Minnesota Center for Environmental Advocacy
Comments on the Environmental Assessment Worksheet for
U.S. Steel Keetac Tailings Storage Facility Project

October 2, 2025

I. Introduction

Minnesota Center for Environmental Advocacy ("MCEA") appreciates the opportunity to submit these comments on the Environmental Assessment Worksheet ("EAW") for the U.S. Steel Keetac Tailings Storage Facility Project ("Proposed Project"). MCEA is pleased to see that the Minnesota Department of Natural Resources ("DNR") conducted an environmental review of this significant modification of the Keetac tailings basin. However, the EAW lacks an analysis of how the Proposed Project will affect dam safety at the tailings basin, even though improving dam safety is a main purpose of the project. Before DNR makes any decisions regarding permitting for the Proposed Project, it must either revise the EAW to include a dam safety analysis or order an EIS that will include this critical information.

II. The Proposed Project is intended to improve safety at the Keetac tailings basin

The Keetac tailings basin was first used to store mining waste from U.S. Steel's Keetac taconite mine in 1967.[1] Since that time, the facility has been developed in stages, using topography and dams[2] to confine the tailings.[3] Stage 1 was used until the 1980s, when Stage 2 Exterior dams were first built to the south.[4] The area inside Stage 2 Exterior

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[1] DNR, *Environmental Assessment Worksheet for U.S. Steel Keetac Tailings Storage Facility Project* at 7 (Aug. 25, 2025) ("EAW").

[2] DNR's EAW distinguishes between dams and dikes, but this comment will refer to all artificial barriers intended to impound water or waste materials containing water at the tailings basin as "dams" in compliance with the definition in DNR's rules. *See* Minn. R. 6115.0320, subp. 5 (defining "dam" as "any artificial barrier .. which does or may impound water and/or waste materials containing water," and excluding dikes that are constructed for flood control purposes "which are not intended to act as impoundment structures.") All barriers referenced in the EAW are intended to impound water and/or waste materials containing water. *See* EAW at 8 (defining dams as storing water and dikes as storing tailings). Regardless of whether these barriers are called "dams" or "dikes" in the EAW, they must remain in compliance with Minnesota's rules on dam safety and must remain governed by U.S. Steel's dam safety permit. To clarify this issue, DNR should revise the EAW to refer to "dams" throughout, in compliance with its own rules.

[3] EAW at 7.

[4] *Id.*

was used for tailings deposition until 1993.[5] Thereafter, Stage 2 Interior dams were built inside the Stage 2 space, "constructed upon tailings that had been deposited into the Stage 2 Exterior," using an upstream method, and tailings have been discharged into this interior space since that time.[6] After an EIS in 2010, DNR issued a permit allowing further upstream raises to Stage 2 Interior dams, which eventually rose to more than 1,500 feet.[7]

More recently, however, U.S. Steel has had concerns about the stability of the Stage 2 Interior dams and its tailings deposition plan. After assessing the risk associated with the tailings basin dams, U.S. Steel "identified that continuing to vertically raise Stage 2 Interior at Keetac in an upstream method was not sustainable."[8] U.S. Steel accordingly began evaluating options for continuing to use the tailings basin. In 2022, U.S. Steel received permission to raise the Stage 2 Exterior dams, construct an interior diversion berm, and to depose tailings into this space, "with the intent to improve the stability of the Stage 2 Interior basin embankments."[9] This was intended, however, to be a short term solution.

Now, U.S. Steel expects that both Stage 2 Interior and Stage 2 Exterior will be at their full permitted capacity by 2028, and raising Stage 2 Interior dams as planned is not practicable.[10] Accordingly, it has requested approval of a project that would vertically raise Stage 2 Exterior dams using downstream and modified centerline dams beyond the current tailings basin footprint to allow further tailings placement in the basin.[11] DNR issued an EAW evaluating this project, which noted that the intent of the Proposed Project was not only to align the tailings basin capacity with Keetac's mine life but also "to reduce risk and improve the safety of the [tailings basin] … with the ultimate goal of reducing the risk of dam failure."[12]

III. DNR must revise the EAW or order an EIS for an analysis of dam safety

The Keetac EAW entirely avoids analysis of the effects of a breach of the dams at the tailings basin, even though the very purpose of the Proposed Project is to reduce the risk of dam failure. This critical absence means that DNR must revise the EAW or order an EIS to (1) analyze dam safety, to determine the *potential* for significant environmental effects, and (2) evaluate the likely results of a dam breach, to identify the *significance* of

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[5] *Id.*
[6] *Id.* at 7, 14.
[7] EAW at 11, 13.
[8] *Id.* at 13.
[9] *Id.* at 7.
[10] *Id.* at 7, 13.
[11] *Id.* at 7, 8, 13.
[12] *Id.* at 8.

the environmental effects. Only with this information can DNR provide a full analysis of the environmental impacts of the Proposed Project.

Under the Minnesota Environmental Policy Act, DNR must order an EIS if the Proposed Project has the "potential for significant environmental effects."[13] In making this determination, DNR must consider the type, extent, and reversibility of environmental effects; cumulative potential effects; whether effects are mitigated by public regulatory authority; and whether effects can be anticipated and controlled through other available studies.[14] If DNR decides that "information necessary to a reasoned decision about the potential for, or significance of, one or more possible environmental impacts is lacking, but could be reasonably obtained," DNR must order an EIS or postpone the decision on the need for an EIS in order to obtain the lacking information.[15]

A massive tailings basin filled with hundreds of millions of tons of dangerously polluted mining waste, like the Keetac tailings basin, poses an intrinsic potential risk of significant environmental effects because of the ever-present possibility of a breach. Notably, even DNR itself has previously recognized that a breach of the Keetac tailings basin dams would have the potential for significant environmental effects. In the 2009 EIS evaluating an expansion of the Keetac mine and tailings basin, DNR stated, "as with all tailings basin dams, there is a potential for failure, and therefore an adverse effect to the environment."[16]

However, sixteen years after this pronouncement by DNR, the EAW contains no analysis of the risk of a dam breach or the environmental effects of such an event, and little information about dam safety.[17] Such information could be obtained from U.S. Steel. Accordingly, DNR does not have information necessary to make a decision about the potential for or significance of the environmental effects of a dam breach and must obtain the information or order an EIS.

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[13] Minn. Stat. § 116D.04, subd. 2a(a).
[14] Minn. R. 4410.1700, subp. 7.
[15] *Id.*, subp. 2a.
[16] DNR, *U.S. Steel Keetac Taconite Mine Expansion Project, Final Environmental Impact Statement*, at 4-117 (Nov. 2010) ("2010 Keetac EIS") (Excerpt Attached as Ex. 1).
[17] The EAW form does not have a specific question on this topic, but question 22 asks whether there are any other potential environmental effects from the project, and the EAW states that none are anticipated. EAW at 80.

A. The limited information in the EAW indicates the Keetac tailings basin has the potential to cause environmental effects through breach

With respect to the *potential* for effects, the limited amount of information in the EAW raises serious questions that require further study. Tailings basins filled with mining waste will always have the potential to breach through a catastrophic failure or smaller release. Around the world, tailings facilities have failed "with increasing frequency and severity,"[18] at much higher rates than water supply reservoir dams.[19] As stated by the Association of State Dam Safety Officials:

> Dams and the reservoirs they create are innately hazardous structures. Failure or mis-operation can result in the release of the reservoir contents—this includes water, mine waste, or agricultural refuse—causing negative impacts both upstream and downstream, or even at locations remote from the dam.[20]

The EAW includes few details about the dams, including information about their dimensions, maps of their precise locations, details about their construction and foundations, and their capacities, both before and after the Proposed Project, that should be included for a complete analysis. While the EAW states that the tailings basin has piezometers and other measuring equipment, it does not state whether all of these are functional[21]—which has been an ongoing issue at another permitted tailings basin facility, MilePost 7. Still, the limited information indicates there is cause to be concerned about a potential breach at Keetac.

Some of the new dam raises that are part of the Proposed Project will be constructed as downstream raises, but others are less stable—and cheaper to build—types of dams. The Stage 2 Interior dams are upstream dams, initially built on the tailings discharged into the Stage 2 Exterior area and then raised in an upstream direction.[22] These dams, because their foundation rests on the tailings they are intended to confine, are the

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[18] Jan Morrill et al., *Safety First: Guidelines for Responsible Mine Tailings Management*, Earthworks, MiningWatch Canada, & London Mining Network, at 10 (May 2022), https://earthworks.org/resources/safety-first/ ("Safety First Guidelines") (Attached as Ex. 2).

[19] David M. Chambers & Bretwood Higman, *Long Term Risks of Tailings Dam Failure*, at 1 (Oct. 2011), available at https://earthworks.org/files/pubs-others/ChambersHigmanLongTermRisksofTailingsDamFailureOct11.pdf (Attached as Ex. 3).

[20] Association of State Dam Safety Officials, *Roadmap to Reducing Dam Safety Risks*, https://damsafety.org/Roadmap#RiskofFailure.

[21] EAW at 8.

[22] *Id*. at 7, 14.

most dangerous type of tailings dam, and they are banned in countries including Chile, Peru, and Brazil.[23] The 2009 EIS noted that a breach of the Stage 2 Interior dam might not be contained on the east side of the facility, where there was no constructed embankment—suggesting that even 15 years ago, DNR recognized the risks posed by these dams. In addition, the EAW states that some of the raises of the Stage 2 Exterior dams will be "modified centerline dams."[24] Such dams are still built partially on top of tailings, thus incorporating the feature of upstream dams that makes them the least stable and most dangerous type of tailings dam.[25] U.S. Steel itself clearly has concerns about the stability of the dams at the facility, as it determined that continuing to raise the Stage 2 Interior dams as planned was "unsustainable," and that buttressing of these dams was needed, thus triggering the Proposed Project.

While there are few details in the EAW, it is clear that the Proposed Project also involves a massive expansion of the tailings basin. The tailings basin currently holds tailings from decades of mining in a 5,800 acre deposition area[26]—a space about twice the size of the Minneapolis-St. Paul Airport.[27] If the Proposed Project were built to capacity, the basin would hold 590 million long tons of tailings and the Stage 2 Exterior dams would rise an additional 100 feet, to a height of 1,580 feet.[28] As dam walls get higher and the waste behind them gets deeper, the force against the dam becomes greater, with potential impacts on dam stability. The Proposed Project, then, appears to increase the risk of a dam breach.

However, the true measure of the risks is unclear because the only information about dam stability in the EAW is disconcertingly vague. U.S. Steel asserts that the Proposed Project is intended to improve dam stability, suggesting risk of a dam breach which may be mitigated by the Proposed Project. Yet there is no analysis of the likelihood

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[23] Helen Reid and Jeff Lewis, *Upstream tailings dams pose much higher stability risks, study finds*, Reuters (March 5, 2021), available at https://www.reuters.com/article/economy/upstream-tailings-dams-pose-much-higher-stability-risks-study-finds-idUSKBN2AX0YI/; *see also Safety First Guidelines*, at 16 (calling for a ban on upstream dam construction and a closure of current upstream dams) (Ex. 2); D. Kossoff et. al, *Mine tailings dams: Characteristics, failure, environmental impacts, and remediation*, 51 Applied Geochemistry 299, 235 (Dec. 2014) ("Upstream raised dams are the most likely to fail.") (Attached as Ex. 4)

[24] EAW at 8.

[25] *Safety First Guidelines*, at 23 (explaining that a modified centerline dam "must be considered an upstream dam because it still includes construction of the dam on top of uncompacted tailings.") (Ex. 2).

[26] EAW at 7.

[27] Minneapolis-St. Paul International Airport, *Wikipedia*, https://en.wikipedia.org/wiki/Minneapolis%E2%80%93Saint_Paul_International_Airport.

[28] EAW at 9, 11.

of a catastrophic failure or lesser breach either before or after the construction of the Proposed Project, and how the project will impact stability.

One critical measure of a dam's stability is its factors of safety, but the EAW states that the "DNR does not specify factor of safety criteria for analysis."[29] Instead, U.S. Steel itself apparently selected a factor of safety that "meets or exceeds industry standards is defensible to independent review."[30] This factor of safety—chosen by the regulated party and not the regulator—is not specified. Considering that the 2010 EIS used a Total Stress Analysis factor of safety of 1.2, which the EIS admitted was "slightly less protective than the traditional value of 1.3,"[31] allowing U.S. Steel to choose its own factor of safety without disclosing it to the public is inadequate. When the instability of the dams is the very reason for the Proposed Project, it is critical for the EAW to analyze that stability to determine the potential for environmental effects, but this EAW fails to do so.

B. The limited information in the EAW indicates the effect of Keetac tailings basin breach would be significant

With respect to the *significance* of the effects, again, the EAW includes little information but raises serious questions that merit further analysis. A breach of a dam that holds polluted mining waste will always have the possibility of causing serious environmental problems. Around the world, breaches of tailings basin dams have led to deaths, destruction of property, devastation of wildlife and aquatic ecosystems, and long-term toxic contamination of water and soils.[32] Even smaller, non-catastrophic breaches, leakages, or overtopping can lead to serious environmental consequences for nearby waters.[33]

After the Proposed Project is constructed, the Keetac tailings basin could contain up to 590 million long tons of tailings. A breach that would spill even a fraction of these tailings could be devastating to nearby people, plants, animals, aquatic life, and waters. The Keetac tailings basin is built in the middle of forests, peatlands, and wet forests; in an area with wildlife including some federal and state-listed species such as Canada lynx and gray wolf; in the immediate vicinity of two lakes and five streams with aquatic life including fish, reptiles, and amphibians; and above several groundwater aquifers, where

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[29] *Id.* at 8.
[30] *Id.*
[31] 2010 Keetac EIS at 4-114 (Ex. 1).
[32] D. Kossoff et. al, *Mine tailings dams: Characteristics, failure, environmental impacts, and remediation*, 51 Applied Geochemistry 299, 235-40 (Dec. 2014) (Ex. 4); Association of State Dam Safety Officials, *Roadmap to Reducing Dam Safety Risks*, https://damsafety.org/Roadmap#RiskofFailure.
[33] *Safety First Guidelines* at 15 (Ex. 2).

groundwater is as little as three feet below the surface.[34] The city of Keewatin is just over two miles away from the tailings basin, and in the 2010 EIS, DNR noted that there were dwellings to the east and northwest sides of the dam.[35] These natural resources and human habitations could all be affected by a dam breach. But because the EAW explains neither what pollutants are present in the basin waste that could be released in a breach, nor where the released tailings are likely to go, determining the significance of the environmental effects is not possible.

C. DNR cannot avoid the required analysis of determining the potential for significant environmental effects by asserting it will address effects through its ongoing regulatory authority

DNR cannot rely on its ongoing regulatory authority to avoid including this information in environmental review, as doing so would miss a critical step. Before DNR can rely on mitigation by its ongoing regulatory authority to avoid an EIS, it must explain how its proposed mitigations are "specific, targeted, and are certain to be able to mitigate the environmental effects."[36] As explained by the Minnesota Supreme Court, vague promises of future mitigation are insufficient; instead an agency "must have some concrete idea of what problems may arise and how they may specifically be addressed by ongoing regulatory authority."[37]

Here, DNR cannot explain how its regulatory authority will address the problems, because it has not yet identified those problems. DNR cannot jump to step three of the analysis required by the Minnesota Rules for determining the need for an EIS—first, it must identify the type, extent, and reversibility of the environmental effects and any cumulative potential effects before it can determine whether those specific effects can be addressed by mitigations.[38] It has entirely failed to do so, and the Minnesota Environmental Policy Act requires it to conduct this analysis before DNR takes any actions with respect to the Proposed Project.

IV. Conclusion

One of the main purposes of environmental review is to inform the public about a proposed project's potential for significant environmental effects before governmental

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[34] EAW at 37, 43, 57-60, 66.
[35] *Id.* at 66; 2010 Keetac EIS at 4-116 (Ex. 1).
[36] *Citizens Advocating Responsible Dev. v. Kandiyohi Cnty. Bd. of Comm'rs*, 713 N.W.2d 817, 835 (Minn. 2006).
[37] *Id.*
[38] Minn. R. 4410.1700, subp. 7.

decisions are made.[39] For large tailings basins in particular, because of their inherent risks, information about the possibility and effects of a breach should be made publicly available before permitting so that the public understands the risks of the project.[40] The Keetac tailings basin EAW, however, fails to fulfill that purpose and inform the public about real and serious risks—risks that DNR itself recognized in an earlier EIS. Specifically, the EAW does not include the following information:

- Details about the dams to be built and/or raised by the Proposed Project, including their dimensions, maps of their locations, details about their construction and foundations, and their capacity, both before and after the Proposed Project
- Information about the functionality of piezometers and other measuring stability equipment at the tailings basin
- An analysis of the current stability of the dams at the tailings basin facility, and how the Proposed Project will affect their stability
- The factors of safety being used to analyze the stability of the dams
- An analysis of the environmental effects that would result from different types of dam breaches, including a catastrophic collapse, to people, wildlife, ecosystems, aquatic life, and waterways

Because this information is absent from the EAW, DNR cannot make a decision about the potential for or significance of the environmental effects of a dam breach at the tailings basin. Accordingly, it must amend the EAW to include this information or order an EIS.[41]

Respectfully submitted,

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[39] *See* Minn. Stat. § 116D.04, 2a(d) (requiring public notice and comment for Environmental Assessment Worksheets).
[40] *See Safety First Guidelines*, at 37-38 (Ex. 2). These guidelines note that while some companies claim releasing such information creates a security risk, there is no evidence for such claims. *Id.* at 38.
[41] *See* Minn. R. 4410.1700, subp. 2a.