COMMENTS ON THE MPCA DRAFT AIR PERMIT FOR POLYMET

Prepared By Vicki Stamper

03/16/2018

I. The Draft Permit for PolyMet Fails to Ensure the Source Will Comply with the National Ambient Air Quality Standards (NAAQS).

The Permit for PolyMet is required to include terms and conditions necessary to ensure compliance with the National Ambient Air Quality Standards (NAAQS). Specifically, Minn. Rule 7007.0100, Subp. 7.K. defines "applicable requirement" to include "any national ambient air quality standard adopted under section 109 of the act or increment or visibility requirement under part C of the act...." Minn. Rule 7007.0800, Subp. 1 states that "the agency shall include the permit conditions specified in this part in all permits, except where the requirement states that it applies only to part 70 permits or only to state permits." Minn. Rule 7007.0800, Subp. 2.A. states that the permit must "include emission limitations, operational requirements, and other provisions needed to ensure compliance with all applicable requirements at the time of permit issuance...." Further, Minn. Rule 7007.0800, Subp.2.B. states that the permit must "include any condition the commissioner determines to be necessary to protect human health and the environment."

Minn. Rule 7009.0020 mandates that "No person shall emit any pollutant in such an amount or in such a manner as to cause or contribute to a violation of any Minnesota ambient air quality standard under part 7009.0080 beyond the person's property line, provided however, that in the event the general public has access to the person's property or portion thereof, the ambient air quality standards apply in those locations."[1]

It is clear that fugitive dust sources at the PolyMet site is the primary concern for compliance with the PM10 and PM2.5 NAAQS, particularly around the mine site. Fugitive particulate emissions are projected to be very high at the PolyMet site.

Beginning at the source-wide level (mine and mineral processing plant), the uncontrolled fugitive emissions of total PM, PM10, and PM2.5 and the "controlled" level of emissions have been projected by PolyMet as follows:

[1] This Minnesota rule also states that the general public "does not include employees or other categories of people who have been directly authorized by the property owner to enter or remain on the property for a limited period of time and for a specific purpose."

Table 1. PolyMet's Projected Potential to Emit (PTE) and "Controlled Potential to Emit" of Particulate Matter in Tons Per Year (tpy) from Fugitive Emission Sources[2]

Pollutant	Fugitive Sources PTE (tpy)	Fugitive Sources "Controlled PTE" (tpy)	Percent Control of Fugitive Source PTE Assumed by PolyMet
PM	11,738.38	2,351.68	80%
PM10	3,156.84	715.21	77%
PM2.5	344.5	100.34	71%

Fugitive emissions at PolyMet mine site are the majority of these total plantwide fugitive particulate emissions. Table 2 below shows PolyMet's projection of PTE and Controlled PTE of particulate matter from fugitive emission sources at the mine site.

Table 2. PolyMet's Projected Potential to Emit (PTE) and "Controlled Potential to Emit" of Particulate Matter from Fugitive Emission Sources at the Mine Site[3]

Pollutant	Fugitive Sources PTE (tpy)	Fugitive Sources "Controlled PTE" (tpy)	Percent Control of Fugitive Source PTE Assumed by PolyMet
PM	8,145	1,349	83%
PM10	2,204	409	81%
PM2.5	243	63	74%

The bulk of the fugitive mine source PM10 and PM2.5 emissions is from unpaved mine roads and mine haul roads. By our tally of the unpaved road emissions at the mine, the uncontrolled PM10 emissions due to unpaved roads were projected to be a total of 2,040 tpy or about 93% of the total 2,204 tpy of uncontrolled PM10 from fugitive dust sources at the mine site.[4] Uncontrolled PM2.5 emissions from unpaved roads at the mine site tally up to 209 tpy, which reflects 86% of the total 243 tpy of uncontrolled PM2.5 from fugitive dust sources at the mine.[5] PolyMet's PTE calculations and calculations of emission rates for input into the ambient air modeling demonstration assumed 90% control from PTE emissions for all unpaved roads, with the exception of Dunka Road for which Polymet assumes 80% control.[6] Those are very high levels of control to assume for unpaved road emissions, and the assumptions undoubtedly made a significant difference as to whether the PolyMet mine site modeling could demonstrate attainment of the PM10 and PM2.5 NAAQS.

---

[2] See Attachment 1 to MPCA's Technical Support Document (TSD), Table B-1. The Fugitive Sources PTE and "Controlled PTE" was derived from subtracting the "Point Sources Only" PTE from the "Point Sources + Fugitive Sources" PTE.

[3] See Attachment 1 to MPCA's Technical Support Document (TSD), Table B-16 at page 18 of 18. The Fugitive Sources PTE and "Controlled PTE" were derived from subtracting the "PSD Point Sources" PTE from the "Point and Fugitive Sources" PTE for the mine site.

[4] *Id.* at Table B-16. *See also* PolyMet Mine Site Calculations (V2D2) spreadsheet attached as Ex. 1. This spreadsheet was previously posted on MPCA's PolyMet website, but does not appear to be on MPCA's website anymore.

[5] *Id.*

[6] *Id.*

PolyMet's modeling predicts that the maximum concentrations of the PM10 and PM2.5 would be almost at the level of the NAAQS. Specifically, the Class II NAAQS modeling of the proposed PolyMet source predicted 24-hour average concentrations of PM10 and PM2.5 that were about 90% of the NAAQS and predicted annual PM2.5 concentrations that were about 93% of the annual PM2.5 NAAQS.[7] Given how close these predicted maximum concentrations are to the levels of the PM10 and PM2.5 NAAQS and the high levels of fugitive dust control taken into account in the PM10 and PM2.5 modeling, it is imperative that the inputs to the model accurately predict maximum allowable impacts and that the control measures of the permit are enforceable, lawful, and reasonably tied to the assumptions in the modeling.

It appears that these peak concentrations in PM10 and PM2.5 were predicted both adjacent to the Plant Site Effective Fence Line and adjacent to and near the Mine Site Effective Fence Line, areas which are likely to be heavily influenced by fugitive dust from unpaved roads.[8] Our review of the emissions input to the model and the conditions of the permit finds that the permit does not adequately or lawfully limit emissions from unpaved roads at the Mine Site or Plant Site. Further, the permit will not adequately ensure that the public is restricted from the area that PolyMet did not consider to be "ambient air," claiming it was within the Plant and Mine Fence Lines. Thus PolyMet's NAAQS modeling is fatally flawed for not including all locations of ambient air. Moreover, MPCA allowed PolyMet to exclude impacts from other nearby sources in its modeling, which is not allowed by MPCA's own guidance. The exclusion of both large swaths of ambient air and air impacts of nearby sources mean the maximum modeled impacts are understated. For all of these reasons as will be detailed below, the draft air permit for PolyMet does not ensure that the source will comply with the applicable requirements of the NAAQS.

A. It is Not Clear Whether PolyMet Currently Has Ownership of Control of the Ambient Air Boundary Used to Define the Scope of the Air Modeling in Assessing Whether the Facility Will Comply with the NAAQS.

PolyMet's air modeling did not include receptors within the "effective fenceline."[9] The draft permit requires PolyMet to use fencing, control access points, conduct security patrols, place 'no trespassing' signage, and use remote monitoring to maintain control over the effective fenceline prior to blasting of waste rock, but no later than the initial startup of Mine Site Blast Hole Drilling (FUGI 25)."[10] The permit also requires development of an "Ambient Air Boundary Control Strategy Implementation Plan."[11] It is apparent that PolyMet does not currently own or control all of the area of the effective fenceline. Specifically, as stated in its January 2018 Permit Application, "[t]he effective fencelines for the Plant Site and Mine Site are within property *expected to be owned or controlled by PolyMet* at the commencement of operations."[12]

---

[7] MPCA TSD for Draft Permit, Attachment 7, Class II Modeling Report (MPCA Approval) at 6-7.
[8] *See* MPCA TSD, Attachment 7, Large Figures Q4-8, Q4-9, Q4-10, Q4-11, Q4-12, and Q4-13.
[9] See PolyMet Class II Modeling Report, Large Figure Q4-5, in Attachment 7 of MPCA TSD.
[10] See Draft Permit at Condition 5.1.42. See also Appendix C of Draft Permit.
[11] *Id.* at Condition 5.1.43.
[12] January 2018 Permit Application at 36 (Section 5.2.2) [emphasis added].

Yet, MPCA is relying on ambient air modeling that excludes the area within the effective fenceline to authorize construction and operation of the PolyMet facility without knowing for certain that PolyMet will own or have control over all of the area of the effective fenceline. In the absence of such ownership or control, PolyMet will not have authority to implement the "Ambient Air Boundary Control Strategy Implementation Plan" requirements of the Draft Permit. MPCA must require PolyMet to document and disclose the impacts on ambient air quality as it stands now in the event that PolyMet does not gain ownership or control of the area within its currently projected "effective fenceline." The permit must include other conditions as needed to protect the NAAQS that apply if PolyMet does not gain ownership or control of the effective fenceline.

EPA defines "ambient air" as "that portion of the atmosphere, external to buildings, to which the general public has access."[13] Given that the NAAQS are to be met in all areas of ambient air, EPA has adopted strict policies for defining what is and is not ambient air and how public access can and cannot be precluded.[14] As PolyMet stated in its December 2017 Ambient Air Boundary Control Plan, areas "owned or controlled by an owner/operator and where the owner/operator precludes [fn omitted] public access to the land or property using a fence or other effective physical barriers are not considered ambient air."[15] As EPA sated in a June 22, 2007 guidance memo, which is the reference cited by PolyMet for the above quote, under the first condition, " 'control' of the land means that the source has certain rights to the use of the land/property, including the power to control public access to it.[16] Currently, it is not clear over what lands PolyMet has control and what the extent of that control is.

PolyMet intends to gain control of the area around the Mine Site via a land exchange with the U.S. Forest Service.[17] That land exchange is still being challenged in court. The litigation is currently stayed due to legislation pending in the Senate to moot the lawsuit. Unless the legislation is signed into law, it is unclear when the litigation will be resolved and PolyMet will have control of the land around the mining operations. Until PolyMet has permanent control of the land around the mine, MPCA cannot issue a permit based on a NAAQS analysis for an effective fenceline for which PolyMet does not currently control.

---

[13] 40 C.F.R. §50.1(e).

[14] *See*, e.g., 8/30/99 letter from EPA Region V to MPCA regarding a proposed ambient air boundary at Minnesota Iron and Steel near Nashwauk, Minnesota, downloaded from EPA's Model Clearinghouse database and attached as Ex. 2, in which EPA said it has typically found that exemptions from ambient air are only allows "for areas owned or controlled by the source and to which public access is precluded by a fence or other physical barriers."

[15] PolyMet's December 2017 Class II Ambient Air Boundary Control Plan at 2, in Attachment 8 of MPCA TSD.

[16] June 22, 2017 EPA Memorandum with Subject: "Interpretation of 'Ambient Air' in Situations Involving Leased Land Under the Regulations for Prevention of Significant Deterioration (PSD)," Attachment at 3. (Ex. 3 to these comments).

[17] *See*, e.g., U.S. Department of Agriculture, Final Record of Decision, NorthMet Project Land Exchange, January 2017.

Further, it appears that the PolyMet effective fenceline extends beyond the currently proposed federal land exchange and thus it is not clear in the Permit Application or the Draft Permit whether PolyMet needs to purchase and/or lease additional land. A comparison of a map of the land exchange to the map of the effective fenceline around the mine indicates the following: 1) Dunka Road is outside the boundary of the land exchange, and 2) there is an area to the southeast of the Ore Surge Pile and to the southwest of the "Category 2/3 Removed and Reclaimed" area that is not within the land exchange and for which Polymet did not own the surface rights to as of at least January 2017, and yet that area is identified as within the effective fenceline in PolyMet's air modeling report.[18] MPCA must identify the lands currently under PolyMet's ownership and/or control and the lands projected to be under PolyMet's ownership and/or control so that it is clear to the public what actions need to be taken by PolyMet to protect the effective fenceline. With respect to the Plant site, it is not clear if all land within the effective fenceline has already been purchased and is owned by PolyMet, if additional property still needs to be purchased, and if any area is leased. MPCA must make clear to the public what the current status of the land ownership and control by PolyMet at the boundary of and within its claimed effective fenceline.

The draft permit requires PolyMet to, have a map marking locations of controlled access points and a map marking locations of controlled access points for power line access.[19] These provisions make clear that parties other than employees of PolyMet or businesses serving Polymet with temporary access, such as fuel delivery, could have access within the "ambient air boundary." Presumably, such access would be granted using Dunka Road. Portions of Dunka Road were considered to be within PolyMet's effective fenceline for purposes of the air modeling,[20] but it is not clear that PolyMet truly has control of Dunka Road.

It appears that Dunka Road is outside of the land exchange with the US Department of Agriculture.[21] In addition, it appears that different companies own or lease parts of Dunka Road (as of 2010, Cliffs Erie, PolyMet, and Minnesota Power owned or leased parts of the road).[22] It is not clear how PolyMet can preclude access to Cliffs Erie and Minnesota Power through its effective fenceline, when those companies own or control parts of the road further from Polymet. There is only one way to get from one end of Dunka Road to the other, and that is through the effective fenceline of the PolyMet Mine site. The road is presumably also used by the United States Forest Service and possibly other federal or state employees for accessing public lands. None of those parties are employees of or related to the business of PolyMet (such as a company delivering fuel to PolyMet). These other parties that would access the road are thus members of the general public with respect to PolyMet. For these reasons, it seems unrealistic that PolyMet could effectively exclude the general public from using Dunka Road. Unless it can do so, the air

---

[18] *See* PolyMet's "NorthMet Project Land Exchange" Pamphlet at 3rd page (attached as Ex. 4), posted at PolyMet's website at http://polymetmining.com/northmet-project/land-exchange/, and compare to Large Figures Q4-3 and Q4-4 in PolyMet's Class II Modeling Report in Attachment 7 of MPCA's TSD.

[19] Draft Permit at Condition 5.1.43.

[20] See, e.g., Large Figure Q4-3 in PolyMet Modeling Report, in Attachment 8 of MPCA TSD.

[21] See PolyMet's "NorthMet Project Land Exchange" Pamphlet at 3rd page (attached as Ex. 4).

[22] 75 Fed. Reg. 62756 at 62758 (Oct. 13, 2010). Note that Section3. 5.3 of the Permit to Mine Application for PolyMet states that Dunka Road is owned by Cliffs Erie.

above Dunka Road must be considered ambient air – even if within the effective fenceline of PolyMet – and PolyMet's modeling must address impacts on Dunka Road.

In evaluating a proposed ambient air boundary for an apparently similar source in terms of size and type of facility and varied approaches for precluding public access, EPA indicated a need for more details on the areas of concern with respect to the NAAQS determined through dispersion modeling and more specific details as to how the general public will be prohibited from accessing those areas of concern.[23] In the case of PolyMet, MPCA has made clear some of the areas of concern with respect to the NAAQS in its Technical Support Document (TSD) with the figures that show the modeled receptors with the highest modeled impacts. For example, it is clear that the area to the south and east of the Plant Site and the areas to the south and one area to the north of the Mine Site are projected to have high concentrations of PM2.5 and PM10, within 90% of the NAAQS.[24] Presumably, modeling would show higher concentrations within the effective fenceline in those areas, potentially exceeding the NAAQS. Thus, it is imperative that the Draft Permit make clear with specific details as to how the public will be excluded from those areas of concern. Simply listing various options for controlling public access in permit conditions does not ensure the public will be prevented from accessing areas that could experience high PM10 and PM2.5 concentrations.[25] Indeed, EPA has typically required much more detail in defining how the general public will be precluded from accessing an area when a source is relying on boundary controls other than a fence or other physical barrier.

For example, while EPA has found that a river can be considered a sufficient natural ambient air boundary and barrier, EPA has stated that the riverbank still must be clearly posted and regularly patrolled by plant security and "[a]ny areas where there is any question...should be fenced and marked, even if there is only a very remote possibility that the public would attempt to use this property."[26] EPA has also not historically considered little public use of an area to effectively mean public access has been precluded. For example, EPA stated for the LTV Steel's iron and steel mill which was located on both sides of the Cuyahoga River in Ohio that the company did not control the river traffic sufficiently (despite the source being on both sides of the river) to preclude the public from the river, stating specifically "[t]he fact that there is little or no recreational traffic in that area is not sufficient to say that all river traffic there is LTV traffic."[27] This EPA guidance is instructive as to how rigorous the preclusion of public access must be to justify exclusion of an area from the ambient air modeling required to show compliance with the NAAQS.

---

[23] *See* 8/30/99 letter from EPA Region V to MPCA regarding a proposed ambient air boundary at Minnesota Iron and Steel near Nashwauk, Minnesota, downloaded from EPA's Model Clearinghouse and attached as Ex. 2.

[24] MPCA TSD, Attachment 7, Figures Q4-8, Q4-9, Q4-11, Q4-12, and Q4-13.

[25] See Draft Permit at Condition 5.1.42. See also Appendix C of Draft Permit.

[26] April 30, 1987 EPA memorandum with subject "Ambient Air," from G.T. Helms, EPA's Control Programs Operations Branch, to Steve Rothblatt, EPA Region V (available on EPA's Air Quality Model Clearinghouse Information Storage and Retrieval System, available at https://www3.epa.gov/ttn/scram/guidance/mch/new_mch/R402_Helms_30_Apr_87_.pdf).

[27] *Id.* at 2.

In summary, MPCA must document and make public which areas within the effective fenceline PolyMet currently has control or ownership of and which areas within the effective fenceline that PolyMet still needs to gain ownership or control of and how that control or ownership is to be obtained. If areas of concern for NAAQS compliance are within areas that PolyMet currently does not own or have control of, then MPCA should not issue the construction permit until PolyMet obtains ownership or control of those areas. Otherwise, MPCA will be issuing a permit with conditions that PolyMet may not be able to legally comply with and that are necessary conditions to ensure compliance with the NAAQS pursuant to Minn. Rule 7007.0800, Subp. 2.A. With respect to the portion of Dunka Road that passes within the effective fenceline, MPCA must provide additional justification to show that PolyMet truly has ownership or control of that portion of Dunka Road such that the general public (which includes employees of Cliffs Erie and Minnesota Power) will be precluded from accessing that portion of Dunka Road currently identified as within the PolyMet effective fenceline. Last, assuming MPCA finds that PolyMet has authority via ownership or control to preclude public access at the effective fenceline, the permit must include more specific requirements regarding how PolyMet will preclude the general public from accessing those areas that have been modeled to be close to (or in excess of) the NAAQS.

B. PolyMet's Air Modeling Failed to Include the Impacts of Contributing Sources.

As MPCA discusses in its review of the PolyMet air modeling, PolyMet did not include all contributing sources' impacts at all locations modeled for the PM10 and PM2.5 modeling. Specifically, MPCA states:

> The Company provided language in their report to narrate how nearby source contributions were removed from the modeling evaluation. The Company followed an approach whereby they subtracted modeled nearby source concentrations from the nearby source property at and up to the property boundary. *This practice is no longer observed in Minnesota. MPCA Management allowed the Company to remove modeled nearby source concentrations from the nearby source property in recognition of historical modeling practice.* The MPCA will expect that any future cumulative ambient air quality modeling will follow the current MPCA Modeling Practices Manual (2017) to address modeled nearby source concentrations. In the event that a modeled exceedance is discovered at a nearby source facility, the MPCA has developed processes to evaluate these situations on a case-by-case basis (See Appendix A of the MPCA Modeling Practices Manual (2017)).

MPCA TSD, Attachment 7, Class II Modeling (MPCA Approval) at 3.

According to MPCA, to justify its approach, PolyMet relied on a 1986 memo from EPA which stated that "controlled property...is non-ambient air. However, property of one company is ambient air with respect to emissions from its neighbor."[28]

[28] *See* MPCA TSD, Attachment 7, Class II Modeling (MPCA Approval) at 2-3, citing Region V Ambient Air Issues – Dec 1986- EPA SCRAM website Model Clearinghouse, Record No. 87-V-09.

It appears the sources that PolyMet excluded pursuant to this policy are the Mesabi Nugget and the Northshore Mining sources.[29] It was not clear why MPCA to allow PolyMet to circumvent its modeling guidance on this issue, especially since MPCA's policy on this matter is clearly intended to ensure that all potential areas of NAAQS noncompliance are evaluated. It must first be noted that MPCA's policy as to how to address a modeled NAAQS violation on a nearby source's property has been in effect in Minnesota since at least October 13, 2015.[30] PolyMet's air permit application was not submitted to MPCA until August 2016 and MPCA did not find that permit application complete until September 1, 2016.[31] In addition, PolyMet submitted revised modeling and a revised permit application to MPCA in December 2017 and January 2018.[32] Thus, PolyMet clearly should have been aware of and could have readily followed MPCA's 2015 modeling policy for modeling emissions over nearby sources' property for its permit application.

MPCA did not provide a reasoned basis demonstrating why the MPCA modeling policy is inapplicable in this particular situation. PolyMet claimed that the Virginia PM10 and PM2.5 air monitors, which were used to reflect background concentrations in the modeling, capture sources "similar to" Mesabi Nugget and NorthMet Plant.[33] This blanket assertion is not supported with any technical analysis to back up PolyMet's claim that "explicitly modeling Mesabi Nugget and the NorthMet Plant Site would be in essence double counting the impacts from these sources when using the NAAQS design value from the Virginia monitor as the representative background concentration."[34] PolyMet did not make such a claim for the Northshore mining site and instead stated outright that the Northshore Peter Mitchell Mine has a "potential for combined" PM10 and PM2.5 impacts "with the [PolyMet Mine] Site sources," and yet PolyMet still excluded the Northshore mine's impacts from PolyMet's impacts on PM10 and PM2.5 concentrations[35] PolyMet thus did not provide *any* basis to justify ignoring MPCA's modeling

---

[29] *See* January 3, 2018 Barr Technical Memorandum with Subject: "NorthMet Class II Modeling Analysis – Model Results Post-Processing with Microsoft Excel and Lakes Environmental AERMOD View™ Multi-Chemical Utility," in Appendix Q4 of PolyMet's January 2018 Permit Application.

[30] *See* October 13, 2015 MPCA Memo with Subject: "Source Contribution Analysis for Modeled Exceedances in a Cumulative Modeling Analysis," in Appendix A to MPCA Air Dispersion Modeling Practices Manual, October 2017 (Ex. 5).

[31] *See* Permit Application and MPCA Completeness Review on MPCA's PolyMet website at https://www.pca.state.mn.us/quick-links/air-quality-permit-northmet.

[32] *See* PolyMet Air Permit Application v2 and PolyMet Class II Cumulative Modeling Results posted at MPCA's PolyMet website at https://www.pca.state.mn.us/quick-links/air-quality-permit-northmet.

[33] *See* January 3, 2018 Barr Technical Memorandum with Subject: "NorthMet Class II Modeling Analysis – Model Results Post-Processing with Microsoft Excel and Lakes Environmental AERMOD View™ Multi-Chemical Utility," in Appendix Q4 of PolyMet's January 2018 Permit Application at pdf page 64 and pdf page 66 of file with name "aq5-35v.pdf."

[34] *Id.*

[35] *Id.*

policy and excluding the Northshore mine's PM10 and PM2.5 impacts from the impacts of the proposed PolyMet facility in its modeling.

In reviewing MPCA's TSD for the PolyMet Air Permit, it appears that another of the contributing source's impact was excluded from the modeling submitted in PolyMet's January 2018 revised permit application, and that was for the Cliffs Erie Pellet Yard. Specifically, the PolyMet Air Quality Dispersion Modeling (AQDM) Results Form in Attachment 7 of MPCA's TSD states:

> Previous modeling submitted for the NorthMet Project, including the modeling submitted with the August 2016 air permit application, incorporated emissions from the Cliffs Erie Pellet Yard based on potential to emit calculations provided by MPCA in 2011. Those emission calculations submitted by Cliffs Erie, were based on operations at the facility at the time.
>
> On June 15, 2016, Cliffs Erie submitted a registration permit application, reflecting the current operational status of the facility. On July 18, 2016, MPCA issued the requested registration permit. Fugitive emission calculations based on current operations at the Cliffs Erie site were included with the registration permit application. Those emissions were based on 2015 actual processing rates and have been corrected for current operations at the facility. The emission rates were reported as 0.05 tons PM10/year and 0.00 tons PM2.5 per year.
>
> The MPCA square root mean distance (SQRM-D) tool is used as a first cut to identify nearby sources for inclusion in the modeling. On Page 35 of the MPCA Modeling Practices Manual, the following statement in reference to the AQRM-D tool is included: "The Tool will remove all sources that have less than one ton per year of emitted criteria pollutants (actuals)." As shown above, in the most recent actual emission calculations submitted by Cliffs Erie, the rates of all criteria pollutants are well below one ton per year and can be accounted for in the background concentrations added to the modeled air concentrations.
>
> Based on this information developed after PolyMet submitted and MPCA approved the protocol, PolyMet did not include Cliffs Erie in the supplemental modeling described in this report.

PolyMet Air Quality Dispersion Modeling (AQDM) Results Form in Attachment 7 of MPCA's TSD at 5.

PolyMet is reading this MPCA Guidance provision out of context with the overall intent of MPCA's modeling guidelines and does not ensure protection of the NAAQS as required under Minnesota's regulations for issuance of this permit. The Cliffs Erie emission source that PolyMet has excluded is adjacent to the PolyMet Plant site and is located at an area of peak PM10 and

PM2.5 impacts from the Polymet Plant site.[36] MPCA's Modeling Guidelines first and foremost require a nearby source inventory "that accounts for all nearby emissions that may adversely affect the compliance status of the source under review."[37]

While there may be very limited operations currently occurring at the Cliffs Erie pellet yard, none-the-less there are sources of PM10 and PM2.5, including sources that were likely not accounted for in the registration permit. For example, windblown dust from unpaved roads and storage piles would contribute to PM10 and PM2.5 concentrations in the immediate vicinity. Second, any vehicular traffic in the pellet yard would cause fugitive dust emissions that would contribute to PM10 and PM2.5 concentrations. While operations may be limited such that Cliffs Erie projected only 0.5 tons per year of PM10, what is more important for the 24-hour PM10 and PM2.5 NAAQS is the maximum projected emissions for a 24-hour period. Given how close the modeled concentrations were to the 24-hour PM10 and PM2.5 NAAQS, MPCA must require that the peak daily PM10 and PM2.5 emissions from the Cliffs Erie Pellet Yard be included in the PM10 and PM2.5 modeling for the PolyMet Project.

PolyMet's methodology of not including neighboring source's emissions fails to result in a complete analysis of whether PolyMet will cause or contribute to a violation of the NAAQS and is not consistent with MPCA's Air Dispersion Modeling Practices Manual. Specifically, MPCA's modeling guidance states as follows:

> ...the nearby source property, including its nonambient portions, are considered ambient air to the project under review. A NAAQS analysis is not complete if portions of the modeling domain, determined to have a potential for a significant ambient contribution through the SIA, are then removed from areas of the analysis prior to completing the Cumulative Impact Analysis (CIA) (see Section 3.7). In this situation, the CIA would not reveal any modeled NAAQS exceedance on portions of the nearby source property where people are actually present (the nearby source). Secondly, upon completion of the CIA, the modeled nearby source contribution can be removed from its own nonambient property as part of the analysis, but not the receptors. This practice provides a better understanding of the project contribution to a modeled exceedance on a nearby source property even if that property is not ambient to the nearby source. In the event a CIA results in a modeled exceedance, please refer to **Appendix A** of this Manual.

MPCA Air Dispersion Modeling Practices Manual, October 2017, at 24.

It must be noted that PolyMet has provided no demonstration to show that the property of these neighboring sources (Northshore Mining, Cliffs-Erie, or Mesabi Nugget) is excluded from public access. If the property is not excluded from public access, then there is no question that the area

---

[36] *See* MPCA TSD, Attachment 7, PolyMet Class II Modeling Report, at Large Figures Q4-9,.Q4-10, Q4-11, and Q4-12, as well as Large Figures 3 and 4 of the PolyMet Class II Modeling Report which shows location of Cliffs Erie Pellet Yard. These are in the MPCA with filename TSD-1.pdf at pdf pages 822-825 and 897 – 898.

[37] MPCA Air Dispersion Modeling Practices Manual, October 2017, at 29.

above such property is ambient air with respect to all sources of emissions that impact that air, including the sources located on that property.

Thus, it was improper for MPCA to allow PolyMet to exclude all of these contributing sources' emissions impacts from the PolyMet modeled receptors on those sources' property. PolyMet must be required to evaluate cumulative impacts on the NAAQS in all areas of ambient air in order to ensure that its permit contains adequate limits emissions to ensure no violations of the NAAQS. As provided for in MPCA guidance, when a cumulative modeling analysis shows a problem with NAAQS compliance, rather than finding reasons to exclude a neighboring source's emissions, a proposed source should analyze its contributions and other neighboring sources' contributions and if the propose source contributes significantly to NAAQS exceedances, then additional emission limitations should be required in its permit.[38] Because of PolyMet's flawed and incomplete modeling, MPCA cannot definitively find that it has included all limitations necessary to ensure that the draft permit includes all emissions limitations necessary to ensure compliance with the NAAQS as required by Minn. Rule 7007.0800, Subp. 2.A. Until a proper cumulative modeling analysis is completed and evaluated by MPCA, PolyMet should not be issued an Air Permit authorizing construction and operation.

C. The Draft Permit Unlawfully Allows for Dispersion Techniques to Protect the NAAQS.

The Draft Permit includes provisions for changes to pollution control measures based on the results of real-time air monitoring done on-site, which appears to be a dispersion technique. Section 123(a)(2) of Clean Air Act prohibits emission limitations under state implementation plans (SIP)s including Minnesota's air permitting program, from being affected in any manner by a dispersion technique. EPA has promulgated that requirement in 40 C.F.R. §51.118(a). EPA defines "dispersion technique" in pertinent part to mean "any technique which attempts to affect the concentration of a pollutant in the ambient air by...(ii) varying the rate of emission of a pollutant according to atmospheric conditions or ambient concentrations of that pollutant...."[39] defines dispersion technique as including "any intermittent or supplemental control of air pollutants varying with atmospheric conditions." EPA regulations more specifically define dispersion technique as "any technique which attempts to affect the concentration of a pollutant in the ambient air." Essentially, the intent of this section of the Clean Air Act was to require continuous emission reductions to protect the NAAQS grounded in what was deemed necessary to ensure the NAAQS are not violated.

Condition 5.1.82 of the Draft Permit requires PolyMet to operating and maintain two real-time hourly PM10 monitors, one upwind of the mine and the other downwind of the mine. Condition 5.1.85 of the Draft Permit states that "[t]he monitored PM10 concentration data shall be used to evaluate the performance of, including the need for changes to, the Fugitive Emissions Control Plan...." Condition 5.1.87 requires PolyMet to maintain an on-site meteorological station.

---

[38] *See* October 13, 2015 MPCA Memo "Source Contribution Analysis for Modeled Exceedances in a Cumulative Modeling Analysis," in Appendix A of MPCA's current Air Dispersion Modeling Practices Manual.

[39] 40 C.F.R. §51.100(hh)(1)(ii).

According to Polymet, justification for the special purpose monitors is as follows:

> A Final Environmental Impact Statement (FEIS) was prepared during the course of the Project's environmental review (Reference (1)). The FEIS included a detailed assessment of potential impacts to air quality from the Mine Site and other elements of the Project. In order to reduce potential impacts, PolyMet agreed to adopt site-specific fugitive emission control procedures for the Haul Roads at the Mine Site that result in a 90% reduction from uncontrolled emissions. These procedures are described in the Mine Site Fugitive Emission Control Plan (FEC Plan; Appendix C2). **An element of the Haul Road fugitive emission control procedures is PM10 monitoring within the effective fenceline to verify the fugitive emission control procedures performance and to provide data to support improvements to fugitive emission control procedures at the site**.

January 2018 Polymet Revised Permit Application, Appendix D at 1 [Emphasis added.]

In fact, the draft permit requires implementation of fugitive dust control measures if PM10 monitored concentrations are elevated. Specifically, Condition 5.1.92 of the Draft Permit requires that if the monitored PM10 data shows a 1-hour average PM10 concentration greater than or equal to 105 µg/m3, then PolyMet is to investigate the cause of the monitored result by reviewing operating records and meteorological data and then take corrective actions identified in the fugitive dust control plan to reduce PM10 emissions. Condition 5.1.93 of the Draft Permit requires that if the monitored PM10 data shows a 1-hour average PM10 concentration greater than or equal to 150 µg/m3, then PolyMet is to investigate the cause of the monitored result by reviewing operating records and meteorological data and then take corrective actions identified in the fugitive dust control plan to reduce PM10 emissions. Condition 5.1.94 of the Draft Permit requires that if the monitored PM10 data shows a 24-hour block average PM10 concentration greater than or equal to 150 µg/m3 (which is the level of the 24-hour average PM10 NAAQS), then PolyMet is to investigate the cause of the monitored result by reviewing operating records and meteorological data and, if PolyMet sources significantly contributed to the elevated concentration of PM10, then PolyMet must propose revisions to the fugitive emissions control plan.

These permit conditions vary fugitive dust emissions controls on ambient PM10 concentrations, and are thus clearly dispersion techniques which are prohibited under the Clean Air Act. While the concept of requiring special purpose air monitoring as a double-check on the air modeling is helpful concept, the fugitive emissions controls that have been relied on to demonstrate attainment of the PM10 and PM2.5 NAAQS cannot vary based on atmospheric conditions. Instead, the fugitive emissions control must mandate measures intended to continuously control fugitive dust to the levels assumed in the air modeling analysis. As discussed below, the permit and the fugitive emissions control plan fail to ensure continuous emission reductions to the levels assumed in the air modeling analysis.

D. PolyMet Understated Fugitive PM10 and PM2.5 Emissions, Which in Turn Means PolyMet Understated PM10 and PM2.5 Ambient Air Impacts.

An analysis of the assumptions and calculations that went into PolyMet's determination of emissions to model for fugitive emissions shows that PolyMet understated emissions. Given the likelihood that fugitive emissions are the primary driver for the maximum PM10 and PM2.5 concentrations, these deficiencies call into question the adequacy of PolyMet's modeling and whether the Permit includes all conditions necessary to ensure attainment of the NAAQS. The areas in which PolyMet understated fugitive PM10 and PM2.5 emissions are discussed in detail below.

1. PolyMet Failed to Include Emissions Caused by Employee Driving Trips to the Facility.

In determining the number of trips on Dunka Road, PolyMet excluded the trips by employees driving to Area 2 of the plant site. This exclusion was determined by an analysis of the electronic version of the Polymet Plant Site Calculations spreadsheet, at the "Dunka Rd" tab.[40] Given that the employees getting to the site are a required component to operation of the facility and that their vehicles traveling over unpaved roads on the plant site will create fugitive dust, PolyMet should not have excluded these emissions from its calculations and modeling.

2. PolyMet Failed to Estimate and Model Peak Daily Emissions from Unpaved Roads at the Mine Site.

In determining pound per hour emission rates to model for the unpaved road fugitive emissions for the Mine Site haul roads, PolyMet used expected annual vehicle-miles-traveled (VMT) and assumed those annual VMT would be spread out evenly over all of the hours in a year (i.e., 8760 hours/year). This deficiency was determined by comparing the assumed annual VMT to the hourly VMT, and it is clear that PolyMet assumed the annual VMT would be spread out evenly across all hours of the year on the Mine Haul Roads.[41] This is inconsistent with the approach PolyMet applied to determining hourly emissions to model for other haul roads, for which Polymet did evaluate the timeframe of expected maximum hourly VMT for determining the hourly rate to model.[42] Thus, PolyMet failed to determine worst case hourly PM10 and PM2.5 emission rates for its Mine Site haul roads, which means the 24-hour PM10 and PM2.5 modeling of emissions from the mine site are understated.

---

[40] *See* spreadsheet "PolyMet Plant Site Calculations(V2D1).xlsx," attached as Ex. 6. This spreadsheet was previously posted on MPCA's PolyMet website, but does not appear to be on MPCA's website anymore.

[41] *See* Table B-16 of Attachment 1 of MPCA TSD, at entries for "Mine Haul Roads." *See also* spreadsheet for PolyMet Mine Site Calculations (V2D2) at tab "VMT Calcs_Yr 8" (Ex. 1).

[42] *See* spreadsheet "PolyMet Plant Site Calculations(V2D1).xlsx," at tab "Dunka Road" attached as Ex. 2.

3. PolyMet Used the Same PM10 and PM2.5 Emission Factors for Various Vehicle Types and Weights for the Dunka Road Fugitive Emissions at the Plant Site, when Vehicle Weight Impacts Fugitive Dust Emissions.

For Dunka Road fugitive emissions at the Plant Site, PolyMet used the same emission factor of 1.193 lb PM10/VMT and 0.119 lb PM2.5/VMT for light trucks, fuel tankers, blast mat trucks.[43] The EPA AP-42 particulate matter emission factors equations, which PolyMet relied on for estimating uncontrolled PM fugitive dust emissions, are based on the weight of the vehicles[44], and each of these vehicles have different and widely varying weights.[45] Thus, it does not make sense that Polymet used the same PM10 and PM2.5 emission factors for all of these vehicle types.

4. PolyMet Assumed 80-90% Control of Fugitive Dust Emissions from Unpaved Roads, But the Fugitive Emission Control Plan and Associated Requirements in the Draft Permit Fail to Include the Necessary Requirements to Correlate with Such High Removal Efficiencies.

Polymet assumed 80% control of fugitive dust from unpaved haul roads on the Plant Site and 90% control of fugitive dust from unpaved roads on the Mine Site, which are extremely high levels of control and there has been no demonstration that the Fugitive Emission Control Plan will achieve these high levels of control. Indeed, a review of the Fugitive Emission Control Plan and terms of the Draft Permit show that the Draft Permit does not sufficiently impose enforceable requirements that, according to the EPA, are needed to assure such high levels of PM10 and PM2.5 removal efficiency.

While both the Plant Site and Mine Site Fugitive Emission Control Plans rely on watering of roads to control fugitive dust from unpaved roads, neither the Plant Site Fugitive Emission Plan or the Mine Site Fugitive Emission Plan definitively require any set schedule for watering of the unpaved roads, nor does it indicate the amount of water to be applied per area of road. Instead, the decision on when and which roads to water is up to the discretion of the Plant Site Operator or the Mine Site Operator.[46] While the Mine Site Fugitive Emission Plan requires once per day opacity readings (something not required in the Plant Site Fugitive Emission Plan), there is no clear trigger point as to what opacity levels would trigger a need to water the roads. Moreover, neither the permit application nor MPCA's TSD provide any basis for a correlation between certain opacity ranges and percent control of fugitive dust.

---

[43] *See* Table B-26 of Attachment 1 of MPCA TSD, at entries for PM10 and PM2.5 Emission Factors for "Unpaved Roads, Dunka Road."

[44] *See* EPA's AP-42 Emission Factors, Chapter 13.2.2 (Unpaved Roads), at 13.2.2-4 (Equation 1a).

[45] See Table B-18, NorthMet Project Plant Site Mean Vehicle Weights, in Attachment 1 of MPCA TSD.

[46] *See* Section 1 of Section 4.3 of Mine Site Fugitive Emission Control Plan and Section 5.1 of Plant Site Fugitive Emissions Plan, both in Appendix B of the Draft Permit.

The Mine Site Fugitive Emissions plan also relies on the special purpose PM10 monitoring program to identify higher PM10 concentrations.[47] The Draft Permit requires that, if the real-time PM10 monitoring measures PM10 concentrations above certain levels, PolyMet must identify the culpable sources and take on or more of the corrective actions in the fugitive emission control plan.[48] As discussed in Section I.C. above, this approach of targeting emissions control implementation based on PM10 concentrations appears to be a dispersion technique which is not lawful under the Clean Air Act. Even if it was a lawful emission control method, neither the Permit Application nor the TSD identify a specific correlation between the concentration of PM10 measured by the monitors and a percent removal of fugitive dust from unpaved roads. Thus, these air monitoring provisions do not ensure 90% control of fugitive emissions from unpaved roads at the Mine Site.

Application of chemical dust suppressants is also identified as a potential unpaved road control strategy, particularly during the winter months, but again the application of this particulate control is at the discretion of the Mine Site manager or the Plant Site Manager.[49] There are no specific requirements for frequency of application of chemical dust suppressants. Further, neither the Mine Site Fugitive Dust Plan or the Plant Site Fugitive Dust plan include any requirements as to the type of chemical dust suppressant or how much chemical dust suppressant is to be applied to the unpaved roads.

The primary differences between the Mine Site Fugitive Emission Plan and the Plant Site Fugitive Emission Plan is the requirement for daily observations, recordkeeping and reporting of visible emissions at the Mine Site haul roads, as well as the use of the real-time PM10 monitor at the Mine Site which as stated above is a dispersion technique rather than a permanent control measure. The Draft permit states that "opacity<= 20 percent" for the Dunka Road, Tailings Basin unpaved roads, Mine Site Fueling Facility Circle, and Mine Site Haul Roads.[50] However, there has been no correlation provided that keeping opacity less than or equal to 20% from unpaved roads equates to either 80% or 90% control. Further, even though the draft permit states that PolyMet will "check the fugitive source at a location in which emissions from the fugitive source would be expected to vent to the atmosphere once each day of operation for any visible emissions...,"[51] neither the Draft Permit nor the Mine Site Fugitive Emission Control Plan require any specific action items that would definitively reduce PM10 and PM2.5 emissions based on the daily visible emissions monitoring. In both Fugitive Emission Control Plans for the Plant Site and for the Mine Site, the decision to employ controls on road dust is up to the discretion of the Plant Site and Mine Site supervisors.[52] Thus, it is arbitrary for MPCA to claim that these requirements for haul roads at the Mine Site justify assuming an additional level of

---

[47] *See* Section 10 of Section 4.3 of Mine Site Fugitive Emission Control Plan, in Appendix B of the Draft Permit.
[48] *See* Conditions 5.1.92, 5.1.93, 5.1.94, and 5.1.95 of the Draft Permit.
[49] *See* Section 4.3.3.2 of the Mine Site Fugitive Emission Control Plan and Section 5.2 of the Plant Site Fugitive Emission Control Plan, in Appendix B of the Draft Permit.
[50] Draft Permit, Conditions 5.206.1, 5.207.1, 5.212.1, and 5.230.1.
[51] Draft Permit, Conditions 2.206.3, 5.207.2, 5.212.3, and 5.230.5.
[52] *See* Draft Permit, Appendix B, Plant Site Fugitive Emission Control Plan at Section 5.1 and Mine Site Fugitive Emission Control Plan at Section 4.3, subsection 1.

control of fugitive particulate emissions at the Mine Site haul roads compared to the Plant Site unpaved roads.

The application rate of water or chemical dust suppressants for PM control from unpaved roads is a key part of the level of pollution control expected from this control. As EPA states in its AP-42 Compilation of Emission Factors section on unpaved roads, watering and chemical suppressants "require frequent reapplication to maintain an acceptable level of control."[53] With respect to watering, EPA states "[t]he control efficiency depends on how fast the road dries after water is added. This in turn depends on (1) the amount (per unit road surface area) of water added during each application; (b) the period of time between applications; (c) the weight, speed and number of vehicles traveling over the watered road during the period between applications; and (d) meteorological conditions (temperature, wind speed, cloud cover, etc.) that affect evaporation during the period."[54] EPA's AP-42 chapter on unpaved road emissions includes a graph that shows the relationship between the moisture ratio "M," which is the surface moisture content of the watered road divided by the surface moisture content of the unwatered road, and the expected control efficiency due to watering.[55] To get to 90% control requires a moisture ratio of about 4.2[56], meaning that a watered road needs to have 4.2 times more moisture than an uncontrolled (unwatered) road. To get to 80% control requires a moisture ratio of approximately 2.7.[57] EPA's AP-42 section on unpaved road emissions suggests that characterization of emissions from uncontrolled and watered unpaved roads be determined by collecting road surface material samples at various times between water truck passes, and then the moisture content ratios can be associated with a control efficiency.[58] EPA states that samples be collected during periods with active traffic on the road and that, due to different evaporation rates, samples should be collected at various times per year.[59] Neither the Draft Permit nor the Fugitive Emission Control Plans require any such analysis, and there is no evidence in the permit application or the TSD that such analysis has already been done.

With respect to chemical dust suppressants, EPA states that the control effectiveness depends on "(a) the dilution rate used in the mixture; (b) the application rate (volume of solution per unit road surface area); (c) the time between applications; (d) the size, speed, and amount of traffic during the period between applications; and (e) meteorological conditions (rainfall, freeze/thaw cycles, etc.) during the period."[60] EPA states that other factors also affect the performance of chemical dust suppressants such as other traffic characteristics (including track-on from unpaved areas such as one would expect at the Mine Site) and road characteristics.[61] EPA states that the variabilities in these characteristics and the composition of dust control products make the control efficiencies difficult to estimate. EPA states that past field testing showed that chemical

---

[53] EPA's AP-42 at 13.2.2-8, attached as Ex. 7.
[54] *Id.* at 13.2.2-10.
[55] *Id.* at 13.2.2-11 to 12, including Figure 13.2.2-2.
[56] *Id.* at 13.2.2-12.
[57] *Id.*
[58] *Id.* at 13.2.2-11.
[59] *Id.*
[60] *Id.* at 13.2.2-13.
[61] *Id.*

dust suppressants could provide 80% PM10 control efficiency when applied at regular intervals of 2 weeks to 1 month.[62] However, there is nothing in the Draft Permit or in the Fugitive Emission Control Plans that provide any detail on application frequency of chemical dust suppressants. Chemical application is identified as a "potential control strategy" particularly during the winter months in the PolyMet Fugitive Emission Control Plans, but again the application of the control is at the discretion of the Mine Site manager or the Plant Site Manager.[63]

EPA has long identified the specific types of requirements that should be made clear in a permit or a SIP rule for unpaved road controls, including:

1. A list of all road segments referenced on a map
2. Length of each road
3. Amount of water to be applied to each road/area and planned frequency of application, or alternatively a minimum moisture level could be specified,
4. Provisions for weather (e.g., ¼ inch of rainfall could substitute for one treatment, program suspended during freezing periods, watering frequency defined as a function of temperature, cloud cover).
5. Source of water an tank capacity.

See EPA's Control of Open Fugitive Dust, September 1988, at 3-15 to 3-16.

For chemical dust suppressants, the plan or permit should specify the same information as in 1,2, and 4 above as well as the type of chemical to be applied to each road, the dilution ratio, application intensity, and planned frequency of application.[64] The Draft Permit and Fugitive Emission Control Plans do not specify any of this information for either watering or chemical applications to control road dust at the PolyMet site. Without such specific requirements, it is not appropriate to assume that such high levels of PM10 and PM2.5 control will actually occur at the PolyMet site.

For all of these reasons, PolyMet was not justified in assuming 80% control for unpaved road emissions at the Plant Site nor was PolyMet justified in assuming 90% control for unpaved road emission at the Mine Site, because the Draft Permit and Fugitive Emission Control Plans fail to include specific requirements and steps to take to ensure 80-90% reduction in fugitive particulate matter from these roads. Further, there has been no analyses provided to show that the conditions in the Permit for opacity limitations or PM10 monitoring levels are reflective of 80-90% control of fugitive dust emissions from unpaved roads at the PolyMet site. As a result, PolyMet greatly understated PM10 and PM2.5 emissions from unpaved roads, which means the PM10 and PM2.5 modeling understated maximum projected concentrations due to PolyMet.

---

[62] *Id.*

[63] *See* Section 4.3.3.2 of the Mine Site Fugitive Emission Control Plan and Section 5.2 of the Plant Site Fugitive Emission Control Plan, in Appendix B of the Draft Permit.

[64] *See* EPA's Control of Open Fugitive Dust Sources, September 1988, at 3-22.

5. Summary

MPCA must require PolyMet to revise its PM10 and PM2.5 emission projections for unpaved roads at the Plant Site and the Mine Site. For the short term average PM10 and PM2.5 NAAQS, MPCA must require that short term emissions estimates reflect worst case daily emissions at both the Mine Site and Plant Site, reflecting employee trips on unpaved roads as well as other vehicle trips related to PolyMet. MPCA must also require the use of PM10 and PM2.5 emission factors appropriate for the weight of the vehicle at the Plant Site. Further, MPCA cannot allow such a high level of PM10 and PM2.5 control to be assumed from unpaved road emissions without specific enforceable requirements to ensure that 80-90% control is actually achieved. These deficiencies in projecting PM10 and PM2.5 emissions from unpaved roads call into question the validity of the PolyMet modeling, and these issues must be addressed before MPCA can definitively find that it has included all necessary requirements in the permit to ensure PolyMet will comply with the NAAQS.

E. MPCA Must Require PolyMet to Conduct Additional Modeling for PM10 and PM2.5 so that MPCA Can Include in the Permit All Conditions Necessary to Ensure PolyMet Complies with the PM10 and PM2.5 NAAQS.

As previously stated, MPCA is required to include in PolyMet's air permit all terms and conditions necessary to ensure compliance with the NAAQS, pursuant to Minn. Rule 7007.0100, Subp. 7.K. and Minn. Rule 7007.0800, Subps. 1, 2.A., and 2.B. To know what requirements need to be imposed as permit limitations to protect the NAAQS requires a complete modeling analysis of the PolyMet facility's potential impacts on the NAAQS in all areas of the ambient air. PolyMet's modeling analysis is flawed and likely understates PM10 and PM2.5 impacts for the reasons discussed above.

The modeling conducted for the PolyMet air permit predicts PM10 and PM2.5 impacts that are approximately 90% of the NAAQS, but those impacts have been understated. The impacts have been understated in part because PolyMet did not include the impacts of neighboring sources at the receptors in those neighboring sources land. The impacts have also been understated because Polymet understated worst case fugitive emissions of PM10 and PM2.5 from unpaved roads at the Mine Site and Plant Site, and that PolyMet assumed 80-90% control of fugitive dust from unpaved roads based on fugitive dust control requirements that are based on unlawful dispersion techniques, do not definitively require application of controls, and that have not been demonstrated to be correlated to 80-90% control in accordance with techniques set forth by the EPA. It is also unclear whether PolyMet truly has authority to block public access to all areas within the "effective fenceline" assumed for its modeling, particularly Dunka Road, and thus it is highly questionable whether PolyMet's air modeling adequately evaluated PM10 and PM2.5 impacts in all areas of ambient air.

For all of these reasons, which are discussed in more detail above, MPCA must require PolyMet to conduct revised modeling for compliance with the PM10 and PM2.5 NAAQS before it can issue an Air Permit authorizing construction and operation. In the absence of enforceable and more definitive requirements to ensure control of PM10 and PM2.5 from unpaved roads to 80-90% control, the revised modeling demonstration must be based on uncontrolled emissions or a

lower level of control reflective of the specific requirements PolyMet is willing to accept as permit conditions. MPCA must ensure that the revised modeling includes all areas of "ambient air" and that it includes all contributing source emissions in compliance with MPCA's permitting guidance. And, with respect to control of fugitive emissions from unpaved roads, if some level of PM10 and PM2.5 control is deemed necessary to assure compliance with the NAAQS (which presumably it will be), then MPCA must impose more definitive requirements in the Air Permit that will control fugitive dust to the levels assumed in the modeling and that are not simply dispersion techniques.

Until this revised modeling is conducted and more definitive fugitive dust control requirements are imposed, MPCA cannot lawfully issue the Air Permit for PolyMet because it cannot be demonstrated that the permit includes all terms and conditions necessary to assure attainment of the PM10 and PM2.5 NAAQS.

II. The Draft Permit Does Not Include Adequate Limits on the Potential Emissions of the PolyMet Facility under the Prevention of Significant Deterioration Permitting Regulations.

MPCA claims that the PolyMet source is a synthetic minor source and is thus not subject to prevention of significant deterioration (PSD) permitting requirements in Minn. Rule 7007.3000, which incorporates by reference the federal PSD permitting rules at 40 C.F.R. 52.21.[65] Under the PSD permitting program, a source is considered to be a major stationary source if the potential to emit of any regulated New Source Review pollutant is equal to or greater than 100 tons per year for certain source categories and 250 tons per year for all other source categories.[66] MPCA has stated that PolyMet is in the 250 ton per year source category.[67] The potential to emit of a new source is defined as follows:

> The maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.
>
> 40 C.F.R. 52.21(b)(4), incorporated by reference at Minn. Rule 7007.3000.

A source that would otherwise be a major stationary source can take federally and practically enforceable limitations on its potential to emit to keep air emissions below major source emission thresholds. Such a source would be deemed a "synthetic minor" source. MPCA has

---

[65] These rules were first approved by EPA as part of the State Implementation Plan on September 26, 2017 (82 Fed. Reg. 44,734); see also 40 C.F.R. §52.1220(c).
[66] 40 C.F.R. §52.21(b)(1)(i).
[67] MPCA TSD at 3.

stated that it is issuing a synthetic minor permit for the PolyMet facility.[68] MPCA has identified permit conditions that are necessary to ensure the PolyMet source is not a major source as "Title I conditions."[69]

The following provides review and comment on the Title I conditions and other conditions of the draft permit to evaluate whether the limits address all potential point source emissions and whether the limits are technically justified and practically enforceable.

A. The Potential to Emit of PolyMet Does Not Account for the Full Potential Emissions of the Fine Crushing Plant.

As stated above, potential to emit is to be based on a facility's physical and operational design. The PolyMet facility will be using the former LTVSM taconite ore processing facility at which there are four surplus fine crushing lines that PolyMet does not intend to use.[70] PolyMet did not include emissions from these units in its calculation of potential emissions because they "do not have any current plans to restart" the crushing equipment.[71] PolyMet also states that the equipment cannot be started up "without a permit applicability analysis and applicable permitting, " and further states that "[n]o additional permit terms or conditions are necessary to prevent the use of additional unpermitted equipment without the proper review of permitting requirements as provided for by state and/or federal rules."[72] With respect to determining potential to emit of the PolyMet facility, these fine crushing lines do have potential to emit air pollutants and the Draft Permit does not include any prohibition on their startup or operation as a Title I condition. Thus, these crushing lines must be included in the potential to emit of the PolyMet facility.

If MPCA was to impose Title I limitations prohibiting operation of these four fine crusher lines without a permit modification, then these crusher lines could be properly excluded from the potential to emit of the PolyMet facility. However, MPCA must make clear that, in the case of a future permit change authorizing the use of any of these four crusher lines, the PolyMet source must be re-evaluated for PSD applicability as though construction had not yet commenced pursuant to 40 C.F.R. 52.21(r)(4).

B. The Permit Fails to Take Into Account All Non-Fugitive Particulate Emissions in Determining Whether PolyMet is a Major Stationary Source under the PSD Program.

In determining if the PolyMet facility is a major stationary source under the PSD permitting requirements, PolyMet and MPCA have excluded "fugitive emissions." Emissions are considered to be "fugitive emissions" if the emissions "could not reasonably pass through a

---

[68] *Id.*
[69] *Id.* at 4
[70] January 2018 Permit Application at 12.
[71] *Id.*
[72] *Id.*

stack, chimney, vent, or other functionally equivalent opening."[73] EPA's NSR Workshop Manual states the following regarding defining emissions as fugitive emissions:

> Remember, if emissions can be "reasonably" captured and vented through a stack they are not considered "fugitive" under EPA regulations. In such cases, these emissions, to the extent they are quantifiable, would count towards the potential to emit regardless of the source or facility type.

EPA, New Source Review Workshop Manual, October 1990, at A.16.

PolyMet considered several sources of emissions as fugitive emissions when the emissions from those sources could be reasonably captured and vented through a vent or stack. Specifically, PolyMet considered emissions from the portable crushing plants, screening, and blasthole drilling at the Mine Site as fugitive emissions.[74] Particulate emissions from all of these sources could be reasonably captured and vented through a stack or other functionally equivalent opening.

Specifically, emissions from portable screening and crushing plants can be captured and controlled, by covering and routing to a baghouse. This is commonly required in the asphalt industry and could readily be used at the crushing plants at the Mine Site. Indeed, EPA has required portable screening and crushing facilities of certain capacities to use a baghouse for particulate control since at least 1985 in the NSPS for Nonmetallic Mineral Processing Plants in 40 C.F.R. Part 60 Subpart OOO.[75] When EPA was questioned in that 1985 rulemaking about the feasibility of using a baghouse control on portable plants, EPA determined it was economically feasible for portable plants with process capacities of 150 tons per hour or more.[76] This shows that particulate emissions from portable crushing plants *are* reasonably captured and vented through a stack or baghouse, and thus such emissions must be considered point source emissions. Even the emissions from blasthole drilling can be captured and routed to a baghouse.[77] Consequently, the potential to emit from the portable screening and crushing plants must be considered part of the PolyMet facility's potential to emit PM, PM10, and PM2.5.

In determining which emissions count towards a source's potential to emit for determining PSD applicability, it does not matter whether or not these emission sources are subject to the NSPS Subpart OOO requirements or other baghouse control requirements or whether it is economically feasible for these emission sources to capture emissions and route to a baghouse. Instead, the

---

[73] 40 C.F.R. 52.21(b)(20).
[74] January 2018 Permit Application at 15.
[75] 50 Fed. Reg. 31328 (Aug. 1, 1985); 40 C.F.R Part 60, Subpart OOO. Note that since at least 1980, EPA has recognized that particulate emissions from screening, crushing, and drilling could be captured and controlled by a particulate control device. *See* EPA's Air Pollutant Control Techniques for Crushed and Broken Stone Industry, EPA-450/3-80-019, May 1980, at 3-2 (Ex. 8).
[76] 50 Fed. Reg. 31328, at 31334 (Aug. 1, 1985);
[77] *See* EPA's Air Pollutant Control Techniques for Crushed and Broken Stone Industry, EPA-450/3-80-019, May 1980, at 3-2 (Attached as Ex. 8).

question is whether such emissions could reasonably be captured and directed to a stack or control device? In the case of the portable crushing plants, the screening equipment, and the blasthole drilling at the Mine Site, the answer is yes – these sources' particulate emissions could reasonably be captured and vented to a stack or baghouse. Therefore, the potential to emit particulate (PM, PM10, and PM2.5) must be included in determining the potential to emit of the PolyMet facility.

C. The Permit Fails to Adequately Limit the Potential to Emit of the Autoclave Unit and Autoclave Flash Vessel.

At PolyMet, an autoclave will be used to process nickel flotation concentration to leach valuable minerals in the concentrate so they can be removed. According to PolyMet, "[i]n the Autoclave, pressure oxidation will be conducted in the presence of chloride to leach the valuable minerals in the concentrate into solution where they can be recovered. A Flash Vessel associated with the Autoclave will be used to bring the Autoclave discharge solution down to atmospheric pressure."[78] Potential emissions include PM, PM10, PM2.5, SO2, and sulfuric acid mist, among other pollutants, and can be emitted from both the Autoclave vent and the Flash Vessel.[79] Emissions from the Autoclave vent and the Flash Vessel will be controlled by a venturi scrubber and flash vessel in series.[80]

This process to leach out minerals from the nickel flotation concentrate has not been used on a full-scale. PolyMet's emission estimates are based on what it claims was "extensive sampling" during a 2005 pilot study.[81] It appears that the pilot plant study was based on a 10-day pilot plant trial.[82] Problems were encountered during a significant part of the pilot testing, with steady-state operation being achieved for 72 hours of the 10-day pilot plant trial.[83] It is not clear under what conditions that the air emissions testing was done, or whether air emissions were tested during various conditions to determine worst case emissions. While PolyMet applied a safety factor of 1.5 to the emission rates determined by the pilot-scale testing[84], that safety factor is really an arbitrary number. It is unknown whether that is a reasonably estimate of potential emissions. Further, PolyMet did not even provide any information on vendor guaranteed emission rates expected with the scrubbers in operation.

PolyMet determined emission factors for the Autoclave in terms of pound of pollutant per ton of gas flow, based on a scaling up of the pilot plant testing by a safety factor of 1.5.[85] However, in

---

[78] January 2018 PolyMet Permit Application at 19.
[79] *Id.*
[80] *Id.* at 20.
[81] *Id.*
[82] *See* Ferron, C.J., C.A. Fleming, P.T. O'Kane, and D. Dreisinger, Pilot plant demonstration of the Platsol process for the treatment of the NorthMet copper-nickel-PGM deposit, Mining Engineering (Littleton, CO, United States) (2002), 54(12), at 33. (Ex. 9).
[83] *Id.* at 37.
[84] *See* spreadsheet of PolyMet Plantsite calculations (V2D1), at tab "References," at cells F245 to F250. Ex. 6.
[85] *Id.*

addition to the fact that the emissions testing was only done over a 10-day pilot plant trial (which had operational issues as discussed above), PolyMet has stated that "it was not possible to quantify the flow rate at the autoclave vent during the test program."[86] Instead, PolyMet estimated the flow rate based on fresh solid feeds rate, the feed sulfur content, and the oxygen flow rate.[87] The same was true for the flow rate for the autoclave flash vessel in the pilot testing.[88] To estimate emissions from the Autoclave flash vessel vent, PolyMet used process flow simulation for particulate matter and other pollutant emissions because it produced higher results than the pilot plant data.[89] To our knowledge, none of that data is in the administrative record for this Draft Permit. Thus, the uncontrolled emission factors developed for the autoclave vent and flash vessel are truly estimates at this point, and there is not sufficient support in the permit record to justify those estimates.

Further, the assumed level of control for SO2, sulfuric acid mist, and particulate matter including PM10 and PM2.5 are estimates. The emissions from the Autoclave Vent and Autoclave Flash Vessel vent will be routed to a venturi scrubber in series with a packed bed scrubber as the air pollution control equipment.[90] PolyMet assumed 90% SO2 control based on an engineering estimate,[91] assumed 99% control for sulfuric acid mist, and assumed 99.06% control for PM, PM10, and PM2.5.[92] There is absolutely no documentation provided in the Permit Application or TSD to support these levels of control. Indeed, there is not much data provided at all for the scrubbers, such as the type of reagent to be used in the packed bed scrubber and whether any reagent is to be used in the venturi scrubber.

With respect to expected PM, PM10, and PM2.5 removal efficiencies expected, EPA has identified a range of 70% to 99% control expected for particles larger than 1 μm across a venturi scrubber and greater than 50% for particles under 1 μm.[93] EPA has said packed tower scrubbers are not often used for PM removal due to high particle concentrations building up on the packing and clogging the tower.[94] Similar types of scrubbers such as tray towers can achieve 97% control efficiency of particles greater than 5 μm, but such scrubbers do not effectively control submicron particles.[95] Thus, there is a wide range of expected PM, PM10, and PM2.5 control efficiencies expected with venturi and packed bed scrubbers, and there is not support in the

---

[86] *See* November 2008, PolyMet Mining Inc., Stationary and Mobile Source Emission Calculations for the NorthMet Project – Combined Report (RS57), at 15 (attached as Ex. 10).
[87] *Id.* at 16.
[88] *Id.* at 20.
[89] *Id.* at 19-21.
[90] January 2018 Permit Application at 20.
[91] *See* spreadsheet of PolyMet Plantsite calculations (V2D1), at tab "References," at cells F245 to F 256.
[92] *See* spreadsheet of PolyMet Plantsite calculations (V2D1), at tab "References," at cells F247 to F249.
[93] *See* EPA's Control Cost Manual, Section 6, Chapter 2, Mussatti, Daniel and Paula Hemmer, Wet Scrubbers for Particulate Matter, July 15, 2002, at 2-9 (Available at https://www3.epa.gov/ttncatc1/dir1/cs6ch2.pdf and attached as Ex. 11).
[94] *Id.* at 2-11.
[95] *Id.* at 2-9.

permit record for the extremely high levels of control assumed by PolyMet. Neither MPCA nor PolyMet has provided any data on the expected size fraction or type (filterable versus condensable) of particulate matter expected to be emitted from the Autoclave vent and Autoclave Flash Vessel, which is extremely important in estimating control efficiency of the scrubbers. It is reasonable to assume that most of the particulate matter emitted from the Autoclave vent and the Autoclave flash vessel vent will be PM2.5, since it will likely be due to pollutants emitted initially as gases (formed due to the heat and pressure of the autoclave) that condense into particulate in the ductwork to the scrubbers.[96] Typically condensable particulate matter is smaller than 2.5 μm in diameter.[97] Thus, PolyMet's estimate of 99.06% control of PM, PM10, and PM2.5 with venturi and packed bed scrubbers is highly questionable, especially for PM2.5. MPCA must require more documentation to support such a claim by PolyMet.

While MPCA has proposed pound per hour limits on the autoclave scrubber stack (to which the autoclave vent, the autoclave flash vessel vent, and also the iron and aluminum precipitation tanks will be routed) for PM, PM10, and PM2.5 which are considered Title I conditions to keep the Polymet facility a minor source,[98] the Draft Permit only definitively requires one stack test within 180 days of operation to ensure compliance with these limits under the terms of the Draft permit.[99] The Draft Permit then allows test frequency to be every 12-months, every 36 months, or up to every 60 months, apparently at the discretion of PolyMet.[100] None of these testing schedules is frequent enough to ensure continuous compliance with the pound per hour limits on PM, PM10, or PM2.5, and thus these emission limits cannot be relied upon to limit the potential to emit of these emission units.

It is not clear that the permit could mandate any level of testing for these particulate emissions that would continuously ensure compliance with the pound per hour limits. In *United States v. Louisiana-Pacific Corporation*, the Court interpreted the definition of potential to emit in 40 C.F.R. § 52.21(b)(4) to require restrictions on operating hours or production levels or types of material combusted, rather than simply imposing limits on tons of pollutants emitted per year, in order to effectively limit potential to emit.[101] While the Louisiana-Pacific Court was focused on ton per year emission limits intended to reduce a source's potential to emit because such limits "would be virtually impossible to verify or enforce,"[102] pound per hour limits are similarly

---

[96] *See* Dreisinger, David, William Murray, and Don Hunter - PolyMet Mining; Ken Baxter, Mike Wardell-Johnson, Alan Langley, and Jenni Liddicoat – Bateman Engineering; Chris Fleming, Joe Ferron, Alex Mezei, James Brown, Ron Molnar, and Dan Imeson – SGS, Metallurgical Processing of PolyMet Mining's NorthMet Deposit for Recovery of Cu-Ni-Co-Zn-Pd-Pt-Au, SGS Mineral Services, Technical Paper 2006-06, at 7, attached as Ex. 12. The chemical process equations shown identify various SO4 compounds which are condensable particulate matter.
[97] EPA Method 202 Best Practices Handbook, January 2016, at ii, available at https://www3.epa.gov/ttnemc01/methods/m202-best-practices-handbook.pdf.
[98] *See* Draft Permit at 21.
[99] Draft Permit, Conditions 6.244.2, 6.244.3, and 6.244.4.
[100] Draft Permit, Conditions 6.244.12, 6.244.13, and 6.244.14.
[101] *See United States v. Louisiana-Pacific Corporation,* 682 F. Supp. 1122, 1133 (D. Colo. 1987) (blanket restrictions on actual emissions cannot be considered in determining potential to emit).
[102] *Id.*

impossible to determine continuous compliance (which is necessary to rely on such hourly limits to limit annual potential to emit) without continuous emission monitoring systems (CEMS).

Indeed, in its June 13, 1989 guidance on limiting potential to emit, EPA stated that proper limits on potential to emit must include a production or operational limitation in addition to an emission limitation "where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity without pollution control equipment."[103] EPA stated that there are two exceptions to the prohibition on using blanket emission restrictions to limit potential to emit. One exception pertained to surface coating operations, and the other exemption applies when setting operating parameters for control equipment is infeasible. In such cases, a permit that includes "short term emission limits (e.g. lbs per hour) would be sufficient to limit potential to emit, *provided that* such limits reflect the operation of the control equipment, and *the permit includes requirements to install, maintain, and operate a continuous emission monitoring (CEM) system and to retain CEM data, and specifies that CEM data may be used to determine compliance with the emission limit.*"[104] In the case of the pound per hour PM, PM10, and PM2.5 emission limits in the Draft Permit applicable to the autoclave scrubbers, the limits apply to total particulates including condensable particulate emissions for which there are no CEMs available. Thus, these limits cannot be relied upon to limit potential to emit of PM, PM10, or PM2.5 from these units.

Further, because the removal efficiency of the particulate matter from the Autoclave vent and the Autoclave flash vessel vent by the venturi and packed bed scrubbers is unknown for the type of particulate matter to be emitted by these units (i.e., primarily condensable particulate matter, which is typically under 2.5 microns in diameter), the fact that the permit requires the emissions from the autoclave and autoclave flash vessels to be routed to the scrubbers cannot be relied upon to limit particulate emissions from the autoclave units to any specific amount. The Draft Permit does require that PolyMet operate the scrubbers to achieve 99.06% control efficiency of PM, PM10, and PM2.5 and to achieve 99% control efficiency of sulfuric acid mist,[105] but the Permit does not require periodic testing (which would require stack testing upstream and downstream of the scrubbers) to verify compliance with those removal efficiency requirements. While the Draft Permit includes requirements for specific pressure drops and water flow rates for the Autoclave Scrubbers,[106] neither MPCA nor PolyMet has provided data and analysis to show that those operating parameters will ensure compliance with the 99.06% removal efficiency requirement for PM, PM10, and PM2.5 and the 99% removal efficiency requirement for sulfuric acid mist.

Given the unknown PM, PM10, and PM2.5 removal efficiencies to expect across the scrubbers and the estimate of the uncontrolled emission rates based on a 10-day trial at a pilot plant, the fact that the permit requires the emissions from the autoclave and autoclave flash vessels to be routed to the scrubbers cannot be relied upon to limit sulfuric acid mist emissions from the

---

[103] June 13, 1989 EPA Memorandum from Terrell E. Hunt and John S. Seitz with subject "Guidance on Limiting Potential to Emit in New Source Permitting," at 5-6.
[104] *Id.* at 8 [emphasis added].
[105] Draft Permit at Conditions 5.336.3, 5.336.4, and 5.336.7.
[106] Draft Permit at Conditions, 5.336.12 and 5.336.13.

autoclave units to any specific amount. There are just too many unknowns to rely on control equipment alone to limit potential to emit from the autoclave units.

All of these issues also apply to the pound per hour sulfuric acid mist limit applicable to the Autoclave Scrubber Stack in the Draft Permit.[107] There is no continuous emission monitoring system for sulfuric acid mist. The removal efficiency of sulfuric acid mist in scrubbers is quite variable.[108] Similar to the testing for compliance with the particulate matter pound per hour limits, the Draft Permit only requires one stack test within 180 days after startup, and then provides PolyMet the discretion to decide how frequently to re-test emissions and does not request testing any more frequently than once per year.[109] This infrequent testing is nowhere near sufficient to ensure continuous compliance with the pound per hour sulfuric acid mist limit.[110] Given the unknown removal efficiency to expect across the scrubbers and the estimate of the uncontrolled emission rate based on a 10 day trial at a pilot plant, the fact that the permit requires the emissions from the autoclave and autoclave flash vessels to be routed to the scrubbers cannot be relied upon to limit sulfuric acid mist emissions from the autoclave units to any specific amount.

For all of the reasons discussed above, the Draft Permit fails to limit the potential to emit of the Autoclave unit and Autoclave flash vessel, and there does not appear to be an adequate method to create practically enforceable limits on emissions from the Autoclave and Autoclave flash vessel. Given the unknowns about this process which has never being tested at a commercial scale and the unknowns and wide variability of control of PM, PM10, PM2.5 and sulfuric acid mist across the scrubbers, the potential to emit of the PolyMet facility must be based on the worst case uncontrolled annual emissions that could be emitted from the Autoclave unit and Autoclave flash vessel under their physical and operational design.

D. The Permit Lacks Federally and Practically Enforceable Limits on the Potential to Emit of Other Sources of Emissions at the PolyMet Facility.

The Draft Permit contains hundreds of conditions intended to limit the PolyMet facility's potential to emit which are labeled "Title I conditions." However, the number of permit conditions and the extreme length of the permit obfuscates whether such conditions are practically enforceable and whether such conditions will ensure that the potential emissions of the PolyMet facility are limited to less than major source emission levels. In addition to the deficiencies we raised with the permit limits on Autoclave vent and Autoclave Flash vessel discussed above, there are numerous other deficiencies in the Draft Permit that render the limits on the potential to emit ineffective. The following comments detail why the Draft Permit does not include practically enforceable limits necessary to limit the potential to emit of the PolyMet facility to less than major source levels.

---

[107] Condition 5.282.5 of Draft Permit.
[108] *See*, e.g., EPRI, Estimating Total Sulfuric Acid Emissions from Stationary Power Plants, Version 2010a, April 2010, at 4-21 to 4-22.
[109] Draft Permit, Conditions 6.244.6 and 6.244.16.
[110] Draft Permit, Condition 5.282.5

1. **The Draft Permit Contemplates the Addition of "Contractor Activities," Which are Currently Undefined and Likely Need to Be Counted in the Potential to Emit of the PolyMet Facility, But Fails to Include Any Limitations on the Emissions from Those Activities.**

Condition 5.1.1 of the Draft Permit states as follows:

> Prior to any contractor activities, not included in this permit under COMG 2, that cause or contribute to air emissions being conducted on site, the Permittee shall determine whether the contractor activities are part of the stationary source as defined in MN R 7005.01000, 42c. If contractor activities are part of the stationary source, the Permittee shall evaluate the activities to determine whether a permit amendment is needed. If a permit amendment is needed, the Permittee shall apply for and obtain the appropriate permit amendment or permit prior to allowing the contractor to conduct the activities. If the Permittee determines a permit amendment is not needed, the Permittee shall retain records of the calculations and other information used to determine a permit amendment is not needed.

This is problematic for numerous reasons. Most importantly, MPCA should not be authorizing construction and claiming that PolyMet is a minor source exempt from PSD permitting requirements when the full extent of the PolyMet facility is not known. There are several PSD requirements that must be addressed prior to beginning construction, including but not limited to preconstruction ambient air monitoring required pursuant to 40 C.F.R. 52.21(m)(1), determination of best available control technology (BACT) pursuant to 40 C.F.R. 52.21(j), and demonstrating that the facility will not cause or contribute to a violation of the Class II increments pursuant to 40 CFR 52.21(k)(2).[111]

Moreover, Condition 5.1.1 of the Draft Permit leaves the regulatory decision of how additional contractor activities might impact what rules apply to the PolyMet facility entirely up to PolyMet by allowing PolyMet to "determine whether the contractor activities are part of the stationary source as defined in MN R 7005.01000, 42c." This is simply not an appropriate condition for the permit. With Permit Condition 5.1.1, MPCA is essentially providing PolyMet with an affirmative

[111] There are other requirements that must be addressed before issuance of a PSD permit including an evaluation of whether or not the PolyMet facility will cause or contribute to a violation of the PSD increments or adversely impact an air quality related value such as visibility in a Class I area. While PolyMet provided some of those analyses for Class I areas (e.g., Boundary Waters Wilderness and Voyageurs National Park) in its permit application since they were also done for the Environmental Impact Statement (EIS), we have not reviewed or commented on those analyses because it does not appear that MPCA would have authority to address issues with Class I PSD increments or air quality related values impacts in the context of this Draft Permit for a non-PSD source. If it is later determined that PolyMet should have been permitted as a PSD source, MPCA must provide the public a new opportunity to comment on whether the proposed facility will comply with all PSD permitting requirements including Class I area requirements.

defense to any noncompliance with Minnesota air permitting rules for an expansion of the activities at its facility because it can determine that certain activities are not part of the stationary source. This condition should not be in the permit.

Instead, if PolyMet at some future date prior to commencing operation decides it needs to change or add activities to its facility, the permit must require that PolyMet submit such changes to MPCA and follow all other permitting requirements that MPCA determines apply to such change including determining whether the initial permit was a sham permit. EPA has stated that "[p]ermits with conditions that do not reflect a source's planned mode of operation may be considered void and cannot shield the source from the requirement to undergo major source preconstruction review. In other words, if a source accepts operational limits to obtain a minor source construction permit but intends to operate the source in excess of those limitations once the unit is built, the permit is considered a sham...Additionally, a permit may be considered a sham permit if it is issued for a number of pollutant-emitting modules that keep the source minor, but within a short period of time an application is submitted for additional modules which will make the total source major."[112]

2. The Permit Fails to Ensure that if any Title I Conditions Are Relaxed, the Source Must Be Evaluated for PSD Applicability as Though Construction Has Not Yet Commenced.

In the PSD program, 40 C.FR.R. 52.21(r)(4) states as follows:

> At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements or paragraphs (j) through (s) of this section shall apply to the source or modification as though construction had not yet commenced on the source or modification.

The Draft Permit fails to include any provision reflective of these requirements and, instead, includes a condition that indicates changes at the source that would make the source a major source must be processed as a major permit amendment.[113] If the PolyMet facility makes a change or changes that relax Title I limits or that otherwise make the PolyMet source a major source, it must get a PSD permit as though construction has not yet commenced on the source.

Permit amendments are for modifications to existing sources, and any changes to the Title conditions or other changes (such as additional activities not yet determined, as discussed above) must require a new permit as if starting from square one. Numerous requirements would apply, all of which should have applied prior to construction of the facility. It is not appropriate to indicate that the necessary permit could be issued as a Major Permit Amendment, which typically applies to emission increases at a source and not to the entire source as though

[112] EPA, New Source Review Workshop Manual, October 1990, Appendix C at c.6.
[113] Draft Permit Condition 5.1.13.

construction has not yet commenced. Therefore, MPCA must revise Draft Permit Condition 5.1.13 to read consistently with the requirement of 40 C.F.R. 52.21(r)(4) quoted above. Otherwise, Draft Permit Condition 5.1.13 strongly implies that any changes in Title I conditions or addition of activities that could make the source major could be addressed as a modification to the source, which for a minor source could allow an increase of up to 250 tons per year without triggering PSD.

3. The Ore Processing Throughput Limit Does Not Limit the Amount of Ore Produced at the Mine, and the Draft Permit Fails to Include Necessary Conditions to Limit Ore Throughput at the Plant Site.

Condition 5.1.39 of the Draft Permit limits ore process throughput to 11.680 million tons per year of ore processed at the facility, and Condition 5.1.40 of the Draft Permit requires PolyMet to monitor and record the tons of ore exiting the coarse crusher building on a monthly basis. By monitoring the amount of ore exiting the coarse crusher building, this tons-of-ore-processed limit does not effectively limit the tons of ore produced at the mine because some of the mined ore could be shipped off-site for processing. Therefore, all of the emission estimates for mine sources used for modeling and those that are used for Title I conditions at mine site sources that rely on the 11.680 million ton per year ore processing limit are based on a limitation that does not exist in the Draft Permit. For Mine Site sources for which emissions are projected based on this ore processing limit of 11.680 million tons per year, the limit must be imposed to all ore shipped either to the Plant Site or offsite for processing from the Mine Site, with appropriate monitoring, recordkeeping and reporting and periodic calibration of belt scales or whatever other method is used for tracking weight of ore transported to the Plant Site or offsite.

Further, the 11.680 million ton per year limit of ore processed cannot be relied on to limit emissions of the coarse crusher building because the Draft Permit does not require monitoring of the weight of ore fed into the coarse crushers. Instead it only requires monitoring of the ore at the exit of the coarse crushers. The Permit should limit the weight of ore entering the coarse crusher building.

Lastly, the wording of Draft Permit Condition 5.1.40 needs to be revised because it does not definitively require constant monitoring and recording of the ore throughputs exiting the coarse crusher building. Specifically, this permit condition states that PolyMet shall "*monitor and record* the tons of ore exiting the coarse crushing building *on a monthly basis*."[114] Instead, this permit condition must require the *continuous* weighing of ore throughput exiting the coarse crusher building and summing of total ore throughput on a monthly basis. The permit must also require period calibration of the belt scales used for monitoring ore throughput and associated recordkeeping and reporting of such calibrations. Further, the permit must include provisions for any malfunctions or breakdowns in operations of the belt scales, including requiring prompt notification to MPCA, prompt repair of the scales, and other specific provisions indicating how PolyMet will ensure compliance with the 11.680 million ton per limit on ore processed during any periods of belt scale outage or breakdown. Without such provisions, the ore throughput

[114] Condition 5.1.40 of the Draft Permit [emphasis added].

limitation of Condition 5.1.39 cannot be considered to be a reliable limit on potential to emit of the remainder of the ore processing facilities at PolyMet.

These conditions are especially important given that the coarse crusher lines and the fine crushing lines have more capacity than the 11.680 million ton per year ore throughput limit. Specifically, just one of the coarse crushers has hourly ore throughput capacity of 4025 tons per hour, which equates to 35.259 million tons of ore capacity per year.[115] It appears there are two coarse crusher lines (North and South), and thus the potential capacity is two times 4025 tons per hour or 70.518 million tons of ore capacity per year. Even just the three fine crusher lines that PolyMet claims are all it will use of the seven fine crusher lines that exist in the fine crusher building have higher ore throughput capacity than 11.680 million tons per year. Specifically, the three fine crusher lines have a total capacity of 2412 tons of ore per hour[116], which equates to 21.129 million tons of ore capacity per year. With the other four fine crusher lines that currently exist at the site (which we believe must be included in determining potential to emit of the facility unless the permit specifically prohibits their use as a Title I condition, see Section II.A. above), the ore throughput capacity is even greater.

For all of these reasons, the permit must include provisions to ensure the integrity of the ore throughput capacity limit of Condition 5.1.39 of the Draft Permit in order for it to be relied upon to either limit emissions that were considered in the ambient air modeling and/or to limit emissions in determining potential to emit of the PolyMet facility.

4. The Draft Permit Fails to Identify All Provisions Related to Title I Conditions as Title I Conditions, Which is Necessary to Ensure that Such Provisions Remain in Effect even if the Permit Expires.

The Draft Permit includes numerous Title I conditions with associated monitoring or recordkeeping requirements that are necessary to assure compliance but that are NOT listed as Title I conditions. A key component of practically enforceable limits are conditions that imposing testing and monitoring of compliance with permit conditions. Thus, the permit provisions that provide the mechanism for compliance with Title I conditions must also be listed as Title I conditions. Table 3 below lists those permit conditions that we have identified that are related to determining compliance with Title I conditions but which have not been listed as Title I conditions in the Draft Permit.

Table 3. PolyMet Draft Permit Conditions that Should Be Listed as Title I Conditions and That Are Necessary for Title I Conditions to be Enforceable

Permit Condition(s) that Should Be Listed as a Title I Condition	Description	Title I Condition(s) to Which the Permit Condition is Related
5.3.10	Requirement to conduct emission calculations for portable crushing equipment	5.3.3, 5.3.4, 5.3.5, 5.3.6, 5.3.7, and 5.3.8

[115] *See* spreadsheet of PolyMet Plantsite calculations (V2D1), at tab "Process Rates," at cell B10.
[116] *Id.* at cells B22 and B23.

Permit Condition(s) that Should Be Listed as a Title I Condition	Description	Title I Condition(s) to Which the Permit Condition is Related
5.3.11 to 5.3.16	Equations for compliance with emission limits at portable crushing equipment	
5.3.20 to 5.3.21	Operating Hours Recordkeeping-daily and monthly	
5.146.6	Requirement for monitoring throughput for acid flocculant silo	5.146.4
5.156.5	Monitoring throughput for Plant Lime Silo	5.156.4
5.159.5	Monitoring throughput for Limestone conveyor to stacker conveyor	5.159.2
5.160.6	Monitoring throughput for Limestone Reclaim Chute	5.160.2 5.160.3
5.161.5	Monitoring throughput for Limestone Reclaim Feeder to Conveyor	5.161.2 5.161.3
5.162.4	Monitoring throughput for Limestone Tunnel Conveyor to Bunker	5.162.1 5.162.2
5.163.4	Monitoring throughput for Limestone Bunker to Crusher Feed	5.163.1 5.163.2
5.164.4	Monitoring throughput for Limestone Crusher Feed Conveyor	5.164.1 5.164.2
5.167.4	Monitoring throughput for Limestone Conveyor to Mix Tank	5.167.1 5.167.2
5.169.5	Monitoring throughput for MSFMS Lime Silo	5.169.4
5.170.4	Monitoring throughput for MSFMS Lime Transfer to Tank	5.170.3
5.172.6	Monitoring throughput for Limestone Reclaim Pocket Dump	5.172.3 5.172.4

Permit Condition(s) that Should Be Listed as a Title I Condition	Description	Title I Condition(s) to Which the Permit Condition is Related
5.175.18 through 5.180.11	Provisions requiring documentation that unit is an emergency generator under EPA's 9/6/95 PTE Memo	If emergency generators are to be considered as limited to 500 hours per year in PTE calculations pursuant to EPA's 9/6/95 guidance, these provisions must be Title I provisions.
5.181.7	Monitoring of operating hours of generator to move electrical equipment.	5.181.5
5.183.4	Monitoring process throughput of WWTS Calcite Handling	5.183.3
5.203.5	Monitoring process throughput of WWTS Lime Silo	5.203.4
5.204.4	Monitoring process throughput of WWTS Lime Transfer to Mix Tank	5.204.3
5.205.4	Monitoring process throughput of WWTS other dry material handling	5.205.3
5.226.6 and 5.226.9	Monitoring process throughput of Mine Site Surface overburden Screen #1, and recordkeeping requirements	5.226.2 5.226.3
5.227.6 and 5.227.9	Monitoring process throughput of Mine Site Surface overburden Screen #1 discharge, and recordkeeping requirements	5.227.2 5.227.3
5.237.6 and 5.237.9	Monitoring process throughput of Mine Site Surface overburden Screen #2, and recordkeeping requirements	5.237.2 5.237.3
5.238.6 and 5.238.9	Monitoring process throughput of Mine Site Surface overburden Screen #2 discharge, and recordkeeping requirements	5.238.2 5.238.3

Permit Condition(s) that Should Be Listed as a Title I Condition	Description	Title I Condition(s) to Which the Permit Condition is Related
5.239.6 and 5.239.9	Monitoring process throughput of Mine Site Surface overburden Screen #3, and recordkeeping requirements	5.239.2 5.239.3
5.240.6 and 5.240.9	Monitoring process throughput of Mine Site Surface overburden Screen #3 discharge, and recordkeeping requirements	5.240.2 5.240.3

Almost all of these requirements pertain to requiring monitoring of throughput or other information, and such a requirement is imperative to the enforceability of throughput or processing limits that are designated as Title I limits on potential to emit. Therefore, all of these monitoring requirements must be identified as Title I conditions in the permit, in addition to the Title I condition to which the monitoring requirements pertain, to ensure that the monitoring requirements necessary to ensure practical enforceability of limits on potential to emit remain in effect even if the permit expires. MPCA should review all of the Title I conditions of the permit to ensure that all conditions necessary to ensure the enforceability of an emission or production limit are listed as Title I conditions in the permit.

5. The Draft Permit Does Not Include All Conditions Necessary to Ensure Continuous Compliance with Emission Limitations Intended to Limit the Potential to Emit of the PolyMet Facility.

The Draft Permit imposes numerous pound per hour limits and control efficiency requirements for control equipment. Those limitations were, in turn, relied upon for determining potential to emit of the PolyMet facility. In the comments in Section II.C. above regarding the emission limitations on the Autoclave, we explained why the pound per hour emission limits and the requirements to route to a particulate control device were not sufficient to limit potential to emit. To reiterate, the Court in *United States v. Louisiana-Pacific Corporation* has interpreted the definition of potential to emit in 40 C.F.R. § 52.21(b)(4) to require restrictions on operating hours or production levels or types of material combusted, rather than simply imposing limits on tons of pollutants emitted per year.[117] In its June 13, 1989 guidance on limiting potential to emit, EPA stated that proper limits on potential to emit must include a production or operational limitation in addition to an emission limitation "where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity without pollution control equipment."[118] EPA stated that there are two exceptions to the prohibition on using blanket

[117] *See United States v. Louisiana-Pacific Corporation,* 682 F. Supp. 1122, 1133 (D. Colo. 1987) (blanket restrictions on actual emissions cannot be considered in determining potential to emit).
[118] June 13, 1989 EPA Memorandum from Terrell E. Hunt and John S. Seitz with subject "Guidance on Limiting Potential to Emit in New Source Permitting," at 5-6.

emission restrictions to limit potential to emit. One exception pertained to surface coating operations, and the other exemption applies when setting operating parameters for control equipment is infeasible. In such cases, a permit that includes "short term emission limits (e.g., lbs per hour) would be sufficient to limit potential to emit, *provided that* such limits reflect the operation of the control equipment, and *the permit includes requirements to install, maintain, and operate a continuous emission monitoring (CEM) system and to retain CEM data, and specifies that CEM data may be used to determine compliance with the emission limit.*"[119]

In the case of the pound per hour emission limits in the Draft Permit that are being relied upon as Title I conditions to limit potential to emit of the PolyMet facility (of which there are numerous such limits), the permit does not require use of CEMs to determine compliance. Instead, the Draft Permit requires one stack test within 180 days of operation and then very infrequent stack tests occurring at intervals of one to five years entirely at the discretion of PolyMet.[120] Thus, the various pound per hour limits cannot be relied upon to limit potential to emit of any air pollutants in the absence of CEMs, especially with such infrequent testing, at any of the emission units at PolyMet.

The Draft Permit lacks necessary requirements to rely on control equipment requirements in the Permit to ensure compliance with the limits on potential to emit. For example, for all of the emission points of the crushing operations, PolyMet assumed particulate emissions based on "performance specifications for the baghouses that will be installed in the crushing plant of 0.0025 gr/cf of total PM...Uncontrolled emissions were estimated by assuming a control efficiency of 99% for the baghouses."[121] First, it must be noted that PolyMet has not provided any vendor guarantee for the baghouses or cartridge filters that a 0.0025 grains per cubic foot limit can be met at the crushing operations at the PolyMet Plant site. MPCA must require such information to support PolyMet's claimed emission rate. Further, the Draft Permit fails to impose a 0.0025 grain per cubic foot permit limit on any of the cartridge filters or baghouses. While the draft permit imposes a requirement that all cartridge filters or baghouses be operated and maintained to achieve 99% control efficiency of particulate matter,[122] the Permit does not include any provisions to determine the control efficiency of the cartridge filters or baghouses. While the Draft Permit does include other provisions regarding the operation of the baghouses or cartridge filters, such as pressure drop requirements,[123] neither MPCA nor PolyMet has provided any demonstration that these pressure drop requirements will ensure 99% control efficiency across the baghouse. But given that PolyMet did not properly estimate uncontrolled particulate

---

[119] *Id.* at 8 [emphasis added].
[120] The Permit Conditions regarding testing for compliance are in numerous provisions in Section 6 of the Draft Permit (beginning at page 534), but all of the permit conditions that pertain to testing with pound per hour Title I limits are the same – initial test within 180 days, subsequent testing on 1 to 5 year intervals at the discretion of PolyMet. *See*, e.g., testing requirements for EQUI 106, Railcar Loading- Copper Concentrate, Draft Permit at pp. 667-668.
[121] *See* spreadsheet of PolyMet Plantsite calculations (V2D1), at tab "References," at cells F218 to F220.
[122] *See*, e.g., Permit Conditions, 5.288.3, 5.288.4, and 5.288.5. MPCA seems to have required 99% control efficiency requirements for all baghouse and cartridge filters in the Draft Permit.
[123] *See*, e.g., Draft Permit Conditions 5.288.7.

emissions, what is more important to ensuring the integrity of PolyMet's potential to emit calculations for PM, PM10, and PM2.5 at the Plant Site is ensuring that there are vendor guarantees for all of the baghouse and cartridge filters to achieve 0.0025 grains per cubic foot and to ensure periodic testing (more frequent than 1 to 5 times per five years) of compliance with the pound per hour limits at all baghouse and cartridge filter emission points.

Similarly, for the emission limits for the units routing emissions to TREA 53, the Plant Scrubber, the draft permit sets pound per hour emission limits for PM, PM10, PM2.5 and sulfuric acid mist,[124] but the Draft Permit only requires infrequent testing of compliance with those limits – as infrequent as once per five years.[125] The Draft Permit requires 99% particulate matter and sulfuric acid mist control efficiencies for the scrubber, but the Draft Permit fails to include any requirements for ensuring compliance with the 99% control efficiency requirements.[126] While the Draft Permit has operational requirements for the Plant Scrubber including to regulate pressure drop, water flow rate, and pH across the scrubber,[127] neither MPCA nor PolyMet has put forth any demonstration that these requirements are tied to 99% control of PM, PM10, PM2.5 or sulfuric acid mist across the scrubber. The Plant Scrubber is relied upon to control the emissions of the AuPGM precipitation tanks (EQUI 110), the CuS Cementation Tank N2 Vent (EQUI 112), the MHP Stage 1 Tank Vent (EQUI 113), and the NaHS Mix Tank/Storage Tank. With very infrequent test requirements for the particulate matter and sulfuric acid mist emission limits and no provisions for ensuring the control efficiency of the scrubber, the pound per hour emission limits cannot be relied upon to limit potential to emit.

For all of these reasons, the Draft Permit fails to include all conditions necessary to limit potential to emit of the PolyMet facility with practically enforceable limitations that ensure continuous compliance with emission limitations intended to keep the PolyMet facility from being considered a major source under the PSD program.

E. Summary Regarding the Potential to Emit of the PolyMet Source

For all of the reasons discussed above, the Draft Permit currently does not adequately limit the potential to emit of the PolyMet source. For some units, primarily the Autoclave vent and Autoclave flash vessel, the assumed controlled emission rates have not been adequately justified. Given the unknowns about this process which has never being tested at a commercial scale and the unknowns and wide variability of control of PM, PM10, PM2.5 and sulfuric acid mist across the scrubbers, it is questionable that any limits on potential to emit of the Autoclave vent and Autoclave Flash Vessel can be assumed. The uncontrolled emissions from the Autoclave Flash Vessel by itself exceed the major source emission thresholds for PM, PM10, PM2.5 and sulfuric acid mist. Specifically, PolyMet projected the uncontrolled emissions just from the Autoclave Flash Vessels as 4,033.865 tons per year of each PM, PM10, and PM2.5 and 426.470 tons per

---

[124] Draft Permit at Conditions 5.283.1, 5.283.2, 5.283.3, and 5.283.5.
[125] Draft Permit, Conditions 6.245.1, 6.245.2, 6.245.3, 6.245.5, 6.245.7, 6.245.8, 6.245.9, and 6.245.11.
[126] Draft Permit Conditions 5.338.3, 5.338.4, 5.338.5, and 5.338.7
[127] Draft Permit, Conditions 5.338.9, 5.338.10, and 5.338.11.

year of sulfuric acid mist.[128] Thus, it is imperative that MPCA and PolyMet justify the assumptions that went into the assumed scrubber removal efficiencies for PM, PM10, PM2.5 and sulfuric acid mist based on the most probable form of particulate matter expected from the Autoclave vent and Autoclave flash vessel of condensable particulate matter.

As previously stated, the assumed 99.06% control efficiency of the Autoclave scrubber for PM, PM10, and PM2.5 and the 99% control efficiency of sulfuric acid mist have not been justified by vendor guarantees, and the Autoclave scrubber control efficiency limits in the Draft Permit do not include provisions to make those assumptions enforceable. Further, the scrubber operational requirements have not been tied to these high levels of particulate and sulfuric acid removal, especially given the likelihood that the particulate matter will likely be condensable particulate matter that is not as readily captured in scrubbers. As it is right now (not even taking into account the other issues with the potential to emit of the PolyMet facility and the permit deficiencies discussed above), if the scrubbers only achieved 97.9% control of PM, PM10, and PM2.5, the PolyMet facility's potential to emit would be major (i.e., greater than 250 tons per year[129]) for PM, PM10, and PM2.5. A particulate control efficiency of 97.9%, especially for condensable particulate matter which is likely the form of the particulate to be emitted from the autoclave flash vessel, is still a very high control efficiency to assume for the scrubbers to be installed for condensable particulate matter, and this slight change in control efficiency makes the difference as to whether the PolyMet source is major or not for PM, PM10, and PM 2.5 under the PSD program.

Thus, because of the difficultly of imposing emission limits for which compliance can continuously be demonstrated for the sulfuric acid mist, PM, PM10, and PM2.5 emissions from the Autoclave units, it is imperative that the assumed removal efficiencies for the Autoclave scrubbers for sulfuric acid mist, PM, PM10, and PM2.5 are technically justified for the form of and concentrations of particulate matter that are expected to be emitted from the Autoclave units to the Autoclave scrubbers. Vendor guarantees should be obtained and made available for public review before MPCA issues any permit purporting to impose synthetic minor limits on the PolyMet facility because the pollutant removal efficiency achieved across the control equipment is extremely important to PolyMet's potential to emit calculations being grounded in reality, especially given the fact that the process to be used in the Autoclaves at PolyMet has never been done on a commercial scale. In the absence of such vendor guarantees and unless permit conditions are imposed to ensure continuous compliance with the pound per hour limits, the potential to emit of these emission units should be based on uncontrolled emissions when determining potential to emit of the PolyMet facility.

---

[128] *See* MPCA TSD, Attachment 1, PTE Summary Calculation Spreadsheets, Table B-126 at 18 (pdf page 159 of MPCA file entitled "TSD-1.pdf."

[129] The current potential to emit is stated as 166.31 tons per year for PM2.5. (Potential to emit is slightly higher for PM10 and PM). MPCA TSD at 3. If the scrubber only achieves 97.9% control instead of the assumed 99.06% control of PM, PM10, and PM2.5, that could increase the potential to emit just from the Autoclave Flash Vessel by 84.7 tons per year which, when added to 166.31 tons per year for PM2.5, is 251 tons per year. Potential to emit PM and PM10 would be even higher than 251 tons per year. And this estimate does not even consider the effective on emissions from the Autoclave vent.

In addition, MPCA must address all of the other deficiencies in the Draft Permit in limiting potential to emit of the PolyMet source in order to ensure the integrity of PolyMet's potential to emit calculations and assumptions. As it stands now, it does not appear that the Draft Permit will sufficiently limit PolyMet's emissions to less than major source emission thresholds without significant changes to the permit as discussed above and without additional support for the emissions assumptions.

III. The Draft Permit Fails to Adequately Limit Potential Hazardous Air Pollutant Emissions of the PolyMet Facility to Less than Major Source Emission Thresholds.

The Draft Permit for the PolyMet facility also includes emission limitations intended to keep the PolyMet facility a synthetic minor source of hazardous air pollutants (HAPs) under 40 CFR 63.2. Those limits are identified in the Draft Permit as "Avoid major source under 40 CFR 63.2" and the majority of those limits apply to metal HAPs that would also qualify as particulate matter.[130] These limits are generally control efficiency requirements for the baghouses/cartridge filters.[131] As discussed above, those removal efficiency requirements are not enforceable requirements unless the permit requires periodic testing to ensure compliance with the control efficiency limit. Typically that is done by measuring emissions upstream and downstream of the pollution control device. It is not clear how to accomplish the upstream emissions from some of the sources at PolyMet such as the crushing operations controlled by cartridge filters. Further, the operational requirements applicable to the pollution control devices have not been shown to be sufficient to achieve the assumed removal efficiency. In any event, because the permit does not require testing to ensure compliance with the HAP removal efficiency requirements, those requirements cannot be relied upon to limit potential to emit HAPs at the PolyMet facility.

IV. Additional Comments on the Draft Permit for PolyMet.

A. MPCA Must Require PolyMet to Begin Construction within a Shorter Timeframe than 60 Months.

Condition 5.1.1 of the Draft Permit states that the permittee must start construction of the equipment authorized in this permit within 60 months (five years) after issuance or the authorization to construct will expire. Five years is a long time to allow for commencement of construction. The PSD permit provisions require construction to commence within 18 months of permit issuance or the permit to construct will expire.[132] The reason for this limitation on the beginning of construction after permit issuance is so the information in the permit and the air quality and other analyses upon which it is based is current. While five years may be the length of time of a Part 70 permit, such Part 70 permits were not envisioned to be authorizations to construct but authorizations to operate. While it is recognized that MPCA has adopted a combined construction and operating permit program, the state still could – and should – impose a shorter timeframe for commencing of construction of the PolyMet facility. To preserve the

[130] *See*, e.g., Draft Permit at Condition 5.286.6, 5.287.6, etc.
[131] *Id.*
[132] 40 CFR 52.21(r)(2).

integrity of the modeling and to be consistent with PSD permitting requirements, MPCA should require construction commence on the PolyMet facility within 18 months of permit issuance.

B. Assuming MPCA Incorporates Additional Provisions into the PolyMet Permit to Sufficiently Limit Potential to Emit below Major Source Levels, the Permit Should be Streamlined to More Readily Ensure Compliance by PolyMet.

The Draft Permit is extremely long at 1230 pages and is also very difficult to follow, because provisions applicable to one emissions unit are found in several different parts of the permit. After going through the entire permit in detail, it is clear that many identical provisions and emission limits are repeated for different emission units. Assuming MPCA incorporated additional provisions to adequately limit potential to emit of the PolyMet facility, MPCA should also streamline repeating conditions of the permit to better ensure compliance by PolyMet. For example, The North 60" Crusher and the South 60" Crusher are subject to the same numerical particulate matter emission limits, but route their emissions to two different particulate matter controls (that also have identical requirements).[133] Instead of breaking those conditions up into individual permit conditions for each crusher and baghouse, these emission limits could be combined into one permit condition applicable to each Crusher on an individual basis. Indeed, the Permit could simply have a table of emission limits for all of the various emission units, which in many cases are the same limits. Also the baghouse and cartridge filters are subject to the same requirements, which could be summarized as one set of requirements applicable to each of those particulate controls on an individual basis. At the very minimum, the permit should include such a summary at the beginning to help assure PolyMet's compliance with the Permit.

V. Conclusion

In summary, MPCA must not issue the Draft Permit for the PolyMet facility as currently proposed for several reasons. First, MPCA must require PolyMet to conduct revised modeling for compliance with the PM10 and PM2.5 NAAQS before it can issue an Air Permit authorizing construction and operation. MPCA must ensure that the revised modeling includes all areas of "ambient air" and that it includes all contributing source emissions in compliance with MPCA's permitting guidance. And, with respect to control of fugitive emissions from unpaved roads, if some level of PM10 and PM2.5 control is deemed necessary to assure compliance with the NAAQS (which presumably it will be), then MPCA must impose more definitive requirements in the Air Permit that will control fugitive dust to the levels assumed in the modeling and that are not simply dispersion techniques. Until this revised modeling is conducted and more definitive fugitive dust control requirements are imposed, MPCA cannot lawfully issue the Air Permit for PolyMet because it cannot be demonstrated that the permit includes all terms and conditions necessary to assure attainment of the PM10 and PM2.5 NAAQS.

Second, the Draft Permit does not properly limit potential to emit of the PolyMet facility below major source levels for numerous reasons. Specifically, the permit fails to account for all sources of point source emissions existing and contemplated at the PolyMet site (e.g., portable crushing equipment at Mine Site, existing fine crushing lines at Plant Site, additional contractor

[133] Draft Permit Conditions for EQUI 1 and EQUI 2, and TREA 1 and TREA 2.

activities contemplated in Draft Permit). Further, the potential to emit of the Autoclave vent and Autoclave flash vessel is based on short term pilot testing for a process that has never been implemented on a commercial basis, and the permit record fails to include support for the emissions assumptions and the assumed control efficiencies of the Autoclave scrubbers. The Draft Permit also to include practically enforceable limits and associated requirements to ensure the integrity of the assumed emission rates and control equipment efficiencies from the Autoclave units, the crusher units, and several other emission units. Without proper and practically enforceable limits on the PolyMet facility, the source must be permitted as a major source under the PSD program.

In sum, there are significant changes needed in the modeling and emissions documentation for the permit as well as within the permit itself to ensure compliance with the air permitting requirements of the Clean Air Act and the Minnesota Rules. We request the ability to review and comment on that information and revised permit conditions in a new 30-day comment period.