxic drainage from the hydromet residue itself, with seepage volume estimates associated with the hydromet process. But we have no assurance that the HRF is designed to structurally withstand thousands of gallons per day of Tailings Basin seepage along the dikes that do not have seepage capture features installed.

¹⁹⁹ SDEIS 3-117

²⁰⁰ SDEIS 4.2.14.3

²⁰¹ SDEIS Figure 4.2.14-4

²⁰² SDEIS 4.2.3 Wetlands

Inadequate assessment of indirect impacts to wetlands; Inadequate mitigation for direct impacts

The tribal cooperating agencies have exhaustively challenged the co-lead agencies' approach to predicting indirect impacts to wetlands and their resulting conclusions, as an overly simplistic method based upon a flawed concept of hydrology at the mine site. This remains a major deficiency in the SDEIS, and is a significant unresolved issue for the Bands, who are concerned about direct, indirect, and cumulative effects to the high quality wetland resources that would be affected by the NorthMet Proposed Project.

Within the NorthMet Project area, 105 of the 177 wetlands (59 percent) are rated as high-quality, 12 wetlands (7 percent) are rated as moderate-quality, and 60 wetlands (34 percent) are rated as low-quality. The low-quality wetlands are located at the Hydrometallurgical Residue Facility, existing LTVSMC Tailings Basin, and Colby Lake water pipeline corridor. The moderate-quality wetlands are located at the Mine Site, existing LTVSMC Tailings Basin, and Colby Lake Water Pipeline Corridor. Wetlands at the Mine Site, and Transportation and Utility Corridor are ranked as high-quality.²⁰³

Approximately 92 percent of the wetlands in the Mine Site are of high overall wetland quality, and 8 percent of wetlands are of moderate overall wetland quality. High-quality wetlands have low disturbance levels and high vegetative diversity and integrity. Moderate-quality wetlands have impounded open water because of beaver dams and downstream culverts under Dunka Road or the railroad, are adjacent to USFS roads, the Dunka Road corridor, or the railroad corridor (PolyMet 2013b).

The wetlands along the Transportation and Utility Corridor have all been rated as high-quality. While the wetlands along the Railroad Connection Corridor are moderately affected by either a haul road or an existing railroad, they have a high vegetative diversity/integrity (PolyMet 2013b).

*...The vegetation types located at the Mine Site are indicative of pre-settlement conditions and lack hydrologic disturbance. The hydrology of the wetlands at the Mine Site has been stable over time (Barr 2008h).... However, monitoring would detect connectivity trends and reveal potential drawdown issues, **which would then be mitigated as direct effects.***

The purpose of an EIS is to be "forward looking" by predicting potential impacts and adequate mitigation for those impacts; this SDEIS is deficient in that respect. The USACE has not yet developed a monitoring plan to assess after-the-fact Project impacts to wetlands, but maintains that will be the way to best determine and mitigate indirect wetland impacts. The Band is not aware of any previous instance for which the USACE St. Paul District Office has required reasonably foreseeable indirect wetland impacts to be later mitigated as direct effects based upon monitoring.

Compensatory wetland mitigation for the proposed NorthMet project is expected to be approved and constructed in advance of any authorized wetland impacts and would therefore not require

²⁰³ SDEIS 4-157

*financial assurance. The USACE could consider financial assurance for potential indirect wetland effects and monitoring when additional detail has been provided.*²⁰⁴

Given the persistent major differences of opinion between the co-lead agencies and the tribal cooperating agencies, the Band specifically requests that financial assurance for potential indirect wetland effects and monitoring be secured.

Sites of High Biodiversity Significance contain very good-quality occurrences of the rarest species, high-quality examples of rare native plant communities, and/or important functional landscapes (MDNR 2008a). The entire 3014.5-acre Mine Site has been characterized by the MBS as various Sites of High Biodiversity Significance due to the presence of the One Hundred Mile Swamp site, which covers 15 percent of the Mine Site, and the Upper Partridge River site, which is 85 percent of the Mine Site (MDNR 2008a).

Two native plant communities, black spruce-jack pine woodlands (FDn32c; 34 percent of Mine Site) and rich black spruce swamp (FPn62a; 7 percent of Mine Site), have been characterized by the MBS as “imperiled/vulnerable” and “vulnerable,” respectively (MDNR 2008b).

There are two MBS Sites of High Biodiversity Significance (18.8 acres) located within the Transportation and Utility Corridor, including the One Hundred Mile Swamp (2 percent of the Corridor) and the Upper Partridge River (13 percent of the Corridor) (MDNR 2008a).

There is substantial evidence of the high quality and functional values of the existing wetlands and vegetation communities at the Mine Site. Nearly 2,000 acres of coniferous bog wetlands will be directly impacted by mine pit(s) and stockpiles, or indirectly impacted due to drawdown and/or pollution. This is particularly significant to the Band because many tribally harvested resources are only available in coniferous bogs, and restoration of coniferous bogs is a very difficult and long process that has extremely low success rates.²⁰⁵

The proposed mitigation plan is inadequate; it allows for the vast majority of mitigation and/or restoration credits to come from outside the Partridge, Embarrass, and St. Louis River watersheds. There is no justifiable reason to permit out-of-watershed mitigation when in-watershed opportunities still exist, especially when the St. Louis River watershed as a whole has experienced cumulative wetland destruction, degradation and hydrologic alterations in well over 50% of the watershed.²⁰⁶ In fact, unresolved wetland mitigation challenges and opportunities throughout northeastern Minnesota has led to an effort by an Interagency Review Team to improve wetland conservation and mitigation efforts in Bank Service Areas 1 and 2 (the Rainy and Lake Superior Basins). Comments by the Minnesota Center for Environmental Advocacy to the Minnesota Board of Water and Soil Resources speak to this point:

“Thousands of acres of high-quality wetlands are threatened by current and proposed mining projects and the mitigation proposals identified to date will not replace the functional wetland values that will be lost. MECA is not convinced that sufficient efforts have been made to avoid or minimize these impacts, nor is MCEA convinced that there are few if any valuable mitigation opportunities left in NE Minnesota.

²⁰⁴ SDEIS 3.2.2.4 Financial Assurance

²⁰⁵ Quinty, F., Rochefort, L., Peatland Restoration Guide.

²⁰⁶ SDEIS Appendix C. Tribal Cooperating Agencies Cumulative Effects Analysis, NorthMet Mining Project and Land Exchange. Sept. 2013

In our view, the goal of this process should be to preserve the functional values of wetlands with the Lake Superior and Rainy River watershed, and MCEA's primary concern is that the agencies are too ready to sacrifice those values to raise revenue for unrelated projects in other parts of the state."

"...As estimated by the NE Mitigation Siting Team, 2,850 acres of wetlands are projected to be impacted by mining activities in the next twenty years. While this is a significant acreage of wetlands to provide mitigation for, the *Northeast Minnesota Wetland Mitigation Inventory & Assessment Phase II: Final Assessment Report* ("Phase II Report") states, "[c]onsidering the 11 to 61 percent range of landowner interest...the total likely available, high potential credit identified by the GIS analysis and field verification ranges from approximately 4,950 credits to 27,400 credits." Even under the lowest estimate of the Phase II Report, there are enough available credits in the NE to cover the proposed need for credits from mining activity. Further minimization of wetland impacts through improved stockpile, tailings basin and mining road designs could reduce the credit demand even further."²⁰⁷

The USACE and DNR are active participants in the IRT, and are well aware of the mitigation potential within the St. Louis River watershed. The Band objects to the approval of any further out-of-watershed mitigation credits or restoration for impacts to irreplaceable high quality aquatic resources of national importance, which include all remaining unimpacted wetlands within the St. Louis River watershed/Lake Superior Basin.

Inadequate cumulative effects analysis, across all resource categories

Cumulative effects result in a relentless, unmitigated diminishment of treaty resources and access to those resources. Yet across virtually all resource categories, the SDEIS predicts that there will be no adverse impacts as a result of the NorthMet Project Proposed Action; this conclusion then enables the co-leads to determine 'no cumulative effects' from the project and the land exchange. But those initial no-impact predictions are contingent upon assumptions that all best management practices, engineering controls and mitigation measures discussed throughout the SDEIS will be successfully and flawlessly implemented, and that the NorthMet Project will comply with all applicable federal state and local regulations and permit requirements, particularly water quality standards. The tribal cooperating agencies have provided extensive comments and analyses over the course of the DEIS and SDEIS processes that support our misgivings for this circular logic. We presented a substantial alternative analysis of cumulative effects from the NorthMet Project Proposed Action as part of our commenting during the preliminary SDEIS review.²⁰⁸ Key concepts from our tribal CEA include:

- Tribal cooperating agencies believe the CEA for land use should encompass the 1854 Ceded Territory, as the signatory Bands have lost access to substantial portions of the 1854 CT and the resources within.
- The tribal cooperating agencies believe the water quality and hydrologic cumulative effects analysis should incorporate the entire St. Louis River watershed. This watershed has experienced substantial historic, current and proposed expanded mining activities, as well as other industrial, agricultural and urban development. In addition to the direct surface water and

²⁰⁷ MCEA Comments on the Wetland Mitigation Strategy for Northeast Minnesota, December 23, 2013

²⁰⁸ *Id.*

wetland impacts (loss and/or degradation) from these activities, nearly half of the watershed has experienced hydrologic alteration from extensive ditching.

- Tribal cooperating agencies consider a 216,300 acre area bounded by the St Louis River, Lake Superior, Lake Vermilion and the Beaver Bay to Vermilion Trail to be a Tribal Historic District, and the pertinent area for consideration of cumulative effects to cultural resources.
- The tribal cooperating agencies' review of the water modeling data packages for the NorthMet Project Proposed Action led to our conclusion that GoldSim did not accurately predict existing conditions, and cannot be relied upon to accurately predict future project conditions.

While any individual mine may not have significant impacts on plants, wildlife or the landscape, the cumulative impacts of thousands of acres of habitat loss and degradation correspond to a legitimate, significant concern for treaty-protected resources and access to them. As more mines are developed, these resources will increasingly suffer negative impacts either through direct loss of habitat or indirectly through disturbance. Traditional activities such as harvesting, fishing, gathering, hunting and trapping and other forms of treaty resource use will suffer as a result.

Inadequate analysis of impacts to the 1854 Ceded Territory, exercise of treaty rights

The Band's comments on the 2009 DEIS related to impacts to the 1854 Ceded Territory stand.

Inadequate analysis of environmental justice issues

The Band's comments on the 2009 DEIS related to environmental justice impacts still stand.

Inadequate analysis of climate change impacts

The Band's comments on the 2009 DEIS related to climate change impacts still stand.

Cultural Resources

As a result of Phase I cultural resources surveys and consultation with the Bands and the SHPO concerning the results of identification efforts for properties of religious and cultural significance to the Bands, three cultural resources have been identified within the Land Exchange area: the BBLV Trail, NorthMet Archaeological Site, and Knot Logging Camp.

An analysis of whether any particular property associated with the Bands' exercise of their usufructuary rights may be considered a TCP is limited by lack of available information regarding Band members' traditional exercise of those rights. Determining how the Bands have traditionally conducted their usufructuary rights on or near the Land Exchange Proposed Action area would only be available through a detailed ethnographic study of individual Band members and their families. The cultural resources investigations included Band member interviews with Bois Forte, Fond du Lac, and Grand Portage, although only Bois Forte's results were made available. The results of the interviews and the cultural resources investigation did not find any natural resources that would be considered a TCP or other traditional cultural place.²⁰⁹

The Fond du Lac Band of Lake Superior Chippewa conducted meetings in February 2011 to discuss past

²⁰⁹ SDEIS 4.3.9

and current traditional uses by the Band of the area in the NorthMet project. It was expected from the beginning that the distance between the NorthMet area and the Fond du Lac Reservation would reduce the chances of documenting specific use of the area by Fond du Lac Band members. In addition, the practices of Federal and State officials to disrupt traditional cultural practices during the early to middle twentieth century caused severe restriction of the exercise of usufructuary rights. The history of use of the area during the last 150 years could easily have been lost over the decades. Additional factors could affect the amount of information gathered for this report. General reluctance to share information with non-Band members is often prevalent as well as cultural restrictions on who (inside and outside the Band) can legitimately and safely be trusted with sensitive information.

The Band also shares concerns communicated by the Bois Forte Tribal Historic Preservation Officer:

The Area of Potential Effect (APE) for cultural resources divided the project into two separate sections surrounding the proposed mine site and the proposed plant site should be revised. "Figure 4.2.9-1, Cultural Resource Analysis-Area of Potential Effect" needs only to have the two areas joined to compose an APE that reflects an undertaking as defined in Section 106 of the National Historic Preservation Act of 1966. Section 106 defines undertaking as a "project, activity or program funded in whole or part under the direct or indirect jurisdiction of a Federal Agency, including . . . requiring a Federal permit, license or approval" (36 CFR 800.16[y])." An APE that encompasses the Mine and Plant sites and surrounding area affected by operations would better describe the undertaking for cultural resource investigations.

The remaining comments concern the properties of spiritual and cultural significance to the Bands, Mesabe Widjiu, Beaver Bay to Lake Vermilion Trail and Spring Lake Mine Sugarbush. Mesabe Widjiu is correctly identified as a sacred landform, but needs to be considered in its entirety (see attached map as an example). The segment encountered within the project area is small, but integral to the property. Adverse affects to any portion impact the entire feature.

The Beaver Bay to Lake Vermilion Trail requires further clarification. The trail is one of many within a system of water and overland routes that crisscrossed northeastern Minnesota and extended to the border lakes long before the fur trade and continued to be used through the early 20th century. To date, the BBLVT has not been fully researched or field verified within the project area. The trail needs to be better documented. There has been no rigorous attempt to research the BBLVT by the Bands or Lead Agencies, although the Superior National Forest Heritage Program reviewed the GLO plats and conducted field investigations on SNF land. Additional fieldwork should be conducted in the spring or fall when ephemeral features such as foot trails are less easily concealed by vegetation and more easily discerned.

The Bois Forte THPO is skeptical of the co-leads claim that there will be no effect to the Spring Lake Mine Sugarbush from the proposed NorthMet Project. Indirect effects through dust deposition and unauthorized collection are anticipated since the Sugarbush is situated immediately adjacent to the proposed plant site. While the lead agencies dismiss particulate accumulation as a problem, based on visual effects analysis conducted for the project and a site visit in 2010, their lack of concern seems speculative. The proximity of the plant site to the Sugarbush and the cumulative effects of dust on leaves, trees and understory flora have not been examined in detail and their long term effects may well be detrimental to vegetation, other than maples, that comprise the Sugarbush."²¹⁰

²¹⁰ Bois Forte NorthMet SDEIS comments March 2013

Summary

Based upon our extensive evaluation of the SDEIS and supporting technical documents, we conclude that there will undoubtedly be *significant and unmitigated impacts* to natural and cultural resources that the tribal cooperating agencies have consistently elevated to the attention of the co-lead agencies. There will be *significant and unmitigated tribal resource losses* within the 1854 Ceded Territory and the Lake Superior basin, including the St. Louis River watershed. The NorthMet Project Proposed Action and Land Exchange Proposed Action would decrease the amount of land available for public access and use, and would decrease portions of the 1854 Ceded Territory available for use by the Bands.

- The SDEIS must be revised to fully evaluate reasonable alternatives in the SDEIS, including identifying the federal agency preferred alternative and the LEDPA.
- No mitigation has been identified in the SDEIS for this permanent loss of lands and resources (natural and cultural) to the 1854 Ceded Territory. The public interest determination must include a specific finding that “The intended use of the conveyed Federal land will not substantially conflict with established management objectives on adjacent Federal lands, including Indian Trust lands” (36 C.F.R. 254.3(b)(2)(ii)). This threshold has not been met, and the Fond du Lac Band objects to the implementation of the Land Exchange Proposed Action.
- The SDEIS must be revised, with significant additional study, to appropriately evaluate closure, mitigation, reclamation, and perpetual treatment cost estimates. The SDEIS requires substantially more public transparency and less equivocation on what is arguably one of the most fundamental issues at stake for this project: perpetual treatment.
- The SDEIS does not provide sufficient information for the public to understand whether the NorthMet Project Proposed Action will be required to remediate these and other AOCs before commencing project operations, or be allowed to defer remediation until closure.
- There is a demonstrated need for significant improvements to the modeling evaluations. The lack of fracture and fault analysis is also major deficiency of this SDEIS.
- The water quality analysis is fundamentally inadequate; it must be redone.
- The SDEIS evaluation of mercury impacts is deficient, and the conclusion of no mercury impacts downstream in the St. Louis River watershed is not supported by the information presented.
- We consider the high probability of continued degradation of remaining wild rice stands in the Partridge and Embarrass River watersheds as a result of the NorthMet Project to be an unacceptable environmental impact.
- The most significant deficiency in the SDEIS analysis of wildlife impacts is its failure to critically analyze potential impacts to moose.

- Uncontrolled contaminant loading from existing mine facilities, along with elevated constituents from the Proposed Project, have the potential to affect the successful establishment of a sustainable lake sturgeon fishery throughout the St. Louis River. This potential impact should be fully evaluated in the SDEIS.
- A cumulative analysis of fibers expected from the site along with fibers currently being emitted from other sources should be performed. Human health risk assessments should be expanded to include scenarios of worker exposure to amphibole fibers. Fugitive dust impacts must be evaluated for human health and environmental impacts.
- The SDEIS simply does not address the potential lack of integrity or risk of failure when constructing a hazardous waste facility within a wetland.
- The co-lead agencies' approach to predicting indirect impacts to wetlands is an overly simplistic method based upon a flawed concept of hydrology at the mine site. This remains a major deficiency in the SDEIS.
- The Band specifically requests that financial assurance for potential indirect wetland effects and monitoring be secured.
- The Band objects to the approval of any further out-of-watershed mitigation credits or restoration for impacts to irreplaceable high quality aquatic resources of national importance, which include all remaining unimpacted wetlands within the St. Louis River watershed/Lake Superior Basin.
- Tribal cooperating agencies believe the CEAA for land use should encompass the 1854 Ceded Territory, as the signatory Bands have lost access to substantial portions of the 1854 CT and the resources within.
- The tribal cooperating agencies believe the water quality and hydrologic cumulative effects analysis should incorporate the entire St. Louis River watershed.
- Tribal cooperating agencies consider a 216,300 acre area bounded by the St Louis River, Lake Superior, Lake Vermilion and the Beaver Bay to Vermilion Trail to be a Tribal Historic District, and the pertinent area for consideration of cumulative effects to cultural resources.

Respectfully submitted,

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Fond du Lac Environmental Program