

January 10, 2018

# Poly Met Mining, Inc. NPDES Antidegradation Review - Preliminary MPCA Determination

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## Antidegradation Procedures Overview

Poly Met Mining, Inc. (PolyMet) submitted an NPDES/SDS application for a proposed new discharge. Every NPDES permit authorizing a new NPDES discharge requires completion of antidegradation procedures. The purpose of an antidegradation review is to achieve and maintain the highest possible quality in surface Water of the State (Minn. R. 7050.0250). Antidegradation generally specifies three “tiers” of water quality protection:

- Tier 1 protection requires existing uses and the water quality necessary to support those uses to be maintained and protected – this protection is assured when all applicable water quality standards are met;
- Tier 2 protects existing high water quality, which is water quality that is better than that required by the standards necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water;
- Tier 3 requires the maintenance and protection of water quality necessary to preserve specific water resources of outstanding value.

The antidegradation procedures ensure that Tier 1 protection applies to all waters and standards and that Tier 2 and Tier 3 protection applies where applicable.

Generally applicable antidegradation standards and requirements are found in Minnesota Rules parts 7050.0250 to 7050.0335. Antidegradation standards for bioaccumulative chemicals of concern in the Lake Superior basin (Minnesota Rules 7052.0300 to 7052.0330) also apply. Antidegradation procedures require the permit applicant to prepare an antidegradation assessment or evaluation, and the MPCA to conduct an antidegradation review and make a determination as to whether the antidegradation standards are satisfied.

The antidegradation assessment and review compare projected future water quality (after a proposed new or increased discharge) to existing water quality. This comparison requires knowing the current authorized (as defined by an NPDES/SDS permit) loading of pollutants to the receiving water and projected future loading, and determining if there is a measurable change in water quality. If there is a measurable change, additional action must be taken – such as demonstrating that non-degrading alternatives have been investigated, that degradation is prudently and feasibly minimized, and that degradation is needed to allow for important economic and social development.

As noted in the rule record for the MPCA's recent antidegradation rulemaking, “wastewater treatment facilities must operate under a wide variety of conditions[,] which results in effluent pollutant load and concentration variability.” (See Attachment 1 MPCA Detailed Responses to Comments, April 20, 2016, at 46). Therefore, until a new facility is operational, effluent and water quality concentrations can only be a best estimate. Once a facility is permitted, the level of pollution authorized by the permit becomes the baseline for any future antidegradation review.

Any proposals for future changes to the facility must be evaluated to determine if the changes would result in a net increase in loading or other causes of degradation. When a proposal is for new effluent limits because of a new water quality standard or better monitoring data, but those limits are not the result of changes to pollutant loading, antidegradation procedures are not required (see Minn. R. 7050.0255, subp. 26). If a net increase in loading would occur, antidegradation procedures are required and the review begins to look at changes in water quality and proceeds through the rest of the antidegradation procedures.

## Summary

PolyMet's Antidegradation Evaluation sought to satisfy the applicable requirements of the rules in both Minn. R. 7050 and Minn. R. 7052. The full Antidegradation Evaluation including tables, figures and appendices discussed in the write-up below can be found in Appendix A of Volume III of the NPDES/SDS application which can be found as Attachment 1 to this document and at the following link: [<Link>](#). PolyMet's Antidegradation Evaluation provided the Minnesota Pollution Control Agency (MPCA) with the necessary information to conduct an Antidegradation review.

PolyMet's Antidegradation Evaluation and MPCA's subsequent review demonstrate that water quality degradation caused by the proposed project cannot be avoided, but will be prudently and feasibly minimized, existing and beneficial uses will be protected, and the proposed activity is necessary to accommodate important economic or social changes in the geographic area in which degradation of existing high water quality is expected. The proposed project will implement the best technology in practice and treatment. Therefore, the MPCA has made a preliminary determination that the project will satisfy antidegradation standards in Minnesota Rules 7050.0265, 7052.0300, and 7052.0330.

While the project will cause degradation for some water quality parameters, the project will also cut off movement of existing polluted groundwater associated with former LTVSMC tailings basin. As a result, the headwaters of Second Creek, Trimble Creek, and Unnamed Creek will experience an improvement in water quality for sulfate and salty parameters.

## Background

The project's proposed discharge location is in the headwater areas of Trimble Creek, Unnamed Creek (tributaries to the Embarrass River) and Second Creek (tributary to the Partridge River) in the St. Louis River watershed. The immediate receiving waters for the discharges in the Embarrass River watershed are wetlands which are class 2D, 3D, 4C, 5 and 6 waters. These wetlands drain to Trimble and Unnamed Creeks which are class 2B, 3C, 4A, 4B, 5 and 6 waters. The immediate receiving water for the discharge in the Partridge River watershed is Second Creek, which is a class 2B, 3C, 4A, 4B, 5 and 6 water. All the above-identified waters are located in the Lake Superior basin and are classified as Outstanding International Resource Waters (OIRWs). The nearest downstream restricted Outstanding Resource Value Water (ORVW) – a water where a new discharge is not allowed until there is no prudent or feasible alternative - is Lake Superior. There are no prohibited ORVWs – waters where a new discharge is not allowed – downstream of the project.

Under the antidegradation requirements, all existing uses of each water must be maintained ("tier 1" protection). For the purposes of assuring protective antidegradation requirements, all downstream waters were evaluated by MPCA for Class 2 standards as waters "of high quality" on a parameter-by-parameter basis as defined in Minn. R. 7050.0255 subp. 21. This ensures that the antidegradation procedures provide "tier 2" protection. "Tier 2" protection prohibits the lowering of high water quality unless such resulting water quality is necessary to accommodate important economic or social changes in the geographic area in which degradation of existing high water quality is anticipated. The antidegradation procedures also considered "tier 3" protection for OIRWs and ORVWs. "Tier 3" protection requires that the exceptional characteristics of outstanding resource waters be maintained. The antidegradation procedures for this project also includes mercury, the only bioaccumulative chemical of concern for the Lake Superior basin under Minn. R. 7052.0300 that is present in the proposed discharge.

Low flow receiving water conditions represent the period when point sources have the greatest potential to impact receiving water quality. Minnesota Rule 7053.0195, subpart 7, requires control of pollutants from point source dischargers to ensure water quality standards are maintained at specified minimum stream flows. For all parameters of concern for this proposed discharge, the receiving water flow rate required to be protected for is the 7Q10. The 7Q10 is the lowest 7-day average flow that is expected to occur once every 10 years. In this review, the protective receiving

water 7Q10 flow rate for all discharge locations is 0.0 CFS because of the headwaters nature of the site location. A 0.0 CFS receiving water flow rate does not allow for any assimilative dilution of discharged pollutants.

The MPCA chose to evaluate surface water degradation at three locations (TC-1a, PM-7/SD026 & PM-11; Map 1 below). These locations had adequate data to determine the existing water quality. The MPCA determined that if degradation was minimized at these three locations, then degradation would also be minimized for all other downstream waters.

Outfall SD001 will be monitored for effluent water quality for compliance at the point of discharge from the wastewater treatment system (WWTS). The effluent is then distributed to three separate headwater receiving water bodies (Unnamed Creek wetlands, Trimble Creek wetlands, and Second Creek), via outfalls SD002 – SD011. Unnamed Creek is characterized by the data from monitoring location PM-11. Trimble Creek is characterized by the data from monitoring location TC-1a. Second Creek is characterized by the data from monitoring location SD026/PM-7. The treated effluent will be distributed to wetlands in the headwaters area of Unnamed Creek on the west side of the FTB via outfalls SD002 and SD003. Treated effluent will be distributed to wetlands to the north of the FTB to the headwaters area of Trimble Creek via outfalls SD004 – SD010. Treated effluent will be distributed directly to Second Creek via outfall SD011.

The remainder of this document summarizes the process of MPCA's review of PolyMet's Antidegradation Evaluation, then demonstrates compliance with each subpart of the applicable antidegradation regulations included in Minn. R. 7050.0265. The rule language of each subpart is followed by MPCA's assessment of how the Antidegradation Evaluation submitted by PolyMet addressed each requirement.