



September 22, 2025

Minnesota Pollution Control Agency
c/o Stephanie Handeland
520 Lafayette Road North
Saint Paul, MN 55155

Ms. Handeland:

Thank you for the opportunity to comment on the U.S. Steel Corp. Keetac Tailings Basin and Mine draft wastewater permits (NPDES permits MN0055948 and MN0031879) and associated preliminary determination on Keetac's water quality standard variance denial.

MiningMinnesota is committed to promoting sustainable and environmentally responsible mineral production in our state. Our organization works with local citizens, businesses, and other organizations to grow Minnesota's economy and support domestic manufacturing and the supply chain through the responsible development of natural resources.

There are several areas that warrant further consideration by the MPCA in these draft documents, as follows:

- Wild rice standard
- Sulfate standard and methylmercury production
- Specific conductance – aquatic life

Wild rice standard

As identified in our comment letter dated Feb. 7, 2025, MiningMinnesota urged MPCA to consider evaluation of the wild rice standard in the 2025-2027 Triennial Standards Review. Specifically, we recommended MPCA resume its work on evaluation of the multiple factors that affect the health of wild rice in the environment. As described in our Feb. 7, 2025 letter, which provides evidence raised by the MPCA to Governor Dayton's Wild Rice Task Force¹, it is to the detriment of our State's economy to not address the wild rice standard as directed by the Minnesota legislature in 2011. MPCA should consider the site-specific variance request or the timing of the compliance schedule to allow for MPCA's

¹ MPCA Sulfate Treatment Presentation found at [State of Minnesota Sample PowerPoint Template](#)



consideration of these other factors prior to the implementation of the sulfate standard for both of Keetac's NPDES permits, to ensure that the effluent limit MPCA applies is supported by the science of the best available water quality standard for the beneficial use.

Sulfate standard and methylmercury production

In addition to evaluation of sulfate on wild rice, MPCA should also consider the effects of sulfate concentrations on methylmercury formation. A recent article (attached) in *Nature Communications*, with authors from University of California Davis and USGS, including researchers that MPCA has collaborated with, shows a correlation between sulfate, sulfide, dissolved organic matter, and methylmercury. This research found that methylmercury production is optimized with sulfate concentrations between 2-12 mg/L, with lower methylmercury production at higher sulfate concentrations (> 12 mg/L), as shown on Figure d below, as taken from page 5 of this article.

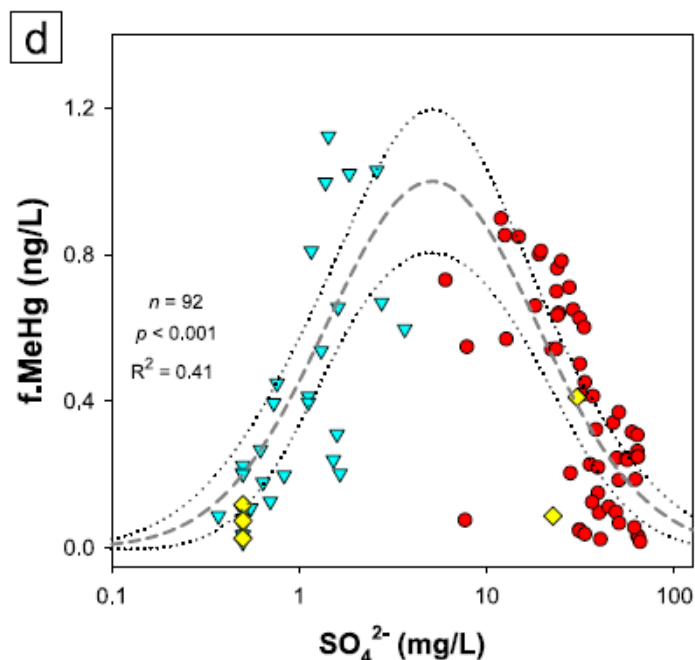


Figure d. Methylmercury response to sulfate. Semi-log scatter plot between the concentration of sulfate (SO_4^{2-}) and filtered methylmercury concentration (f.MeHg). Poulin, B.A., Tate, M.T., Janssen, S.E., Aiken, G.R., Krabbenhoft, D.P. 2025. "A comprehensive sulfate and DOM framework to assess methylmercury formation and risk in subtropical wetlands." *Nature Communications*. 16:4253. <https://doi.org/10.1038/s41467-025-59581-w>



This research supports applying a higher sulfate standard, as shown on the bell curve of Figure d, to minimize methylmercury production in these waterbodies. This correlates well with the use of a slightly higher sulfate standard, as requested in Keetac's site-specific variance request, while being more protective of these waters from methylmercury production.

Specific conductance – aquatic life

The prior water quality standard for specific conductance for Class 4A irrigation was 1,000 uS/cm. With the recent changes to the Class 4A regulations, the standard turned into a narrative standard for irrigation, and the Keetac Fact Sheets acknowledge this under "Specific Conductance – Class 4A Irrigation."

The next section of the Keetac Fact Sheets addresses specific conductance as it relates to aquatic life. It states, "Minnesota does not [sic] have a Class 2 numeric aquatic life water quality standard that protects aquatic life from excess total salts" (page 33 of 63 on Permit MN0055948 Fact Sheet). Similarly, "EPA has not established a national guidance document to perform this translation that is applicable to Minnesota's Northern Lakes and Forest Ecoregion" (page 33 of 63 on MN0055948). However, on the next page, the Keetac NPDES/SDS Permit Program Fact Sheet refers to "Minnesota's draft regional benchmark of 329 uS/cm that is likely to protect aquatic life." Since this isn't a water quality standard in Minnesota, we researched this statement, given that no reference was provided on the Fact Sheets. We found an undated document titled "Implementing the Aquatic Life Narrative Standard" on MPCA's website at this link:

<https://www.pca.state.mn.us/sites/default/files/wq-wwprm1-36.pdf>

It is unclear when this document was written, where this document was from, and what MPCA is doing with this document, but this document does refer to a regional specific-conductance benchmarks, including a regional benchmark for specific conductance for "50-Northern Lakes and Forests". To our knowledge, this is not a document that has been out for public review or comment or provided to industrial or municipal dischargers; however, MPCA uses this "draft regional benchmark" as a threshold that if the effluent is below it, the water would be protective of Minnesota's aquatic life. If MPCA is going to implement new guidance it has developed, as it seems to do here, it would put the guidance out for public comment.

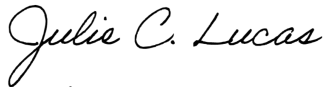
Summary

Thank you for the opportunity to provide input on this important process. Please consider these comments with regard to Keetac's draft wastewater permits (NPDES permits MN0055948 and MN0031879) and associated preliminary determination on Keetac's water quality standard variance denial. We urge the MPCA to reconsider the wild rice standard



especially, and when doing so, consider its implications on methylmercury production. As stated in this letter, we recommend MPCA reconsider the site-specific variance request or the timing of the compliance schedule to allow for MPCA's consideration the wild rice standard and its effects on methylmercury. Additionally, MPCA should be clear in its intent to utilize guidance it develops and ensure it allows regulated parties an opportunity to evaluate and comment on guidance it intends to use in permitting.

Respectfully,



Julie Lucas

Executive Director, MiningMinnesota

Attachments:

1. Feb. 7, 2025 Letter from MiningMinnesota on the 2025-2027 Triennial Standards Review
2. Article from *Nature Communications*: Poulin, B.A., Tate, M.T., Janssen, S.E., Aiken, G.R., Krabbenhoft, D.P. 2025. "A comprehensive sulfate and DOM framework to assess methylmercury formation and risk in subtropical wetlands." *Nature Communications*. 16:4253. <https://doi.org/10.1038/s41467-025-59581-w>

