Joint Supplement to the Petition for a Contested Case Hearing
and
Joint Response to Petitions
Regarding Poly Met Mining, Inc.'s
Permit to Mine Application
For the NorthMet Project

Submitted to the Minnesota Department of Natural Resources

April 6, 2018

Minnesota Center for Environmental Advocacy ("MCEA"), the Center for Biological Diversity ("CBD" or "The Center"), and the Friends of the Boundary Waters Wilderness ("FBWW") (collectively, "Petitioners") submit this letter as a Supplement to their Petition for a Contested Case Hearing ("Petition") and as a Response to Petitions for a Contested Case[1] filed in regard to the application for a Permit To Mine ("Application") for the NorthMet Mine Project (the "Project" or "NorthMet Mine Project") submitted by Poly Met Mining, Inc. ("Applicant" or "PolyMet").

Petitioners file this Supplement and Response due primarily to the release of new information by the Minnesota Department of Natural Resources ("DNR") at a time that did not allow Petitioners to review the information prior to the filing of their initial Petition on February 28, 2018. MCEA submitted a Data Practices Act request to the DNR for documents relating to the NorthMet mine project on November 2, 2017. On February 20, 2018, over three months later, and only eight days before all contested case petitions were due, DNR finally provided the requested information, which included 100s of pages of documents. Petitioners have now reviewed those documents and discovered that many are directly relevant to the substance of the Petition, as described below. Those documents are attached as Exhibits 2-19.

Petitioners' need to file this Supplement and Response is also grounded on the recent release of new information by the Applicant. On March 26, 2018, the Applicant released an Updated Form NI 43-101 Technical Report for the NorthMet Project, which has been attached as Exhibit 1 to this Supplement and Response. This document contains an updated financial analysis for the projected profitability of the Applicant's proposed mine operation, and as

[1] Minn. Stat. § 93.483.

described below, is also directly relevant to many of the assertions of disputed fact raised in the Petition.

I. THE DOCUMENTS RECEIVED BY MCEA UNDER THE DATA PRACTICES ACT SUPPORT THE ASSERTIONS OF DISPUTED MATERIAL FACTS IN THE CONTESTED CASE PETITIONS

A. Tailings Dam Stability

In Section VI.A of the Petition, Petitioners argued that the flotation tailings basin ("FTB") as proposed does not meet stability requirements. DNR's consultants agree, and have said so in no uncertain terms:

> The FTB plan gives me severe indigestion because a lake on top of a pile of sand is inherently unstable, and irresponsible. The dam embankments are a stair step arrangement that is inherently geomorphologically unstable, and will erode and cause the ponded water and tailings to escape if it is not maintained and repaired forever.[2]

Mr. Sutton elaborated on this conclusion in his comments on the Reclamation, Closure and Post Closure Maintenance Plans, noting that the stair step design of the FTB dam will encourage erosive gullying, causing "a potential for a massive release of tailings."[3] This likelihood is not remote; it is a risk inherent to the design itself:

> By storing the water and saturated tailings above and behind a geomorphologically unstable embankment configuration that is constructed of highly erodible sandy silty sized particles, a future failure is likely and could cause substantial environmental harm.[4]

These identified risks were not confined to one isolated consultant, but were shared by many. Cecilio Olivier of EOR wrote DNR that "the tailings dam could be geotechnically stable

[2] Email from Don Sutton, Spectrum Engineering, to Zach Wenz (DNR) *et al*., May 24, 2017, attached as Exhibit 2.
[3] Comments on Section 15 Reclamation, Closure & Post Closure Maintenance Appendices 7, 13, 14, attached to an email dated May 8, 2017 and attached as Exhibit 3.
[4] *Id.*

but geomorphologically unstable . . . All the points raised by Don regarding the geomorphological issues are important and, short of a dry closure, they will require perpetual maintenance."[5]

DNR's response, unfortunately, was to "suggest a permit condition requiring PolyMet to study alternate closure methods for the basin in first few years of operations."[6] This response does nothing to ensure the public's health, welfare and safety is protected from an unsafe dam design, as required by regulation.[7] DNR must deny the Dam Safety Permits and the Permit to Mine until an adequate design is submitted. In the alternative, DNR must find that the stability of the FTB dam is a material issue of disputed fact amenable to resolution in a contested case proceeding.

B. Wet Closure

Section VI.A.1 of the Petition summarized information establishing that the wet closure proposed by the Applicant violates Rule 6132.3200. That rule is consistent with the central conclusions of the Mount Polley Expert Panel that water must be removed from tailings impoundments, and that water covers are not a safe tailings storage method. DNR's consultants have repeatedly emphasized this point, noting that:

- "short of a dry closure [the unstable FTB dam] will require significant perpetual maintenance . . . It is not going to be cheap."[8]
- "The PTM embankment design would be more tolerable if the tailings were in a dry state, and could erode out at a slow rate that could be absorbed by the environment without causing harm. However, by storing the water and saturated

[5] Email of Cecilio Olivier to Dana Dostert (DNR) *et al*., June 1, 2017, attached as Exhibit 4.
[6] Spectrum/PolyMet Differences Ver. 1.1, April 9, 2017, attached as Exhibit 5.
[7] Minn. R. 6115.0410, subp. 8.
[8] Ex. 4.

tailings above and behind a geomorphologically unstable embankment configuration that is constructed of highly erodible sandy silty particles, a future failure is likely and could cause substantial environmental harm. If this happens, the escaped tailings would need to be reconfigured into a dry closure and covered with an impermeable cap at great expense. There would probably be downstream water quality damages that require mitigation . . . If there was no water in the tailings facility or if the tailings were dry and not saturated, there would be minimal impact if a failure occurs."[9]

- "**The wet closure is temporary, it is not permanent.** The geomorphologically unstable slopes will erode back into the pooled water if the slope erosion is not repaired perpetually. The saturated tailings will gush out, oxidize, and cause a variety of downstream water quality problems. After this happens, the State of Minnesota will need to collect the escaped tailings, and rebuild the FTB as a dry closure. This will be very expensive."[10]
- "A 'dry closure' for the tailings basin would significantly reduce the long term O&M costs and insurance premiums needed."[11]

DNR's own Dam Safety staff agrees with the comments set forth above, and has expressed that opinion to DNR Land and Minerals staff. In response to the serious questions raised by Spectrum Engineering (as described in Section I.A above), DNR's Senior Engineer for Dam Safety replied:

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[9] Ex. 3.
[10] Don Sutton, Spectrum Engineering, Comments on Section 10 Mine Waste Characterization Appendix 2, 4, 6, 7, and 17, attached to the email of Cecilio Olivier to Zach Wenz (DNR) *et al.*, May 10, 2017, and attached as Exhibit 7 (emphasis in original).
[11] EOR Presentation to DNR, *Key NorthMet Financial Assurance Recommendations and Status Update,* April 26, 2017, attached as Exhibit 11.

> The geomorphological issues are essentially why I favor dry closure. I would like to be able to see Polymet be able to walk away from a site that no longer has seepage issues and can be allowed to revert to forest. Wet closure will not allow that.[12]

Given the clear regulatory directive that tailings basins must be drained at closure, and the clear warnings from DNR staff and its consultants that a wet closure is inherently unsafe, Petitioners are perplexed that this design feature remains in the permit application and the Draft Special Conditions. As noted above, rather than follow the regulations, DNR has apparently chosen to resolve the issue by directing the Applicant to "study alternate closure methods."[13] Studying whether the project could eventually be modified to comply with the regulations is legally inadequate. The mine design does not comply with lawful requirements, and cannot be permitted.

C. Alternatives Analysis

Section VI.B of the Petition summarized evidence that DNR did not undertake the required alternatives analysis in making the determination that the proposed mine design minimizes adverse impacts to the extent practicable. DNR must do this alternatives analysis prior to issuing any permits. As noted above, there remain significant disputes of material fact concerning the legality of the mine design, particularly the choice to use a wet closure. Under these conditions, DNR's failure to consider filtered tailings as a mine waste storage option in the permitting process is material error. The DNR's regulations require that the Commissioner's determination on a permit to mine be based on an "examination of alternative practices"

[12] Email of Dana Dostert (DNR) to Cecilio Olivier, *et al.*, June 1, 2017, attached as Exhibit 6.
[13] Ex. 5.

supporting the proposed design as the "most effective and workable means of achieving reclamation."[14]

As described above, these two alternatives—filtered tailings and dry closure—were repeatedly urged by DNR's consultants.[15] These alternatives offer obvious environmental benefits to such an extent that their use would completely eliminate risks posed by the proposed design:

> Did PolyMet consider the other extreme of encouraging oxidation to rapidly flush the [contaminants of concern] to shorten the length of collection & treatment? Or, filter the water from the tailings and compact them to reduce infiltration of air and water, and then cap with low permeability cover at end of project. This would eliminate the eventual catastrophic failure of the lake releasing the saturated tailings, and reduce or eliminate the long-term water collection and treatment.[16]

Indeed, one of the central challenges of this proposed mine is that the Applicant freely acknowledges that it will produce contaminated water for centuries. Filtering the tailings prior to storage, a common and increasingly prevalent method of tailings storage, would largely eliminate those impacts:

> Many of the long-term water treatment costs and environmental/operation risks would diminish if only the FTB water was collected and treated. This could be achieved by installing an under drain beneath the tailings and have the collected water flow to the WWTP. This would work even better if the tailings were dewatered and placed in a pile with a smaller footprint than the pond. The smaller footprint would collect less water. The dry tailings could be placed so that precipitation would mostly run off rather than infiltrate during mining, and then be sealed using a bentonite modified soil. The total quantity of water being treated would be a fraction of the amount treated in the PTM plan.[17]

[14] Minn. R. 6132.0100, subp. 17.
[15] Ex. 3, 4, 5, 6, 7.
[16] Ex. 7.
[17] Ex. 3.

These benefits were described extensively in the Comments of MCEA *et al*. on the NorthMet Dam Safety Permits, as well as the Petition and the Comments and Objection on the NorthMet Permit to Mine.

What is notable about the recently produced data practices documents is that they demonstrate that these alternatives were rejected by DNR over a decade ago. EOR was initially retained by the state to assist in permitting the PolyMet project in 2007.[18] Its role was to assist the state in identifying "strengths, weaknesses, and possible omissions found in the [Permit to Mine] application."[19] Later, Spectrum Engineering was included in the assistance role. In 2012, when Spectrum Engineering expressed its concerns about the proposed (and unlawful) wet closure, writing that its experts "don't like the wet closure, because it is not a permanent closure" and that it "will eventually fail and release the sulfates," DNR responded that they appreciated the input but the decision had already been made:

> Because you and the EOR team were brought in after the wet closure alternative was selected, you missed out on much of that discussion . . . Since the currently proposed projects [*sic*] incorporates a wet cover, that is what is being evaluated. We can use your comments about alternatives if the process leads to basin design modifications . . . For now, Lands and Minerals will hold these comments and use them for context and risk evaluation as appropriate as we all evaluate the model results from the project.[20]

As a result of this exchange, it is clear that the decision to use wet closure was made before 2007, and that for the 10 years prior to the submittal of the Application, this decision was set in

[18] See State of Minnesota Professional and Technical Services Contract with Supplemental Agreements, April 26, 2007, attached as Exhibit 9. In that contract, the state's authorized representative is identified as Jennifer Engstrom, the author of the email of Exhibit 8 in which Spectrum Engineering was advised that EOR was brought on after wet closure was selected as the preferred design.
[19] Ex. 9 at Attachment A.
[20] Email of Jennifer Engstrom (DNR) to Don Sutton, Spectrum Engineering, February 2, 2012, attached as Exhibit 8.

stone. In sum, for a full decade, DNR engaged in extensive negotiations with the Applicant about various design features. During that time, DNR contracted with technical experts to assist in reviewing those materials, including the Closure Plan first drafted prior to the contracts in 2007.[21] Those experts advised the DNR for years that the wet closure was unsafe. They recommended removing the water from the tailings either during operations (identified as the Best Available Technology for mine waste storage by the Mount Polley Expert Panel), or at closure, as required by regulation. Throughout the decade-long permitting process, DNR's own consultants persisted in urging alternatives to wet tailings storage, and internal staff at DNR agreed that "wet closure will not allow" the Applicant to be able to walk away from a site that no longer has seepage issues.[22] These recommendations were ignored. As shown above, the DNR had in fact pre-selected wet closure as the preferred mine design since at least 2007, nine years before any Permit to Mine Application was received and eleven years before any draft permits were released.

On this record, the DNR cannot conclude that the mine design is the most effective and workable means of achieving reclamation. The project cannot be permitted as proposed, and in the alternative, the appropriate alternatives analysis must be examined and resolved in a contested case proceeding.

D. Financial Assurance

Section VI.F of the Petition raised four matters where Petitioners have demonstrated that there exists a reasonable basis to conclude that facts material to the permit's financial assurance provisions are in dispute.

[21] Ex. 9 at Attachment B.
[22] Ex. 6.

The Petition demonstrated that the contribution schedule for the trust fund for long term costs is very heavily back-weighted, essentially causing a balloon payment to become due midway through the mine's operational life. This balloon payment schedule does not ensure that financial assurance funds will be sufficient and available when needed, as required by Rule 6132.1200, particularly because the Applicant's profitability is projected to peak early on in the mine's life, thereby reducing its ability to make those balloon payments.

DNR's financial assurance consultants have made this same objection, urging DNR that the trust fund ramp up is "too slow."[23] In April 2017, EOR advised DNR that "Maximizing up front cash and fully funding the Trust within the first few years of mine operation minimize risks associated with Bonding & LOC delays and disputes."[24] EOR's recommendation was unequivocal: "to minimize financial risk to the State, the Trust Fund should be fully funded upfront or within the first few years of operation."[25] DNR ignored this recommendation, and the Draft Special Conditions allow the Applicant to fund a mere $26 million of the Trust Fund over the first 8 years of the mine, at which point the state's potential liabilities approach $900 million.

DNR's assumption that this severe back-weighting of the trust fund contributions does not put the state at risk is unsupported by any evidence. In its Petition, MCEA included a profitability analysis that it commissioned. This analysis demonstrated that the Applicant's ability to generate revenue sufficient to support its trust fund obligations is very much in question.[26] Subsequent to the submittal of the Petition, the Applicant released its own updated profitability analysis, attached as Exhibit 1. That analysis revealed that the project's profitability

[23] Email of Joseph Henderson (DNR) to Michael Kunz (DNR), January 30, 2017, attached as Exhibit 10.
[24] Ex. 11 at slide 2.
[25] *Id.* at slide 19.
[26] Joint Petition Exhibit 13 (Report of Jim Kuipers).

is even lower than Petitioners had believed, as described in Section II below. This development is precisely why Petitioners have been urging DNR to request the updated profitability analysis, but again DNR demurred, noting only that if their work "suggests that elements of the financial feasibility study need to be updated to inform our decision making, [DNR] will request those updates from the company."[27]

Despite clear warnings from its consultants, DNR did not request those revenue projections prior to issuing its Draft Special Conditions, thereby allowing the Applicant to defer the vast majority of its trust fund contributions to a time ten years in the future. EOR warned DNR that "access to an updated financial feasibility study and cash flow projections is paramount."[28] And as described in Section II below, now we know why.

Petitioners also raised a concern about the reclamation estimates relying on contractor quotes rather than the standardized SRCE estimator methodology used in the first permit application. Again, DNR's consultants expressed the same concern:

> A lot of the costs included in Polymet estimates are based on quotes received by one local contractor and are significantly lower that [*sic*] one may expect by using standard unit costs and contractor's mobilization, profit, administration and bond costs. My preference would be to take these quotes with a grain of salt.[29]

Spectrum Engineering expressed the same caution, noting that "[t]he contractor has an incentive to lowball the estimate."[30] According to Petitioner's expert analysis submitted with the Petition,

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[27] Email of Barb Naramore to Marshall Helmberger, January 16, 2017, attached as Exhibit 12.
[28] EOR, Jardine Lloyd Thompson, and Spectrum Engineering, *Financial Assurance Review and Evaluation for the NorthMet Mining Project: Phase I – Task 1B Report: PolyMet Financial Capabilities* 3 (2016) [hereinafter "EOR Financial Assurance Review 1B"].
[29] Email of Cecilio Olivier to Michael Kunz (DNR), *et al.*, March 25, 2017, 12:28PM, attached as Exhibit 13.
[30] Don Sutton, Spectrum Engineering, Comments on Financial Assurance, attached to the email from Cecilio Olivier to Michael Kunz (DNR) *et al.*, May 12, 2017, attached as Exhibit 15.

the use of contractor estimates likely underestimates reclamation costs by 25% to 50%. These estimates must accordingly be independently verified prior to issuance of a permit.

Lastly, the Petition demonstrated that Applicant does not have the capital or access to capital required to conduct its proposed operations, in violation of Rule 6132.0300. Because the financial assurance funds would be provided in large part by surety bonds and letters of credit, DNR's consultants advised it that access to those credit markets is "a key consideration in evaluating the financial assurance funding risks."[31] And access to those markets is in turn dependent on the project's economics, which is why EOR considered the updated profitability projections to be such an important factor in evaluating financial assurance.[32] Mindful of these concerns, Petitioners specifically requested in their Petition that "if the Applicant submits a DFS or any other additional financial information to support its financial viability prior to the issuance of a permit . . . the issue must be included in the scope of the [contested case] hearing, and parties must be given the opportunity to submit evidence and arguments in response."[33]

EOR had reason to be concerned about the Applicant's ability to finance its financial assurance obligations. DNR's consultants inquired with the Surety and Fidelity Association of America and reported to DNR that "[t]here is no way PolyMet can obtain a surety bond without Glencore backing the risk . . . Given the size of the bonds, the surety would only bond a company with many billions in assets. Glencore is in that class."[34] This fact did not escape DNR's attention:

[31] EOR Financial Assurance Review 1B at 2.
[32] EOR Financial Assurance Review 1B at 2.
[33] Joint Petition for a Contested Case Hearing on the NorthMet Permit to Mine Application, submitted to DNR on February 28, 2018, at 90-91.
[34] Email of Don Sutton, Spectrum Engineering to Stu Grubb *et al.*, May 4, 2017, attached as Exhibit 14.

> EOR believes that the State should require PolyMet to show ability to secure full surety bonding for at least the first three years. They are concerned that there will be challenges for PolyMet to bond large/long term costs. They do not want PolyMet to only find bonding for construction years and to not be able to find a surety company to bond the first/greatest $ operation years. They could always sell or partner with a large mining company to increase their ability to get larger bonds, but we must manage the current situation.[35]

DNR chose a different path. Prior to issuance of the Permit to Mine, the Applicant must provide financial assurance to cover legacy reclamation costs.[36] DNR does not require the Applicant to demonstrate an ability to finance its obligations for long term costs until two years after the permit has been issued,[37] putting the state at significant risk. Based on the evidence currently before it, the only supportable conclusion is that the Applicant does not in fact have the capital or access to capital in the amounts necessary to conduct its mining operations, and the permit does not comply with Rule 6132.0300. In the alternative, this disputed fact must be determined in a contested case proceeding.

E. Efficacy of Bentonite Amendment and Barrier Walls in Seepage Containment Systems

Section VI.C of the Petition raises significant questions concerning the predicted efficacy of the seepage containment systems. These concerns are critical, as the Applicant admits that the water impacted by the mine will be contaminated with arsenic, lead, sulfates, magnesium, copper, cobalt and other toxic constituents, but the central premise of this mine's design is that that this water will be prevented from infiltrating surface and groundwaters through an elaborate system of trenches, pipes, barrier walls and sump pumps. Notwithstanding the fact that the regulations do not allow a facility to discharge wastewater into the environment on the

[35] Ex. 10.
[36] Draft Special Conditions, Attachment 2 p. 4.
[37] *Id.*

assumption that a secondary system will recapture those pollutants, there is ample reason to believe this secondary system is premised on optimistic efficacy assumptions.

Petitioners observed that while the Final Environmental Impact Statement refers to cutoff walls being "keyed" into the bedrock, the term "keyed" is not found in the permit application materials. DNR's consultants noted this as well and asked DNR whether those barriers walls would be keyed into the bedrock, since the engineering drawings appeared to indicate a key.[38] This matter remains unsettled. Those consultants also observed more generally that, even though modeling could potentially indicate high capture rates, in reality systems made from actual materials are subject to a variety of failure modes, and it should not be assumed that these systems will capture all contaminated water.[39] The experts hired by DNR to evaluate the weaknesses of the permit application sardonically warned that "Spectrum is unfamiliar with the concept that nothing ever breaks, deteriorates, or goes wrong."[40] Nevertheless, DNR has drafted a permit based on that very concept. As a result, the predictions of low impacts to groundwater and surface waters are almost certain to be underestimates.

This same skepticism permeates the consultants' view of the proposal to comply with the reactive mine waste regulations by installing a layer of bentonite amended soil to limit infiltration of water and air. The permit application, and therefore the permit itself, assumes nearly perfect operation of this bentonite barrier. But reality tends to messy, and the prospect of operating and maintaining this barrier over hundreds of years is a fact that DNR has not yet grappled with. Systems made with actual materials tend to be more susceptible to failure than

[38] Ex. 7.
[39] Perpetual Operation and Maintenance Costs for Reclamation – MY1, attached to the email from Cecilio Olivier to Michael Kunz (DNR), July 12, 2017, attached as Exhibit 16.
[40] *Id.*

computer models assume. These failure modes are not limited to peripheral events, but are central some of the project's fundamental premises:

> The permit assumes that roots will probably not penetrate the bentonite layer. Given the bentonite application method proposed, roots will penetrate, and the seal will leak water and air into the tailings. This will happen anyway. When this happens, PM states that it will be repaired. This could be a very big additional cost that we have not addressed as part of the FA. Is this considered adaptive management?[41]

The proposal to limit infiltration of water and air in the tailings is entirely speculative:

> Spectrum Engineering has some serious reservations about the constructability of the various bentonite applications in the FTB proposed by PolyMet. Some of the proposals are more concepts than plans. The feasibility is questionable. There is wording to the effect that if the proposed methods fail, PolyMet will fix the problems. What is the cost of fixing things? If the bentonite dries or is penetrated by root, the goal of maintaining the tailings in a saturated state may not be achievable.[42]

As described in the Petition, overly optimistic assumptions about the efficacy of the bentonite barrier render the project unable to comply with the reactive mine waste regulations of Rule 6132.2200. By law, the DNR cannot permit a project when regulatory compliance is based on concept alone.

F. Mine Waste Characterization

Section VI.D of the Petition demonstrated that the reactive mine waste generated by the project will be not adequately characterized, and that failures in characterization would result in rule violations. The Petition observed that only 84 waste rock and ore samples were analyzed for acid-base accounting, whole rock chemistry, and mineralogy, compared to an industry recommended 250.[43] DNR's consultants made the same observation:

[41] Ex. 3.
[42] Ex. 15.
[43] Joint Petition at 65.

> Of the 18,800 waste rock and ore samples used to characterize the ore and waste, apparently only 82 samples were used to characterize the waste. This makes me wonder how much confidence we have when scaling up to the full 358 million tons of waste that will be mined, and the 218 million tons that will be stockpiled.[44]

This is precisely the point raised by the Petition. And if those samples were inadequate, then the estimates of sulfide content in the Category 1 waste stockpile are unreliable.[45] These errors are critical because the Category 1 stockpile will be unlined. The design must comply with the regulatory requirement to "prevent the release of substances that result in adverse impacts on natural resources."[46] The record suggests it does not, because the Applicant's modeling "indicates that the Category 1 Waste Rock Stockpile is a major source of sulfate and heavy metals to the West Pit lake."[47]

II. THE APPLICANT'S RECENT UPDATED TECHNICAL REPORT REVEALS SIGNIFICANT INADEQUACIES IN THE DRAFT SPECIAL CONDITIONS FOR THE NORTHMET MINE THAT MUST BE ADDRESSED IN A CONTESTED CASE PROCEEDING

A. The Technical Report Shows that the Project as Designed Is a Fiction

On March 26, 2018, the Applicant released a new Form NI 43-101 Technical Report for the NorthMet Project.[48] This report is the analysis that EOR described as "paramount" to the DNR's decisions on financial assurance. An accurate understanding of the mine's projected

[44] Ex. 7.
[45] Joint Petition at 65; *see also* Comments on Section 7 Mine Site & Mining Facilities & Appendices 3, 5, 8, attached to the email from Zach Wenz to Michael Kunz, May 9, 2017, attached as Exhibit 17 (noting the lack of discussion about how the project intends to accurately separate high sulfide waste from low sulfide waste, and concluding that "the emphasis is on the mining, not on how the %S in the waste will be managed. This is a concern.").
[46] Minn. R. 6132.2200, subp. 1.
[47] Barr Engineering Technical Memorandum, *Summary of Non-Mechanical Treatment Plans for PolyMet* at 4, May 18, 2016, attached as Exhibit 18.
[48] Ex. 1.

profitability is the only way to "determine the risk of PolyMet not meeting their financial assurance funding obligations."[49]

The results of this updated analysis are grim. As noted above, MCEA conducted its own profitability analysis showing that the Applicant would struggle to generate revenue in the amounts necessary to fund its trust fund obligations, even being cash flow negative in some years, but the Applicant's own analysis is even more pessimistic. The project would require capital investments of $945 million, for an internal rate of return (IRR) of 9.6%.[50] If the Hydromet plant is added into the projections, the IRR improves slightly to 10.3%.[51]

Both of these rates of return are effectively subeconomic. For a project as risky as a mine, investors typically demand much higher returns to justify the risk. For new projects, a 40% IRR is the target, and in general a 20% IRR is the minimum. Mine projects are highly sensitive to commodity prices, operating costs, and capital costs, and anything less than 20% IRR has a good chance of failure. These industry norms are described in detail in Exhibit 13 to the Petition, in which Mr. Kuipers describes the project as being at "significant risk of cessation" in an analysis case with a low IRR.[52]

Even more alarmingly, these bleak profitability projections do not include the impact of lower metals prices or the costs of the Applicant's financial assurance obligations, which as Mr. Kuipers described in Joint Petition Exhibit 13, are substantial drivers of cash flow. The updated analysis is based on metals prices that are substantially higher than today's prices, and therefore

[49] EOR Financial Assurance Review 1B at 3.
[50] Ex. 1 at 20.
[51] *Id.*
[52] Joint Petition Ex. 13 at 5.

drastically overstates the project's profitability in the current market. The price assumptions contained in the updated analysis are compared to actual current prices below.[53]

	Units	Technical Report Price	Actual Price	% of Project Revenue
Copper	US$/lb	3.22	3.07	54.3
Nickel	US$/lb	7.95	6.03	20.2
Cobalt	US$/lb	20.68	41.28	1.9
Platinum	US$/oz	1,128	913	4.7
Palladium	US$/oz	973	906	16.9
Gold	US$/oz	1,308	1331	1.6
Silver	US$/oz	18.92	16.35	0.3

In other words, 96.4% of the revenues generated by the project have been inflated from today's market prices. According to the Technical Report itself, "[f]inancial returns for the Project are highly sensitive to changes in metal prices," and cause the net present value of the project to swing as much as $300 million in either direction depending on prices.[54] The IRR for the project based on today's prices would therefore be much lower than even the bleak (but overstated) estimates of the updated Technical Report.

These updated profitability projections also do not include any estimate of the Applicant's financial assurance obligations, which, as Petitioners have shown, are large enough to affect cash flow significantly. Table 22-9 in the Updated Technical Report does contain one reference to reclamation costs, but the total numbers do not approach the trust fund obligations provided for in the Draft Special Conditions. Those obligations require the Applicant to

[53] Data is from Ex. 1 at 25, 226. Market data taken April 6, 2018 from www.infomine.com.
[54] Ex. 1 at 26.

contribute upwards of $580 million to a trust fund for the benefit of the state, but those numbers are not reflected in the Applicant's updated analysis.

It is difficult to overstate the significance of these updated numbers. The NorthMet mine project as proposed in the Permit to Mine Application is clearly uneconomic, and will never be built in its current form. It is a fiction. The Applicant virtually conceded this in the Technical Report, and requested analysis of alternative mine designs at much higher throughputs, up to almost quadruple the current proposal.[55] Those alternative proposals involve expanded mine pits to access "inferred mineral resources," which by definition are "considered too speculative . . . [to] have demonstrated economic viability."[56] The analysis of these vastly expanded mines concluded that at double the capacity of the current proposal, the project could achieve an IRR of 18.5%, and at quadruple the capacity it might be able to achieve an IRR of 23.6%.[57] These rates of return, still much lower than what would be needed to actually attract financing, are again based on *speculative resources*, not mineral reserves. To make matters worse, the Applicant has been aware for years that the smaller footprint project was economically marginal, and that only a vastly increased scope would generate returns worthy of investment. The Applicant commissioned an investment analysis in 2013 that arrived at this very conclusion.[58] That report found that the Applicant's share price would almost triple if the project were expanded to process much higher tonnages.[59] This analysis was based on direct conversations with

[55] Ex. 1 at 19.
[56] *Id.*
[57] *Id.* at 246.
[58] *See* Edison Investment Research PolyMet Report, available at https://www.scribd.com/document/187067954/Edison-Investment-Research-PolyMet-report.
[59] *Id.*

Applicant's officers.[60] At the time the report was commissioned, the Applicant denied plans for an expansion, saying "[t]hat's not part of our discussions around here."[61] But the author of the report emphasized that he spoke with management when writing the report, saying "We didn't make this stuff up."[62] That author has now been shown to be correct, and the Applicant's previous denials that it was considering a vastly expanded operation can now only be seen as misleading.

The updated Technical Report is a staggering concession. What it makes clear is that if Minnesota ever sees a NorthMet project, it will be as a mega-mine processing *four times* as much rock as proposed today, and generating *four times* the waste, creating a tailings basin *four times* the size.[63] This realization has significant repercussions for the permitting decisions pending before the DNR, as described below.

C. The Technical Report Demonstrates Why It Is Critical that the Permit to Mine Contain a Term

The Petition notes at Section V.B that the Draft Permit lacks a term, in violation of Minn. Stat. § 93.481. The term is a critical function of the permit, particularly so for nonferrous mine permits, which are "irrevocable during its term."[64] The updated Technical Report reveals that the intent of this permitting process is to get the Applicant's foot in the door, to enable it to build a

[60] Josephine Marcotty, *Before open pit copper mine opens in Northern Minnesota, the expansion debate has started*, Star Tribune, Nov. 27, 2013, available at http://www.startribune.com/before-copper-mine-opens-in-ne-minn-expansion-debate-begins/233560181/.
[61] *Id.*
[62] *Id.*
[63] Although the Technical Report makes a brief mention that the Applicant "has evaluated placing tailings . . . [in] two existing taconite mine pits" (Ex. 1 at 243), this statement is misleading at best. That possibility was in fact explored in environmental review, but it was *rejected.* Ex. 19. Disposal in Pit 5 was notably rejected because it was (and presumably still is) discharging mercury via overflow, and backfilling it with more materials would increase that discharge, and would therefore not be eligible for a clean water permit. *See id.*
[64] Minn. Stat. § 93.481, subd. 4.

mega-mine, the only version of the project that is remotely profitable. And the lack of a term helps to facilitate this bait and switch. DNR should act now by establishing a permit term that would require the initiation of closure plans on a date specific, to protect the public from what can only be described as a deception.

D. A Vastly Expanded Mega-Mine Would Pose Unreasonable Risks of Tailings Dam Failure

Although the DNR only has before it an application for a mine processing 32,000 tons per day, the updated Technical Report certainly makes it reasonably foreseeable that this permitting process will be immediately followed by a permitting process for a much larger facility. It is accordingly critical that the DNR fully understand the extent to which this expanded mega-mine would put the public at risk. A mine processing 118,000 tons per day would produce an incredible quantity of tailings requiring disposal. That would almost certainly mean expanding the existing LTVSMC FTB.[65]

An expanded FTB would increase the risk of dam failure dramatically. As described in Exhibits 12, 13, and 16 to the Comments of MCEA *et al.* on the NorthMet Dam Safety Permits, the frequency and severity of tailings dam failure are directly correlated to the volumes of waste stored in the facility. Recent decades have seen an increase in tailings dam failures, and this trend is a "direct result of the increasing prevalence of TSF's with greater than 5 million cubic meter capacity necessitated by lower grades of ore and higher volumes of ore production required to attain or expand a given tonnage of finished product."[66] Even the smaller NorthMet project would produce 10,000,000 cubic yards of tailings annually.

[65] *See supra*, FN 63.
[66] Ex. 12 to the Comments of MCEA *et al.* on the NorthMet Dam Safety Permits, at 2.

One of the most serious drivers of tailings failures is that mines are typically designed with a smaller footprint in mind and then expanded later, with less thought and planning going into those expansions than went into the original design. This is exactly what happened with the Samarco failure in Brazil that killed 19 people. There a police investigation found that the root cause of the tailings dam collapse was a "conscious choice to allocate all resources to higher throughput volumes with no corresponding investment in additional waste management technology."[67] As companies chase higher returns on a marginal project to achieve "maximum production at any cost," safety is the first casualty:

> In the run up of the supercycle the active participation among the 330 mines swelled from 144 (44%) to 226 (68%) (viz. an average of 173 active at any one time). It is in this increased re-entry, and often expansion of economically fragile mines that the trend to ever increasing severity and frequency of catastrophic TSF failures has manifested.[68]

This is exactly what has happened with the NorthMet mine proposal. It is DNR's regulatory obligation to prevent this permitting process from creating nothing more than a foot in the door to a future mega-mine that will put Northeastern Minnesota in harm's way. As described below, the DNR is not powerless in this matter, and it must decline to issue any permit until the Applicant can demonstrate it can demonstrate it has the capital or access to capital to operate the project, and that it will be able to satisfy its financial assurance obligations to ensure those funds are sufficient and available when needed, as required by regulation.

D. The Technical Report Shows that the Financial Assurance Proposal Fails to Ensure Funds Will Be Sufficient or Available When Needed

[67] Paul Kiernan, *Brazil police say BHP, Vale Venture at fault for dam disaster*, Wall Street Journal, June 10, 2016, available at https://www.wsj.com/articles/brazil-police-say-bhp-vale-at-fault-for-dam-disaster-1465510198.
[68] Ex. 13 to the Comments of MCEA *et al.* on the NorthMet Dam Safety Permits, at 7.

As described above, the Updated Technical Report, even though it makes the case for a terribly low IRR of 9.6%, does not reflect the current state of the metals market, nor does it include the Applicant's substantial financial assurance obligations. These bleak estimates of profitability are therefore overstated. And as Petitioners argued in the Joint Petition, the Applicant's profitability is the key determinant of whether or not it will be able to make the balloon payments on the trust fund beginning in Mine Year 9. The Applicant's own updated analysis confirms these suspicions, and supports Petitioners contention that the Applicant will not be able to ensure that the funds for financial assurance will be sufficient nor available when needed, as required by Rule 6132.1200, subp. 5.

E. The Technical Report Shows that the Applicant Does Not Have the Capital to Operate the Mine

Similarly, Petitioners argued that the Applicant cannot show that it has the capital or the access to capital necessary to conduct its mining operations, in violation of Rule 6132.0300. The Updated Technical Report confirms this contention, as do the recently produced data practices act documents. It is unreasonable to believe that the Applicant will be able to obtain financing of over $945 million to support a project that would return only 9.6% at metals prices well above what they are today. Nor will the Applicant be able to secure surety bonds or letters of credit to satisfy its financial obligations to protect the state from the $1.1 billion in costs, should the project falter, as many economically marginal mines so frequently do. DNR's own consultants have advised it that there is "no way PolyMet can obtain a surety bond without Glencore backing the risk."[69]

[69] Ex. 14.

Proceeding with issuance of the Draft Permit under these circumstances would put the state at substantial risk of having to assume control of the project without the funds to pay for reclamation. DNR must deny the permit or refer the matter to a contested case proceeding.

III. CONCLUSION

For the foregoing reasons, Joint Petitioners request that DNR deny the permit or, in the alternative, refer the disputed issues of material fact to the Office of Administrative Hearings for a contested case proceeding.

Respectfully submitted,

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