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December 23, 2016

DELIVERED BY MESSENGER
Erik Smith (erik.smith@state.mn.us)
Industrial Division
Minnesota Pollution Control Agency
520 Lafayette Rd. N.
St. Paul, MN 55155

RE: U.S. Steel Minntac Tailings Basin Area Draft NPDES/SDS Permit MN0057207

Dear Mr. Smith,

The following comments are submitted on behalf of WaterLegacy, a Minnesota non-profit organization formed to protect Minnesota's water resources and the communities that rely on them. We've provided these comments with referenced exhibits on a recordable DVD.

WaterLegacy appreciates that the Minnesota Pollution Control Agency (MPCA) has finally placed the U.S. Steel Minntac Tailings Basin Area Draft NPDES/SDS Permit MN0057207[1] (Minntac Tailings Basin Draft Permit) on public notice nearly a quarter of a century after the prior permit lapsed in 1992. However, we believe that the MPCA's Minntac Tailings Basin Draft Permit is inadequate to protect Minnesota waters, waters of the United States, or the wild rice, aquatic life and human beings who depend on clean water.

WaterLegacy believes that critical facts providing the foundation for issuance of a more rigorous permit are beyond reasonable dispute, and that the MPCA should take immediate action to rewrite the Minntac Tailings Basin Permit and issue a final permit in compliance with state water quality standards and the federal Clean Water Act. The revised Minntac Tailings Basin Permit should achieve the following:

1. Both Minntac Tailings Basin direct discharge to surface waters and discharge through groundwater shown to be hydrologically connected to surface waters of the United States should be controlled under the National Pollutant Discharge Elimination System (NPDES) program and in accordance with the Clean Water Act (CWA).

2. Under the Clean Water Act, Minnesota's existing wild rice sulfate standard of 10 milligrams per liter should be applied to all wild rice waters impacted by Minntac Tailings Basin discharge, including the Sand River, Sandy Lake, Little Sandy Lake and possibly also Dark Lake.

3. Limitations on specific conductance should be set for Minntac Tailings Basin discharge to Class B waters to protect aquatic life in compliance with the Clean Water Act and

[1] U.S. Steel Minntac Tailings Basin Area Draft NPDES/SDS Permit MN0057207 (November 2016), attached as Exhibit 1 (Minntac Tailings Basin Draft Permit).

Minnesota's narrative water quality standards.

4. Minnesota's water quality standard for manganese should be applied in compliance with state law and the Clean Water Act to prevent pollution of drinking water with a contaminant that impairs neurological functioning of infants, children and adults.

5. Compliance mechanisms, including the compliance schedule, monitoring and toxicity testing proposed for the Minntac Tailings Basin Permit, should be revised to provide a reasonable assurance of compliance with water quality standards set in accordance with state and federal law.

6. Effects of elevated sulfate discharge from the Minntac Tailings Basin on downstream impairments due to mercury methylation and phosphorus release from sediments should be considered in determining appropriate monitoring, treatment technologies and pollution prevention.

1. Both Minntac Tailings Basin direct discharge and discharge through groundwater that is shown to be hydrologically connected to surface waters of the United States should be controlled under the Clean Water Act NPDES permit program.

The MPCA argues in the Fact Sheet for the Minntac Tailings Basin Draft Permit that federal NPDES program requirements under the Clean Water Act only govern the SD001 outfall to surface waters on the west side of the Tailings Basin and do not govern discharges to groundwater or seepage from the Minntac Tailings Basin.[2] This position is inconsistent with the Clean Water Act, the weight of legal precedent, and specific interpretations of the application of the Clean Water Act to Minntac Tailing Basin discharge to surface waters through hydrologically connected groundwater rendered by the U.S. Environmental Protection Agency (EPA) over the past three years. In addition, the factual record is clear that the Minntac Tailings Basin is a point source where pollutants have been collected and channeled and that these pollutants have discharged to and impacted hydrologically connected surface waters of the United States, including the Dark River, Sand River and their tributaries and adjacent wetlands, including Sandy Lake, Little Sandy Lake, Dark Lake, Timber Creek and Admiral Lake.

The Clean Water Act prohibits "the discharge of any pollutant" except in compliance with certain sections of the Act, including section 1342, which is applicable to NPDES permits. 33 U.S.C. §1311(a). The Clean Water Act defines "discharge of a pollutant" as "any addition of any pollutant to navigable waters from any point source." 33 U.S.C. §1362(12). Navigable waters are defined by the Clean Water Act as "waters of the United States," 33 U.S.C. §1362(7) and a "point source" is

> any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.

[2] MPCA, NPDES/ SDS Permit Program Fact Sheet Permit Reissuance MN0057207 (November 2016) (MPCA Fact Sheet), p. 12, attached as Exhibit 2.

33 U.S.C. §1362(14). The Clean Water Act only allows discharge of pollutants when an NPDES permit governing the pollutant is issued and complied with. See 33 U.S.C. §1342.

The EPA has long interpreted its rules to find that a wide range of discharges come within the purview of the NPDES program under the Clean Water Act. "As a legal and factual matter, EPA has made a determination that, in general, collected or channeled pollutants conveyed to surface waters via ground water can constitute a discharge subject to the Clean Water Act."[3]

The question of whether groundwaters connected to surface waters are *themselves* navigable waters of the United States is an unresolved question. However, "The majority of courts have held that groundwaters that are hydrologically connected to surface waters are regulated waters of the United States, and that unpermitted discharges into such groundwaters are prohibited under section 1311." *Williams Pipe Line Co. v. Bayer Corp.*, 964 F. Supp. 1300, 1319 (S.D. Iowa 1997).

As explained in *Hawai'i Wildlife Fund v. County of Maui*, 24 F. Supp. 3d 980, 998 (D. Haw. 2014), "it would make no sense to exempt a polluter from regulation simply because its pollution passes through a conduit . . . when it is established that groundwater is a conduit for pollutants, liability may attach to a discharge into that groundwater. *See also N. Cal. Riverwatch v. Mercer Fraser Co.,* No. C-04-4620 SC, 2005 U.S. Dist. LEXIS 42997, at *7-8; 2005 WL 2122052 (N.D. Cal. Sept. 1, 2005)("[I]t would hardly make sense for the CWA to encompass a polluter who discharges pollutants via a pipe running from the factory directly to the riverbank, but not a polluter who dumps the same pollutants into a man-made settling basin some distance short of the river and then allows the pollutants to seep into the river via the groundwater.")

Several cases involving tailings ponds and similar mining impoundments have held that an NPDES permit is required for discharge to groundwater with a demonstrated hydrological connection to surface waters. In *Washington Wilderness Coalition v. Hecla Mining Co.*, 870 F. Supp. 983, 990-991 (E.D. Wash., 1994), the court allowed plaintiffs to pursue a claim for discharge without a NPDES permit against the mining company for seeps and leaks from a tailings pond into groundwater where pollution could be traced to a hydrologically connected creek and lake. Recently, in *Yadkin Riverkeeper, Inc. v. Duke Energy Carolinas, LLC*, 141 F. Supp. 3d 428, 444-446 (M.D. N. Car., 2015), a claim was allowed under the Clean Water Act for a utility's failure to obtain an NPDES permit for seepage from a coal ash lagoon impoundment point source into groundwater that was hydrologically connected to a lake and a river, thus serving as a conduit to navigable waters. In *Ohio Valley Envtl. Coalition v. Pocahontas Land Corp*. 2015 U.S. Dist. LEXIS 59910, at *22-23; 80 ERC (BNA) 2193; 2015 WL 2144905 (S. D. W. Va., May 15, 2015), the court ordered a coal mining company to apply for an NPDES permit for discharge from a sedimentation pond which leached pollutants into a hydrologically connected receiving stream, resulting in elevated levels of conductivity, sulfates, calcium, magnesium, and TDS.

The surface waters potentially impacted by the Minntac Tailings Basin are waters of the United States under the Clean Water Act. Sand River and Dark River are navigable in fact and are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce. 40 C.F.R. §230.3(o)(1)(i). Dark River is a headwater tributary of the Little Fork

[3] U.S. EPA, *Proposed National Pollutant Discharge Elimination System Regulations for Concentrated Animal Feeding Operations*, 66 Fed. Reg. 2960, 3016 (Jan. 12, 2001).

River and Sand River is a major tributary of the Pike River, which flows into Lake Vermillion's Pike Bay in the Vermillion River Watershed. Both the Little Fork River and the Vermillion River watersheds are in the Rainy River Basin, whose waters flow north into Canada, eventually arriving in Hudson Bay.[4] Sandy Lake, Little Sandy Lake, Dark Lake, Admiral Lake, Timber Creek and the wetlands adjacent to the Minntac Tailings Basin are tributaries of the Sand River or Dark River or lakes or wetlands adjacent to these rivers. 40 C.F.R. §§230.3(o)(1)(v) and (iv); 230.3(o)(3)(i), (iii) and (iv).

As with the tailings pond in the *Hecla Mining Co.* case, the coal ash lagoon impoundment in the *Duke Energy Carolinas* case and the sedimentation pond requiring an NPDES permit in the *Pocahontas Land Corp.* case, the Minntac Tailings Basin has contained, channeled and impounded wastes constituting a point source. As the Minntac Tailings Basin Draft Permit explains, an average of 35 million long tons per year of tailings are disposed of each year in the tailings basin.[5] Surface runoff water enters the basin through four culverts; stockpile runoff seeps through the perimeter dam; and wastewater is impounded in various basin cells by dams.[6] Wastewater is channeled into the tailings basin: "The agglomerator process water, sewage plant discharge, laboratory wastewater, plant non-process water and surface runoff from the plant area enter the south side of the basin through a series of pipes and ditches."[7]

The EPA has specifically discussed the need to apply NPDES requirements to seepage from the Minntac Tailings Basin to groundwater that is hydrologically connected to surface waters. Discussing impacts of the Minntac Tailings Basin on the Sand River and Dark River in 2013, the EPA emphasized, "EPA has consistently interpreted the Clean Water Act (CWA) to apply to discharges of pollutants from a point source to surface water that occur via directly connected ground water."[8]

The EPA cautioned that, based on surface water monitoring in the Sand River watershed, both the seep collection and return system (SCRS) already installed in the Sand River watershed and a similar system proposed for the Dark River watershed "may not be inclusive of all the seepage discharging" from the tailings basin.[9] The EPA stated that Minntac discharge through ground water with a direct hydrological connection to surface water would require an NPDES permit to comply with the Clean Water Act:

> EPA understands that USS may have installed the seep collection and return system as an approach to eliminate the surface discharge. . . Section 301 of the CWA prohibits point source discharges to surface waters, either directly or via directly connected ground water, unless the discharge is in compliance with an NPDES permit. . .
>
> To the extent that USS may only be converting the path through which pollutants are discharged to surface water or reducing the volume of the discharge, EPA expects that the discharges will continue to be subject to NPDES permit requirements. If a permit is

[4] Summary information from MPCA describing and mapping Basins and Major Watersheds in Minnesota, Rainy River Basin, Little Fork River and Vermillion River is attached as Exhibit 3.
[5] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, p. 5.
[6] *Id.*
[7] *Id.*
[8] EPA Region 5, letter of Peter Swanson, Chief Watersheds and Wetlands Branch to Tamara Cameron, U.S. Army Corps St. Paul District (May 15, 2013), p. 4, attached as Exhibit 4.
[9] *Id.*

> terminated (or a discharger decides not to seek renewal of a permit) without permanent elimination of the entire discharge, the discharger would risk being found in violation of the CWA for discharge without a permit. [10]

When the MPCA circulated a pre-public notice draft Minntac Tailings Basin Permit in December 2014, that draft permit[11] and the MPCA's draft Fact Sheet supporting it (like the current draft and Fact Sheet) denied application of Clean Water Act requirements to discharge from the tailings basin through groundwater.[12] In December 2014, the EPA clearly stated that the Clean Water Act required an NPDES permit to apply to *all* discharges from the tailings basin causing exceedances of surface water:

> We are concerned that this draft permit as written does not address, under MPCA's approved National Pollutant Discharge Elimination System (NPDES) program and in accordance with the Clean Water Act (CWA), all discharges to surface waters from this tailings basin. MPCA acknowledges in the fact sheet that discharges from this 8,000 acre tailings basin are causing exceedances of surface water quality standards. Based on this and facts supporting this conclusion, the CWA requires an NPDES permit for all such discharges to surface waters from the tailings basin. The original NPDES permit, which was issued in 1987, did not contemplate the full extent of the discharges to surface water from this facility. In the years between expiration of that permit and today the discharges to surface waters have continued and are better understood. . . [W]e are concerned that some of the statements in MPCA's draft fact sheet regarding EPA's interpretation of the scope of the NPDES program are incorrect and should be corrected prior to public notice of this draft permit.[13]

There can be no reasonable dispute that seepage from the Minntac Tailings Basin through hydrologically connected groundwater is resulting in exceedances of surface water quality standards. The MPCA has repeatedly confirmed this direct connection and causal relationship:

> The MPCA recognizes that basin-impacted groundwater is currently reaching surface waters and having an impact on those surface waters.[14]
>
> The mitigation efforts and investigations conducted at the basin have shown that there is significant seepage escaping the basin over its 8000+ acre footprint and that this seepage is causing exceedances of water quality standards in surface water and groundwater in a broad area surrounding the basin.[15]
>
> Monitoring results and the configuration of the local water table indicate that pollutants enter the Dark River from the tailings basin via surface flow, which originates at seeps such as SD001, and groundwater flow that enters the Dark River as baseflow both near

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[10] *Id.*, p.5
[11] U.S. Steel Minntac Tailings Basin Area Pre-publication Draft NPDES/SDS Permit MN0057207 (December 2014), attached as Exhibit 5.
[12] MPCA, NPDES/ SDS Permit Program Fact Sheet Permit Reissuance MN0057207 (December 2014 DRAFT), pp.6-8 (MPCA Pre-pub Draft Fact Sheet 2014), attached as Exhibit 6.
[13] EPA Region 5, letter of Kevin Pierard, Chief, NPDES Programs Branch, to Ann Foss, Minnesota Pollution Control Agency (December 19, 2014), p. 1, attached as Exhibit 7.
[14] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, p. 22; identical quote in MPCA Fact Sheet, *supra*, Ex. 2., p. 38.
[15] MPCA Fact Sheet, *supra*, Ex. 2, p. 6.

> the basin and at unknown distances downgradient from the basin.[16]
>
> [T]he permit proposes monitoring for compliance in the Dark River at two locations: a headwaters location and a downstream location where it is likely that most or all of the tailings-impacted baseflow has emerged.[17]

The MPCA Fact Sheet defines "Discharge(H)" as the "Hydrologic definition" as follows: "The flow of water, including any suspended solids, dissolved chemicals, and or biological materials from one water body or aquifer to another, or through a given cross-sectional area. This includes movement through **both surface water and ground water**."[18] The MPCA then explains that surface waters on both the west and east sides of the Minntac Tailings Basin are or have the potential to be impacted by this discharge:

> Surface water monitoring for compliance with numeric water quality standards and narrative criteria is proposed in streams and lakes that are, or have the potential to be, affected by discharge (H) from the tailings basin. On the west side, this includes the Dark River and Timber Creek. On the east side this includes the Sand River which originates near the basin and passes through Admiral Lake, Little Sandy Lake, and Sandy Lake.[19]

The causal relationship between Minntac Tailing Basin discharge and surface water impacts is clear in the MPCA's explanation that to the north, where hydraulic gradient prevented seepage of discharge(H) to surface waters, parameters were not elevated:

> To the north, there are no surface water features known or suspected of receiving discharge(H) from the basin. There is a lesser hydraulic gradient to the north than to either the east or west and monitoring has not shown any impact to Sand Lake from the basin. Sampling conducted there in 2010 and 2011 indicated an average sulfate concentration of 3.2 mg/L and specific conductance of approximately 100 uS/cm, which are in the anticipated range of background concentrations for these parameters in this region.[20]

Monitoring data since the installation in 2010 of a seep collection and return system (SCRS) on the east side of the Minntac Tailings Basin has confirmed that discharge from the Tailings Basin through groundwater with a direct hydrological connection to Sandy Lake and Little Sandy Lake groundwater continues to impact surface waters despite the SCRS system. The MPCA acknowledges, that although there is no longer any observable flow at SD002 since the SCRS was installed on the east side of the tailings basin, 1854 Treaty Authority monitoring shows that "concentrations of water quality parameters impacted by the tailings basin are greatest at the upstream Twin 1 location and decrease at each successive downstream sampling location."[21]

The 1854 Treaty Authority monitoring, in fact, has shown that there was a decrease in sulfate

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[16] *Id.*, p. 16.
[17] *Id.*
[18] *Id.*, p. 7, emphasis in the original.
[19] *Id.*, p. 14.
[20] *Id.*
[21] *Id.*, p. 17.

concentrations in the Sandy Lake and Little Sandy Lake sites after the first year of seep collection operation, but since then, "sulfate levels in 2011-2016 have varied and showed a trend upward."[22]

Although MPCA asserts in its Fact Sheet that collection of surface seepage from the west side of the Minntac tailings "would eliminate the remaining surface discharge (NPDES) to waters of the United States,"[23] this position is inconsistent with federal law and with clearly demonstrated facts. The Clean Water Act requires that Minntac Tailings Basin discharge to surface waters of the United States through hydrologically connected groundwater be controlled through an NPDES permit in compliance with both state and federal law.

Recommendations:

- The MPCA should revise the Minntac Tailings Basin Draft Permit to apply NPDES controls to all tailings basin discharge to groundwater shown be hydrologically connected to surface waters in the Sand River and Dark River sub-watersheds.

- Limits on Minntac Tailings Basin discharge to surface water through hydrologically connected groundwater must comply with all Minnesota surface water quality standards in conformity with the Clean Water Act.

2. Under the Clean Water Act, Minnesota's existing wild rice sulfate standard of 10 milligrams per liter should be applied to all waters used for the production of wild rice affected by Minntac Tailings Basin discharge.

Under the Clean Water Act, a state with a federally authorized NPDES program is required to issue permits that achieve compliance with all federally-approved water quality standards. 33 U.S.C. §1311(b)(1)(C). Unless the state is imposing more stringent requirements, the state is precluded from issuing an NPDES permit "When the conditions of the permit do not provide for compliance with the applicable requirements of CWA, or regulations promulgated under CWA." 40 C.F.R. §§122.4(a); 123.25(a)(1). Each NPDES permit must include "conditions necessary to achieve water quality standards established under section 303 of the CWA." 40 C.F.R. §§122.44(d)(1);123.25(a)(15).

Minnesota's existing water quality standard (Minn. R. 7050.0224, Subp. 2) limiting sulfate in waters used for the production of wild rice to 10 milligrams per liter (mg/L) is a regulation established under section 303 of the Clean Water Act and approved by the EPA in 1973. In 2011, when the Minnesota Legislature was considering changes to the wild rice sulfate standard, EPA Region 5 clearly explained that the wild rice standard was a federally-approved water quality standard that could only be changed through a federal review process to ensure protection of the beneficial use of waters for wild rice:

> As you know, H.F.1010 and S.F. 1029 propose to modify or suspend the current, federally-approved water quality standard for wild rice waters of 10 mg/L, and H.F. 1010-3 (sec. 19, lines 41.15-41.20), specifically sets 50 mg/L as the numeric criterion for

[22] 1854 Treaty Authority, Sandy Lake and Little Sandy Lake Monitoring (2010-2016), Technical Report 16-06, December 2016, autop. 13 (1854 Treaty Authority Monitoring Report), attached as Exhibit 8.
[23] MPCA Fact Sheet, *supra*, Ex. 2, p. 37.

> sulfate in wild rice waters until a new standard is developed. To the extent that any legislation changes the EPA-approved water quality standards for Minnesota, such revised water quality standards must be submitted to EPA for review and approval pursuant to 33 U.S.C. §1313(c)(2)(A), Clean Water Act (CWA)§303(c)(2)(A), and are not effective for CWA purposes, including National Pollutant Discharge Elimination System (NPDES) permits, unless and until approved by EPA (see 40 C.F.R.§131.21). Should Minnesota wish to submit these to EPA as changes to Minnesota's water quality standards, the federal regulations at 40 C.F.R. §131.6 provide the submittal requirements. These include, among other things, the methods and analyses conducted to support the water quality standards revisions, including how the revised water quality criteria are sufficient to protect the designated uses (see generally 40 C.F.R. §131 Subpart B, and 40 C.F.R. §§ 131.11 and 131.20).[24]

In proposing the Minntac Tailings Basin Draft Permit, the MPCA explicitly declined to apply Minnesota's federally-approved water quality standard limiting sulfate to 10 mg/L to protect the beneficial use of surface waters for wild rice. Minn. R. 7050.0224, Subp. 2. The MPCA cited a law passed by the Minnesota Legislature during the 2015 special session stating that "the agency shall not require permittees to expend money for design or implementation of sulfate treatment technologies or other forms of sulfate mitigation." 2015 Minn. Laws 1st Sp. Sess. Ch. 4, Art. 4, Sec. 136.[25] The MPCA has stated, "To be consistent with this legislation, the draft permit contains no sulfate limits for wild rice and does not require expenditures related to wild rice sulfate limits."[26]

The MPCA's reliance on this session law to avoid application of Minnesota's federally-approved 10 mg/L wild rice sulfate standard to Minntac Tailings Basin discharge[27] violates the federal Clean Water Act. As the EPA emphasized with respect to Minnesota's earlier proposals to legislate change to the wild rice sulfate rule, "A state with a federally authorized NPDES program is required to issue permits that ensure the protection of federally approved water quality standards."[28] Where a state proposes to issue a permit that fails to apply, or to ensure compliance with, any applicable requirement, including water quality based effluent limitations, EPA has the authority to block such permit issuance and issue a permit that meets Clean Water Act requirements. 33 U.S.C. §1342(b); 40 C.F.R. §123.44(e)-(h). EPA may also withdraw its approval of a state NPDES program if a state is not administering the program in compliance with federal requirements. 33 U.S.C. §1342(c)(3); 40 C.F.R. §§123.63, 123.64.

The Clean Water Act also requires that the EPA review new or revised state regulations that disable the application of water quality standards. "The EPA cannot choose to review and approve water quality standards while ignoring separate provisions which have the potential to

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[24] EPA Region 5, letter of Tinka Hyde, Water Division Director, to Senator Thomas Bakk and Representative David Dill (May 13, 2011), p. 1, attached as Exhibit 9.
[25] Full text of 2015 Minn. Laws 1st Sp. Sess. Ch. 4, Art. 4, Sec. 136 attached as Exhibit 10.
[26] MPCA Fact Sheet, *supra*, Ex. 2, p. 33.
[27] MPCA told U.S. Steel's predecessor more than 16 years ago that the revised draft permit for the Minntac Tailings Basin was likely to include discharge limits for "sulfate (10 mg/L April through September for the Sand River drainage. . .)." MPCA, Douglas Hall letter to USX-Minnesota Ore Operations, David Johnson, Feb.16, 2000, attached as Exhibit 11.
[28] EPA, Tinka Hyde May 2011 letter, *supra*, Ex. 9, p. 2.

cripple the application of those standards." *Northwest Envtl. Advocates v. U.S. EPA*, 855 F. Supp. 2d 1199, 1211 (D. Ore. 2012). The Eleventh Circuit held in *Fla. Pub. Interest Research Group Citizen Lobby, Inc. v. U.S. EPA*, 386 F 3d 1070, 1088-1089 (11th Cir. 2004) that EPA review of a new impaired waters rule would be nondiscretionary if its application had an effect on water quality standards. *See also Miccosukee Tribe of Indians v. U.S. EPA*, 105 F. 3d 599, 603 (11th Cir. 1997)(However the state characterized its law, if as a factual matter a Florida law had the effect of changing water quality standards, it would invoke a mandatory duty of review by the EPA); *Rivers Unlimited v. Schregadus*, 86 Ohio Misc. 2d 78, 93; 685 N.E.2d 603, 613 (1987)(State legislation that "stands as an obstacle to the accomplishment and execution of the full purposes and objectives" of federal water pollution control laws invalidated).

The MPCA is required under the Clean Water Act to ensure compliance with Minnesota's wild rice sulfate standard in issuing a Minntac Tailings Basin Permit. The EPA has the authority to block a permit that fails to comply with Minnesota's wild rice standard and the duty, in the course of its review, to disapprove application of the state session law precluding compliance with Clean Water Act requirements. It would defy all logic if a state, advised by EPA that a water quality standard amendment must conform to Clean Water Act federal review to protect a beneficial use, were allowed to circumvent the Act by precluding application of that standard.

There is no reasonable dispute that Sand River watershed receiving waters for Minntac Tailings Basin discharge through hydrologically connected groundwater are wild rice waters to which Minnesota's existing wild rice sulfate standard applies. Dark Lake waters impacted by Minntac Tailings Basin discharge may also be wild rice waters protected by Minnesota's existing wild rice sulfate rule.

It is well-established that Sandy Lake and Little Sandy Lake are wild rice waters. The Fact Sheet for the Minntac Tailings Basin Permit states that MPCA anticipated that "Sandy Lake and Little Sandy Lake will be designated as wild rice waters subject to the wild rice sulfate water quality standard."[29] The MPCA's Draft List of Wild Rice Waters includes both Sandy Lake and Little Sandy Lake as proposed wild rice waters,[30] and the MDNR's Natural Wild Rice in Minnesota 2008 report to the Legislature identifies both Sandy Lake and Little Sandy Lake as wild rice lakes.[31] The 1854 Treaty Authority Monitoring Report for Sandy Lake and Little Sandy Lakes explains, "Sandy Lake and Little Sandy Lake, also known locally as the Twin Lakes, historically have produced good stands of wild rice. Wild rice harvesters utilized the lakes when suitable crops were present."[32] The 1854 Authority Report also summarizes vegetation surveys in 1966 and 1987 by the Minnesota Division of Game and Fish and the MDNR:

> The 1966 survey described Sandy Lake with dense wild rice over the entire lake, and Little Sandy Lake with moderately dense rice over the entire lake. The report also mentions that the wild rice is harvested at the lakes when the crop is adequate. Results from the 1987 survey indicated that the aquatic vegetation changed little since the 1966 survey, with one noticeable exception. Wild rice for all practical purposes was absent from both lakes. . . The report also describes the rice crop at Twin Lakes in some years

[29] MPCA Fact Sheet, *supra*, Ex. 2, p. 33.
[30] MPCA, Draft List of MPCA Wild Rice Waters – October 26, 2015, attached as Exhibit 12. (highlighting added)
[31] MDNR, Natural Wild Rice in Minnesota, a Wild Rice Study document submitted to the Minnesota Legislature, Feb. 15, 2008, Appendix B, pp. 80-81, attached as Exhibit 13.
[32] 1854 Treaty Authority Monitoring Report, *supra*, Ex. 8, autop. 2.

> from 1966 to 1987: 1966-fair, 1968-fair, 1970-good, 1972-good, 1973-fair, 1977-poor, 1978-poor, 1980-fair, 1981-fair, 1982-poor, 1984-poor, 1985-poor, 1986-poor, 1987-poor.[33]

Sparse wild rice was found in Sandy and Little Sandy Lakes by the Bois Forte Department of Natural Resources in 2000 and 2001 and by the 1854 Treaty Authority in 2006. Surveys by the 1854 Treaty Authority in 2007 and from 2010 to 2016 found sparse wild rice in Sandy Lake, the lake further from the Minntac Tailings Basin.[34]

As explained in Section 1 of these comments, there is no reasonable dispute that discharge from the Minntac Tailings Basin impacts hydrologically connected surface waters in the Sand River, Little Sandy Lake and Sandy Lake to the east of the Basin. Unlike Sand Lake, which is located north of the Tailings Basin and protected from tailings basin seepage due to its hydraulic gradient (see page 6 of these comments), Little Sandy Lake and Sandy Lake have markedly elevated sulfate levels, far exceeding Minnesota's wild rice sulfate standard of 10 mg/L.

Monitoring by the 1854 Treaty Authority since the SCRS was installed on the east side of the Minntac Tailings Basin in 2010 demonstrates the impact of discharge through groundwater. Annual average sulfate levels in the years 2011-2016 at the Little Sandy Inlet (Twin 1) ranged from 207-460 mg/L. From 2011-2016, sulfate levels decreased at each site further from the Tailings Basin, but still exceeded Minnesota's 10 mg/L wild rice sulfate standard. Average sulfate levels in the middle of Little Sandy Lake (Twin 2) ranged from 144-295 mg/L; in the middle of Sandy Lake (Twin 3) from 97-217 mg/L; and at the outlet to Sandy Lake (Twin 4) from 66-145 mg/L.

Despite surface seepage collection on the east side of the Minntac Tailings Basin, after 2011 sulfate levels did not decline; over the past six years, at each Twin Lakes site the highest average sulfate levels were in 2015.[35] As the EPA noted in 2012, reviewing the initial data from 1854 Treaty Authority monitoring in the Twin Lakes, since the data indicated that wild rice sulfate water quality standards were not being met despite the seepage collection system, "if the NPDES permit was to be reissued, it is likely that WQBELs would be established in that permit."[36]

Minnesota's wild rice sulfate limit of 10 mg/L should also apply to the Sand River. The MPCA's Draft List of Wild Rice Waters includes the Sand River as a proposed wild rice water, noting that both the 1854 Treaty Authority and the U of M/MPCA study identified Sand River as a wild rice water.[37] The 1854 Treaty Authority conducted aerial surveys of the Sand River and Pike Rivers from 2010-2014 and conducted observations on the ground in 2016 and found, "Depending on the year, rice stands in portions of the rivers varied from sparse coverage to some areas with fair to good density."[38]

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[33] *Id.*, autop. 16.
[34] *Id.*, autop. 17, 20-26.
[35] *Id.*, autop. 13, pp. 31-48.
[36] EPA Region 5, Kevin Pierard, Chief NPDES Programs Branch letter to Tamara Cameron, Chief Regulatory Branch USACE St. Paul District, re U.S. Steel – Minntac Mine pending Clean Water Section 402 and 404 Actions (Oct. 22, 2012), p. 2, attached as Exhibit 14.
[37] MPCA, Draft List of Wild Rice Waters, *supra*, Ex. 12.
[38] 1854 Treaty Authority Monitoring Report, *supra*, Ex. 8, autop. 27.

The field data collected by Myrbo et al. at the University of Minnesota under contract for the MPCA Wild Rice Sulfate Standards Study found wild rice in the Sand River in both 2011 and 2012.[39] MPCA discharge monitoring reports show that sulfate levels at sampling site SW001, where the Sand River crosses Highway 53, approximately 2 ½ miles downstream from Sandy Lake,[40] averaged 155.9 mg/L from 2011 through 2014, with all but one sampling event in excess of 10 mg/L.[41]

It is likely that Minnesota's wild rice sulfate limit of 10 mg/L should also apply to Dark Lake on the west side of the Minntac Tailings Basin. In 2013, an MPCA staff scientist documented the presence of wild rice in Dark Lake:

> The recent MDNR list identified the presence of wild rice in Dark Lake (69-0790-00) during a July 30, 2012 survey of the northeast bay of the lake (see June 16, 2013 email message below from Karen Myhre, MDNR).
>
> > *I conduct rare aquatic plant searches for the Minnesota Biological Survey of the MNDNR (in 75 to 100 lakes per year, 1840 lakes surveyed since the survey began in 1995). In the course of those searches, I record every aquatic and emergent plant species that I observe, creating a species list for each lake in which I do a search.*
> >
> > *I conducted a rare aquatic plant search in the northeast bay of Dark Lake on 7/30/2012 and recorded that I observed wild rice in the course of the survey. The northeast bay has extensive emergent borders with wild rice as a component of these borders (there are more extensive emergent borders in the main body of the lake-visible on air photos, but I did not survey the main body of the lake). . .Wild rice was one of the first species that I recorded (looking at the field data), which would indicate to me that it was immediately noticeable at the lake, but I don't remember stand density.* [42]

The MPCA's email also noted that the University of Minnesota field study identified small stands of wild rice in Dark Lake in 2013.[43] The Myrbo et al. Field Survey found wild rice in two Dark Lake locations on three sampling dates in 2013.[44] Photographs of wild rice in Dark Lake in 2016 confirm the presence of small stands of wild rice.[45]

No monitoring is available for Dark Lake. However, MPCA has conducted sampling in the Dark River at County Road 668 between Dark Lake and the Minntac Tailings Basin and in the Dark River at County Highway 65, 1.59 miles downstream of Dark Lake.[46] MPCA Dark River

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[39] Myrbo et al. Field Survey Data (University of Minnesota research for MPCA Wild Rice Sulfate Standards Study), complete spreadsheet attached as Exhibit 15; Myrbo Field Survey Excerpt Wild Sites Near Minntac Tailings Basin attached as Exhibit 15A. The Myrbo Field Survey also found sparse wild rice in Sandy Lake and Little Sandy Lake.
[40] Location described in MPCA Fact Sheet, *supra*, Ex. 2 p. 17.
[41] MPCA Discharge Monitoring Reports, provided in response to December 2014 DPA request as "Minntac Basin Data Dump Post 2008" with email from Erik Smith, MPCA to Krista McKim, EPA on October 20, 2014, attached as Exhibit 16; Excerpt from Ex. 14 pertaining to SW001 Sulfate attached as Exhibit 16A.
[42] MPCA, Gerald Blaha emails to MPCA, Stephanie Handeland and Darren Vogt, 1854 Treaty Authority regarding Dark Lake wild rice, June 20, 2013- September 6, 2013, p. 2, attached as Exhibit 17.
[43] *Id.*, p. 1.
[44] Myrbo et al. Field Survey and Excerpt Wild Rice Sites Near Minntac Tailings Basin, *supra*, Ex. 15; Ex.15A.
[45] Dark Lake Photos by Scott Cardiff, University of Wisconsin, on July 31, 2016, sent to GLIFWC on August 8, 2016, attached as Exhibit 18.
[46] Locations explained in MPCA Fact Sheet, *supra*, Ex. 2, p. 33.

Monitoring indicates that sulfate levels sampled from 2011 through 2014 average 656.7 mg/L in the Dark River upstream of Dark Lake and 308.5 mg/L in the Dark River at CH 65, farther from the Tailings Basin. Samples at both locations are more than an order of magnitude above Minnesota's wild rice sulfate standard.[47]

Minntac Tailings Basin receiving waters Sandy Lake, Little Sandy Lake and the Sand River are and have been waters used for the production of wild rice, and it is likely that Dark Lake is also a wild rice water. Sulfate levels in all of these receiving waters exceed or have the potential to exceed Minnesota's wild rice sulfate standard of 10 mg/L by more than an order of magnitude.

Recommendations:

- The MPCA should revise the Minntac Tailings Basin Draft Permit to require compliance with Minnesota's 10 mg/L wild rice sulfate standard in Sandy Lake, Little Sandy Lake and the Sand River.

- The MPCA should determine, in consultation with tribal authorities, whether Dark Lake should also be considered a water used for the production of wild rice. If so, the Minntac Tailings Basin Draft Permit should require compliance with Minnesota's 10 mg/L sulfate standard in Dark Lake.

3. Limits on specific conductance should be set for Minntac Tailings Basin discharge to Class B waters to protect aquatic life in compliance with the Clean Water Act and narrative water quality standards.

The fundamental purpose of the Clean Water Act is to attain "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." 33 U.S.C. §1251(a)(2). This goal is achieved, in part, by requiring point source dischargers to comply with NPDES permits. 33 U.S.C. §1342(a)-(d).

As previously discussed in these comments, the Clean Water Act establishes the requirements for state NPDES permit control of pollutants. States assuming delegated authority under the Act must establish water quality standards "to protect the use of waters for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes and other purposes including navigation." 33 U.S.C. §1313(c)(2)(A); 40 C.F.R. §131.10.

Each state NPDES permit must include conditions needed to "achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality." 40 C.F.R. §§122.44(d)(1) 123.25(15). NPDES permit limitations "must control *all pollutants or pollutant parameters* . .which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, *including State narrative criteria for water quality*." 40 C.F.R. §122.44(d)(1)(i) (emphasis added).

[47] MPCA Fact Sheet, *supra*, Ex. 2, Table 1 on p. 16.

All of the surface waters affected by Minntac Tailings Basin direct surface discharge and discharge through hydrologically connected groundwater are designated under Minnesota law as Class 2 waters, the beneficial use of which includes fish and aquatic life. The following receiving surface waters affected by Minntac Tailings Basin discharge are Class 2B waters: Timber Creek, Dark River, Dark Lake, Sand River, Sandy Lake, and Little Sandy Lake. A segment of the Dark River beginning 1.59 miles north out of Dark Lake is designated as a Class 2A trout stream for the next 7.91 miles. [48]

In addition to numeric standards, Minnesota's federally-approved Rules prohibit exceedance of narrative water quality standards for Class 2 waters:

> The narrative water quality standards in subpart 3 [pertaining to Class 2 waters] prescribe the qualities or properties of surface waters that are necessary for the protection of designated public uses and benefits. If the narrative standards in this part are exceeded, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to the designated uses of the waters of the state. Minn. R. 7050.0150, Subp. 1.
>
> For all class 2 waters, the aquatic habitat, which includes the waters of the state and stream bed, shall not be degraded in any material manner . . . the normal fishery and lower aquatic biota upon which it is dependent and the use thereof shall not be seriously impaired or endangered, the species composition shall not be altered materially, and the propagation or migration of the fish and other biota normally present shall not be prevented or hindered by the discharge of any sewage, industrial waste, or other wastes to the waters. Minn. R. 7050.0150, Subp. 3.

Under Minnesota Rules, "fish and other biota" and "lower aquatic biota" include "game and nongame fish, minnows and other small fish, mollusks, insects, crustaceans and other invertebrates, submerged or emergent rooted vegetation, suspended or floating algae, substrate-attached algae," and "microscopic organisms and aquatic or semiaquatic organisms that depend on aquatic systems for food or habitat such as amphibians and certain wildlife species." Minn. R. 7050.0150, Subp. 4, Item I.

The Draft Permit conducts no analysis of impacts to aquatic life and provides no water quality based effluent limitations to protect fish or lower aquatic biota in *any* of the Class 2 waters impacted by Minntac Tailings Basin discharge.[49]

The only limits on sulfate in the Draft Permit are the Class 1B drinking water standard which is applied for the trout stream segment (SW003) of the Dark River (250 mg/L) and the Class 4B

[48] *See* MPCA Fact Sheet, *supra*, Ex. 2, pp. 15, 17, 28, for designations of receiving waters.
[49] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, pp. 11-21.

standard (1,000 mg/L) for adult livestock drinking water,[50] which is applied to SD001 discharge, Admiral Lake, Timber Creek and the Dark River (SW008) upstream of Dark Lake.[51]

Similarly, where the Minntac Draft Tailings Basin Permit set any limits for total dissolved salts or total dissolved solids (TDS), the MPCA used Class 1B drinking water and Class 4B agricultural standards (700 mg/L) to set final limits for SD001 discharge, Admiral Lake, Little Sandy Lake, Timber Creek, and the Dark River.[52] Class 4A agricultural standards were used to set final limits for bicarbonates (5 milliequivalents per liter – equivalent to 250 mg/L) and specific conductance[53] (1,000 micromhos per centimeter - equivalent to 1,000 µS/cm) in SD001 discharge, Admiral Lake, Little Sandy Lake, Timber Creek, and both sites on the Dark River.[54] Finally, Class 3C industrial standards were used to set final limits on calcium and magnesium measured as hardness (500 mg/L) and chlorides (250 mg/L) in SD001 discharge, Admiral Lake, Little Sandy Lake, Timber Creek, and both sites on the Dark River.[55]

In 2011, EPA finalized its *Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams,* which concluded that mixtures of ions dominated by salts of calcium, magnesium, sulfates and bicarbonates resulting in high conductivities were associated with impairment of aquatic life.[56] Peer-reviewed literature based on EPA's conductivity research analyzed the causal nature of this relationship, the threshold for protection of aquatic life, the relationship between mining land use and elevated conductivity and the importance of benthic macroinvertebrates (aquatic insects) to ecosystem health.[57]

EPA's 2011 Conductivity Benchmark Study set a chronic aquatic life benchmark of 300 µS/cm in the Appalachian ecoregions studied, noting that this limit was applicable in waters with circumneutral pH where concentrations of dissolved ions are dominated by salts of calcium, magnesium, sulfates and bicarbonates and the background conductivity is below the benchmark.[58] EPA's methods and benchmark were reviewed by the EPA's Science Advisory Board, which validated the benchmark and concluded that both the benchmark and its methodology may be applicable to other states and regions with appropriate validation.[59]

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[50] *See* MPCA, Gerald Blaha email to Erik Smith, MPCA, Re: class 4B sulfate criterion, February 12, 2014, attached as Exhibit 19, which notes that 1,000 mg/L sulfate may not be protective for young livestock or wildlife.
[51] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1 pp. 13, 18-20; MPCA Fact Sheet, *supra*, Ex. 2, pp. 32,33. *See* Minn. R. 7050.0220, Subp. 3a, Item A(30); 7050.0224, Subp. 3 for these sulfate standards.
[52] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, pp. 18-20; MPCA Fact Sheet, *supra*, Ex. 2, p. 32. *See* Minn. R. 7050.0220, Subp. 3a, Item A (34) for "total dissolved solids" standard; Minn. R. 7050.0224, Subp. 3 for "total dissolved salts" standard.
[53] Minnesota rules use the term specific "conductance," while EPA studies use the term specific "conductivity." These terms have the same meaning.
[54] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, pp. 17-20; MPCA Fact Sheet, *supra*, Ex. 2, p. 32. See Minn. R. 7050.0224, Subp. 2 and Subp. 4.
[55] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, pp. 17-20. MPCA Fact Sheet, *supra*, Ex. 2, p. 32, See Minn. R. 7050.0223, Subp. 4. The Dark River trout reach (SW003) is a Class 3B water, so industrial standards of 250 mg/L of hardness and 100 mg/L of chlorides would apply.
[56] U.S. EPA, *A Field--Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams*, Office of Research and Development, National Center for Environmental Assessment, Washington, DC., 2011 EPA/600/R-10/023F, p. viii, (EPA 2011 Conductivity Benchmark Study), attached as Exhibit 20.
[57] Peer reviewed literature based on EPA's research to develop a benchmark for conductivity is attached as Exhibits 20A through 20G.
[58] EPA 2011 Conductivity Benchmark Study, *supra*, Ex. 20, pp. xv, 41. Specific ions identified were Ca^{2+},Mg^{2+}, SO_4^{2-} and HCO_3^-.
[59] *Id.*, p. viii.

On December 20, 2016, the EPA published draft guidance to assist states and tribes in setting numeric limits to protect aquatic life from both chronic and acute effects of elevated ionic concentration as measured by specific conductivity in geographic areas beyond the Appalachian ecoregion for which a benchmark had been set in 2011.[60]

This EPA's 2016 Conductivity Criteria Methods draft confirmed that increased specific conductivity was causally related to reduced benthic macroinvertebrate (e.g. aquatic insects) occurrence and that aquatic life criteria should be based on survival of 95 percent of the genera of these lower aquatic biota.[61] Based on analysis of background and criteria in Region 50, Northern Lakes and Forests, applicable to the region of Minnesota where the Minntac Tailings Basin is located, EPA determined that a provisional value to protect aquatic life well-supported by the data would be a specific conductivity limit of 320 µS/cm.[62]

The EPA referenced an evaluation conducted by two retired Minnesota regulators using data from the 1976-1980 Minnesota *Regional Copper-Nickel Study* as well as from more recent state, federal and tribal sources.[63] The Johnson and Johnson (2015) report found that background conductivity in unimpacted northeast Minnesota streams was lower than that of streams in Appalachia measured in the EPA's 2011 benchmark study of Appalachia; that the major ions driving elevated specific conductivity in Minnesota were calcium, magnesium, sulfate and bicarbonates as in the benchmark study ecoregion; and that Minnesota data demonstrated impacts on invertebrate genera from elevated specific conductance in mining impacted waters.[64] The Johnson and Johnson report concluded:

> In the Minnesota ecoregions discussed in this report, discharge of specific conductance above the level of 300 µS/cm, established as guidance for Appalachian streams is highly likely to result in extirpation of 5% or more of invertebrate genera. Such discharge should be prohibited under Minnesota narrative standards preventing degradation and toxic pollution.[65]

The EPA's Office of Research and Development reviewed the Johnson and Johnson (2015) evaluation, using 40,585 MPCA benthic invertebrate and water quality samples,[66] to overcome uncertainty and assess the validity of the Johnsons' findings.[67] EPA validated the conclusions in the Johnson and Johnson (2015) evaluation, stating,

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[60] EPA, *Public Review Draft, Field-Based Methods for Developing Aquatic Life Criteria for Specific Conductivity*, December 2016, pp. xv, 1-1 (EPA 2016 Conductivity Methods) attached as Exhibit 21. EPA's Fact Sheet; December 2016 Responses to 2014 and 2015 Peer Review Comments; and Appendix D: Development of a Background-to-Criterion Regression Model are attached as Exhibits 21A through 21D.
[61] EPA 2016 Conductivity Methods, *supra*, Ex. 21, pp. 2-24 to 2-25.
[62] EPA, Appendix D. Development of a Background-to-Criterion Regression Model, *supra* attached as Exhibit 21D, at p. D-23.
[63] Johnson & Johnson, *An Evaluation of a Field-Based Aquatic Life Benchmark for Specific Conductance in Northeast Minnesota* (November 2015) prepared for WaterLegacy, attached as Exhibit 22 (Johnson and Johnson 2015).
[64] *Id.*, pp. 14, 42.
[65] *Id.*, p. 42.
[66] MPCA Invertebrate and Water Chemistry Data (2015), attached as Exhibit 23, referenced in EPA Minnesota Conductance Review.
[67] EPA, Susan Cormier, Office of Research and Development, Review Memo "An Evaluation of a Field-Based Aquatic Benchmark for Specific Conductance in Northeast Minnesota," Feb. 2, 2016, pp. 2, 6 (EPA's Minnesota Conductance Review"), attached as Exhibit 24.

> Overall, the weight of evidence supports the inference that effluents that increase water body SC [specific conductivity] to more than 300 µS/cm have adverse effects in northeast Minnesota waters. Using effect levels developed in central Appalachia, more than 5% of these shared genera are likely to be extirpated in waters with SC >300 µS/cm.[68]

EPA's Minnesota Conductance Review concluded, that a "benchmark for SC in Ecoregion 50 is not expected to be greater than the benchmark for central Appalachia, i.e. 300 µS/cm."[69] Conducting an analysis of an independent data set of paired benthic invertebrate and SC data from Ecoregion 50 in Minnesota EPA estimated that more than 5% of genera would be extirpated in streams with specific conductivity greater than 320 µS/cm.[70]

The MPCA has determined that Minntac Tailings Basin discharge has the reasonable potential to exceed Minnesota's specific conductance water quality standard for agricultural use of 1,000 µS/cm in SD001 discharge and in Admiral Lake (SW007), Little Sandy Lake (SW005), Timber Creek (SW006), and both sites (SW008 and SW003) on the Dark River.[71] Monitoring by the 1854 Treaty Authority at the outlet from Sandy Lake to Sand River from 2011-2016 showed elevated specific conductance averaging from 435 µS/cm to 616 µS/cm.[72]

The weight of evidence, including the EPA 2011 Conductivity Benchmark Study, the EPA 2016 Conductivity Criteria Methods Draft and Appendix D, the peer-reviewed literature, the Johnson and Johnson (2015) Northeast Minnesota report, the data collected by the MPCA and reviewed by EPA, and the EPA Minnesota Conductance Review all suggest that a limit on specific conductivity would need to be set at less than a third of the 1,000 µS/cm to protect aquatic life in waters receiving discharge from the Minntac Tailings Basin.

Recommendations:

- The MPCA should revise the Minntac Tailings Basin Draft Permit to limit specific conductivity in receiving waters to protect aquatic life as well as agricultural uses.

- To set limits on specific conductivity for Minntac Tailings Basin discharge, the MPCA should use Minnesota data and reports and EPA benchmarks and methods to protect 95 percent of benthic invertebrate genera, with a predicted protective numeric value for specific conductivity for this permit of 320 µS/cm.

- Waters impacted by Minntac Tailing Basin discharge through hydrologically connected groundwater should be evaluated for the reasonable potential to exceed the protective value for specific conductivity, and mitigation of tailings basin concentrations on specific conductivity as well as sulfate should be required in the final permit.

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[68] *Id.*, p. 2.
[69] *Id.*, p. 9.
[70] *Id.*, p.10.
[71] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, pp. 13, 18-10; *see also* MPCA Fact Sheet, *supra*, Ex. 2, pp. 16, 27, 30, 35, 37. Discharge from the seepage violation at SD002 on the east side of the Tailings Basin in June 2015 had a specific conductivity concentration of 2,265, *Id.*, p. 46.
[72] 1854 Treaty Authority Monitoring Report, *supra*, Ex. 8, pp. 34-48.

4. Minnesota's numeric water quality standard for manganese should be applied in compliance with state water quality standards and Clean Water Act protection of drinking water and human health.

Under Section 303 of the Clean Water Act, surface water quality standards are established to protect the use and value of surface waters for public water supplies, among other uses. 33 U.S.C. §1313(c)(2)(A); 40 C.F.R. §131.10(a). An NPDES permit must then include conditions necessary to achieve these water quality standards. 40 C.F.R. §§122.44(d).

Minnesota water quality standards for Class 1B waters apply to surface and underground waters with a moderately high degree of natural protection so that with approved disinfection, water will meet both the primary (maximum contaminant levels) and secondary drinking water standards issued by the EPA. Minn. R. 7050.0221, Subp. 3. EPA's Secondary Drinking Water Standards limit manganese to 50 µg/L.[73]

In addition, the Minnesota Department of Health (MDH) establishes health risk limits for groundwater to protect human health. Minn. Stat. §103H.201. These health risk limits are developed for use in determining whether groundwater should be regulated based on human health concerns. Minn. R. 4717.7810, Subp. 2. The health risk limit for manganese is 100 ug/L. Minn. R. 4717.7500, Subp. 61. The manganese health risk limit was reviewed by the Minnesota Department of Health in 2012, and the 100 µg/L guidance was set to protect the developing brains of formula-fed infants from adverse neurological effects. Manganese levels in drinking water also result in adverse neurological effects to children and adults.[74]

The Minntac Tailings Basin Draft Permit contains no limits on manganese in Class 1 surface waters, namely the trout stream reach of the Dark River downstream of Dark Lake classified as a Class 1B water. The MPCA Fact Sheet for the draft permit identifies two samples of manganese in SD001 discharge, one at 1760 µg/L and one at 1730 µg/L, averaging 1745 µg/L.[75] The MPCA then claims that dilution in the Dark River between SD001 and the Class 1B reach of the Dark River will reduce manganese to 78.97 µg/L, which would not exceed the applicable water quality standard of 50 µg/L.[76]

MPCA's assertion that manganese in the Dark River at SW003 does not have the potential to exceed 50 µg/L is inconsistent with the MPCA's own data on Minntac Tailings Basin seepage of manganese to the Dark River. Although not disclosed in the Fact Sheet, MPCA's prediction that SD001 discharge averaging 1745 µg/L will be diluted to comply with the applicable 50 µg/L standard when it reaches Class 1B waters is based on a striking assumption that the Dark River water diluting the SD001 discharge *contains no manganese at all*. As the MPCA noted in the analysis on which the prediction of compliance was based, "The stream dilution water was

[73] EPA, Secondary Drinking Water Standards, available at https://www.epa.gov/dwstandardsregulations/secondary-drinking-water-standards-guidance-nuisance-chemicals, last visited Dec. 15, 2016.
[74] MDH, Manganese: Tiered Health Based Guidance for Water, May 2012, attached as Exhibit 25.
[75] MPCA Fact Sheet, *supra*, Ex. 2, p. 31. These two samples, the only ones used in MPCA's analysis, were taken by Minntac within two months of each other, in May and July 2014, as reflected in Minntac SD001 2014 Sampling, attached as Exhibit 26.
[76] MPCA Fact Sheet, *supra*, Ex. 2, p. 31.

assumed to have a concentration of 0 mg/L for all parameters for the purpose of this analysis."[77] However, MPCA's own monitoring data invalidates this assumption.

In 2014, MPCA found surface waters west of the Minntac Tailings Basin, the Dark River (seep origin), had a highly elevated 3160 µg/L concentration of manganese.[78] As previously quoted, the MPCA Fact Sheet admits "pollutants enter the Dark River from the tailings basin via surface flow. . . and groundwater flow that enters the Dark River as baseflow both near the basin and at unknown distances downgradient from the basin."[79] Modeling dilution with Dark River stream waters having no manganese is patently unreasonable.

The Minntac Tailings Basin Draft Permit also contains no limits on manganese in groundwater. While concentrations of manganese in an unimpacted well (GW009) have been from 139 to 167 µg/L, manganese levels in wells impacted by the Minntac Tailings Basin have ranged from 102 µg/L as high as 4558 µg/L.[80] Although MPCA stated in its Fact Sheet "there is little correlation between the concentrations discharged (H) to groundwater and those measured in the downgradient monitoring wells,"[81] no data was provided supporting MPCA's assertion that Minntac Tailings Basin seepage did not cause or contribute to markedly elevated groundwater manganese in wells downgradient from the tailings basin.

The record supports the need to set limits on manganese to protect Class 1B waters of the Dark River and groundwater impacted by Minntac Tailings Basin discharge. Failure to set such limits requires reliance on patently unreasonable assumptions and denial of monitoring results.

Recommendations:

- The MPCA should reassess the reasonable potential of Minntac Tailings Basin discharge from SD001 to exceed the Dark River Class 1B water quality standard (50 µg/L) and health risk limit (100 µg/L) for manganese based on reasonable dilution assumptions reflecting deep seepage of manganese from the tailings basin.

- The MPCA should disclose all available monitoring data and assess the reasonable potential of Minntac Tailings Basin discharge to cause or contribute to an exceedance of the applicable water quality standard and health risk limit for manganese.

5. Compliance mechanisms, including the schedule of compliance, monitoring and toxicity testing proposed for the Minntac Tailings Basin Draft Permit should be revised to provide reasonable assurance that pollution will be controlled and water quality protected.

A. Compliance Schedule Deficiencies

[77] MPCA, Scott Kyser memo to MPCA, Erik Smith, Dark River Class 1 Water Quality Standards, Feb. 5, 2015, p. 2, attached as Exhibit 27.
[78] MPCA, Minntac Parameters – Analytes & Standards Sheets (Mar. 19, 2014), SW Analytes sheet, attached as Exhibit 28.
[79] MPCA Fact Sheet, *supra*, Ex. 2, p. 16
[80] *Id.*, p. 32.
[81] *Id.* Pertinent data, such as the geohydrology of the tailings basin and whether tailings basin parameters are stratified, as well as the manganese monitoring data in groundwater is not provided.

The Minntac Tailings Basin Draft Permit fails to require a compliance mechanism to achieve any attainment of water quality standards by any definite time.

The most definite requirement in the Draft Permit is that a Dark River Seepage Collection and Return System (SCRS), comparable to that installed on the Sand River in 2010, will be operational by December 31, 2017.[82] However, as demonstrated by 1854 Treaty Authority monitoring in Sandy Lake and Little Sandy Lake after construction of the SCRS on the Sand River watershed east side of the Minntac Tailings Basin in 2010,[83] it is virtually certain that the SCRS will not result in compliance of Dark River watershed surface waters with water quality standards. The Draft Permit and Fact Sheet acknowledge that surface seepage returned to the Minntac Tailings Basin will discharge to surface waters through hydrologically connected groundwater.[84] As with the previously installed Sand River SCRS system, the Draft Permit does not require treatment of seepage collected on the Dark River side of the Tailings Basin before that seepage is returned to the Tailing Basin.

The MPCA Fact Sheet states that "MPCA has historically regulated seepage that emerges either from the side of the basin dam, or within the vicinity of the toe of the dam, under federal NPDES guidelines."[85] The MPCA continues,

> The remedy for the impacts to the Dark River from this seepage is to eliminate the discharge (NPDES). Therefore, final compliance with the conditions of the NPDES Compliance Schedule contained within this permit occurs upon implementation of the SCRS and cessation of discharge from identifiable seeps.[86]

Rather than eliminate exceedance of water quality standards in impacted surface water, the requirement of a Dark River SCRS seems to be designed to eliminate Clean Water Act NPDES regulatory accountability by rechanneling "identifiable seeps." The EPA has already criticized this theory in commenting on the 2014 pre-public notice draft permit for the Minntac Tailing Basin, stating that "some of the statements in MPCA's draft fact sheet regarding EPA's interpretation of the scope of the NPDES program are incorrect and should be corrected."[87] As stated previously, in connection with the SCRS system on the Sand River side of the Minntac Tailings Basin, the EPA emphasized three years ago, "To the extent that USS may only be converting the path through which pollutants are discharged to surface water or reducing the volume of the discharge, EPA expects that the discharges will continue to be subject to NPDES permit requirements."[88]

Beyond requiring installation of a collection system to change the path of polluted discharge on the Dark River side of the Minntac Tailings Basin, the Draft Permit's compliance schedule is indefinite, unverifiable and is likely to fail to achieve compliance with surface water quality standards applicable under state law and the federal Clean Water Act or with groundwater standards applicable under Minnesota law.

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[82] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, p. 26.
[83] 1854 Treaty Authority Monitoring Report, *supra*, Ex. 8, discussed at pp. 9-10, 16 of these comments.
[84] See discussion, *supra*, at pp. 5-6 of these comments.
[85] MPCA Fact Sheet, *supra*, Ex. 2, p. 37.
[86] *Id.*
[87] EPA Letter to MPCA (Dec. 19, 2014), p. 1, *supra*, Ex. 7, p. 1
[88] EPA Letter to USACE (May 15, 2013), *supra*, Ex. 4, p. 5.

The proposed compliance schedule includes work plans and study plans intended to result in "concentration of sulfate (as the pollutant of greatest concern and as a surrogate for other dissolved solids) within the tailings basin to 800 mg/L within 5 years of permit issuance, and 357 mg/L within 10 years from permit issuance, or in the shortest reasonable period of time."[89] Although the Draft Permit states that the permittee shall initiate construction or begin implementation of its chosen treatment system no later than 49 months after permit issuance,[90] this requirement does not seem to include achieving specific pollution reductions. The Draft Permit allows modification of the eventual 357 mg/L sulfate concentration limit if approved by MPCA and allows material changes of plans under the compliance schedule upon submittal of the revisions.[91] The Draft Permit implies that neither modification or revision would require public notice and comment on a revised permit.

In addition to its indefinite terms, even if the permittee were to reduce sulfate concentrations in the Tailing Basin to the proposed 357 mg/L eventual limit, compliance with either Minnesota's 250 mg/L groundwater standard or wild rice sulfate standards in hydrologically connected groundwater is poorly substantiated.

The MPCA asserts that its modeling showed that a sulfate limit of 357 mg/L in tailings basin water would allow groundwater to meet a 250 mg/L sulfate limit at the "northeastern site property boundary."[92] However, Minnesota rules protect *all* underground waters from pollution, not just those at a certain property boundary. Minn. R. 7060.0400. The assumption made in MPCA modeling that tailings basin sulfate concentrations would be diluted by groundwater beneath the Minntac Tailings Basin is also demonstrably unreasonable. Sulfate concentrations in groundwater wells impacted by Tailings Basin seepage (GW001, GW002, GW003, GW004, GW005, GW006, GW007, GW008) range from an average sulfate concentration of 486 mg/L to 795 mg/L, with maximum sulfate concentrations as high as 1090 mg/L.[93]

Further, although the use of sulfate as a surrogate for all pollutants is attractive in its simplicity, neither the Fact Sheet nor the Draft Permit establishes that methods to decrease sulfate in the Minntac Tailings Basin would necessarily bring other parameters of concern discharged to hydrologically connected surface waters into compliance. Levels of hardness, bicarbonates, chlorides, total dissolved salts and specific conductance may not decline to meet standards even if sulfate concentrations are reduced.

Continuing a decades-old pattern, the Minntac Tailings Basin Draft Permit does not provide an enforceable mechanism for tailings basin pollution reduction. The MPCA has struggled for at least 15 years with various schedules of compliance to secure water quality treatment and changes in wet scrubber air pollution controls to mitigate impacts of Minntac Tailings Basin pollution. MPCA's Fact Sheet states:

> The Permittee has already conducted significant site investigation and research into treatment and remedial technologies under a series of SOCs since 2001. It is difficult to

[89] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, pp. 22 at 1.1, 24 at 1.12.
[90] *Id.*, p. 26 at 1.21.
[91] *Id.*, p. 24 at 1.12 and 1.13b; p. 27 at 2.5.
[92] MPCA Fact Sheet, *supra,* Ex. 2, p. 36. The modeling assumptions resulting in this conclusion are not specified.
[93] MPCA, Minntac Parameters – Analytes and Standards, *supra*, Ex. 28, Sheet 1(3).

> schedule a timeframe for implementation of a remedy when the nature and scale is unknown.[94]
>
> In March 2009 USS submitted an NPDES Permit Application that included plans to construct a 7000 gallon per minute Process Water Treatment System (PWTS), in part to satisfy a 2008 Stipulation Agreement for line 3 hardness issues. USS predicted the PWTS would lower the basin sulfate concentration from 900 to 350 mg/L in one permit cycle. USS then requested MPCA not act on the application while it investigated refinements to the proposed PWTS. Instead, USS proposed replacement of wet emissions scrubbers on the pelletizing furnaces with dry controls. This would remove a significant source of pollutants to the basin (as well as reduce air emissions) and was forecast to lower the basin sulfate concentration to 476 mg/L within 20 years. The phased installation of dry controls, beginning with line 6, was included in a June 9, 2011, Schedule of Compliance (SOC). In 2015, USS informed MPCA it did not intend to install dry controls.[95]

The Fact Sheet details multiple violations found in the most recent compliance inspection of Minntac Tailings Basin five years ago, including violations of limits on the mass of sulfate deposited in the tailings basin (57,558 pounds net increase) and violations of hardness deposited in the tailings basin (741,468 pounds net increase).[96] The long history of Minntac violations of schedules of compliance to limit sulfate and hardness deposited in the tailings basin are well-documented.[97] Minntac also directly discharged wastewater to the Sand River watershed in June 2015 (from SD002), resulting in a modest administrative fine for this violation.[98]

Minntac's failure to follow through on commitments to reduce pollution is summarized in a recent letter from MPCA Commissioner John Linc Stine to Iron Range legislators:

> Since the early 2000's, the MPCA and US Steel have developed various mitigation efforts. These were agreed to by US Steel, pursued and then changed or dropped by US Steel. Most recently, after proposing a membrane-based water treatment system to treat tailings basin water, US Steel approached the Agency with a proposal to make reductions in both air and water pollutants by replacing the current wet air emissions controls with dry air emissions controls. This proposal was predicted to improve water quality in the tailings basin at a slower pace than the membrane treatment system, but due to the added air quality benefits, the Agency agreed to this path in a 2011 Schedule of Compliance (which US Steel signed).
>
> US Steel officially notified me of their decision to ignore their signed commitment to add the dry controls. The Agency requested, on more than one occasion, that US Steel propose an alternative that would result in equivalent environmental benefits within the same timeframe. The company's suggestions have been unresponsive and have not met those criteria.[99]

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[94] MPCA Fact Sheet, *supra*, Ex. 2, p. 37.
[95] *Id.*, p. 6.
[96] *Id.*, p. 20.
[97] MPCA, Compliance Status Minntac Tailings Basin (2010), attached as Exhibit 29.
[98] MPCA, Enforcement Action - Administrative Penalty Order $4,800, NPDES/SDS Permit No. MN0057207 (Mar, 1, 2016), attached as Exhibit 30. Note discharge concentrations in MPCA Fact Sheet, *supra*, Ex. 2 at p. 46.
[99] MPCA, Commissioner John Linc Stine letter to Iron Range Legislators, Nov. 15, 2016, attached as Exhibit 31.

Minntac's long-standing violations of schedules of compliance and failures to follow through on commitments to replace wet scrubbers and construct a water treatment system underscore the need for clear and enforceable requirements to reduce the tailings basin's discharge to groundwater that the MPCA agrees "has caused and is causing waters of the state (groundwater and surface water) to exceed applicable water quality criteria and numeric standards."[100] A mechanism for compliance based on reductions in Minntac Tailings Basin concentrations must be more comprehensive, specific and definite.

Recommendations:

- The final Minntac Tailings Basin Permit should include concentration limits on all tailings basin pollutants with the reasonable potential to exceed numeric and narrative surface water standards in groundwater and hydrologically connected surface water -- hardness, bicarbonates, chlorides, total dissolved salts, specific conductance and potentially manganese as well as sulfates.

- Final Minntac Tailings Basin Permit concentration limits for each parameter should be modeled based on realistic dilution given the existing levels of the parameter in tailings basin impacted groundwater.

- The final Minntac Tailings Basin Permit should set a date certain for each tailings basin concentration limit so that both interim and final limits must be met at the shortest reasonable time, not to exceed a specific identified date, stated so that the failure to attain the concentration limit is a permit violation.

- The final Minntac Tailings Basin Permit should include a provision stating that any revisions of permit limits, timing or other requirements shall require public notice and comment.

B. Inadequate Monitoring

The monitoring proposed in the Minntac Tailings Basin Draft Permit is inadequate to identify future direct discharge from tailings basin perimeter seepage to surface waters. The Draft Permit also provides insufficient monitoring to evaluate whether the proposed mechanism for compliance – reduction of concentrations of parameters in the Minntac Tailings Basin – is sufficient to result in compliance with water quality standards in impacted surface waters and groundwater.

The existing NPDES/SDS permit for the Minntac Tailings Basin requires monitoring at SD002, the direct surface discharge site on the east side of the tailings basin.[101] The Draft Permit proposes to remove this requirement,[102] despite clear evidence that the installation of a seepage collection and return system (SCRS) in 2010 hasn't obviated the need to monitor tailings perimeter surface seepage.

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[100] MPCA Fact Sheet, *supra*, Ex. 2. p. 35
[101] *Id.*, pp. 25, 46.
[102] See Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, pp. 10-21, no listing as monitoring location, no limits.

The MPCA's Fact Sheet discloses that there was discharge from the SD002 surface discharge point in June 2015 long after the SCRS system was operational.[103] This violation, which resulted in an MPCA enforcement action and Administrative Penalty Order,[104] would not have been detected if monitoring of SD002 had ceased.

The MPCA's Fact Sheet also acknowledges in discussing both SD002 on the Sand River side and SD001 on the Dark River side of the Minntac Tailings Basin that there are areas of unmonitored tailings basin surface seepage: "Air photos and seepage surveys by USS [permittee U.S. Steel] indicate that there are other areas of shallow seepage that do not report to the monitoring station."[105]

Comments from the Great Lakes Fish and Wildlife Commission (GLIFWC) on the December 2014 pre-public notice draft permit for the Minntac Tailings Basin emphasized that there are "many waters surrounding the basin" that meet the criteria set by the MPCA to require NPDES permit controls,[106] namely "seepage points along the exterior toe of the outer basin dykes" which "create ponded features with measurable flow" that would be subject to NPDES requirements.[107] GLIFWC's comments supplied MPCA with a Google Earth photo of a seep from the Tailings Basin just south of SD002 connected to Admiral Lake, noting that "other areas of ponded water at the toe of the basin are too numerous to list but are visible in aerial photos of the site. Most of these ponded areas are connected by visible channels to waters of the state and the U.S."[108]

Despite clear evidence of surface seepage and the MPCA's assertion that the Agency would regulate all such seepage under NPDES permit controls, the Minntac Tailings Basin Draft Permit requires neither identification nor monitoring of any ponded or measurable surface seepage at any location other than SD001, the existing discharge site on the Dark River side of the tailings basin.[109]

Minnesota Rules require effluent monitoring for multiple parameters (including biochemical oxygen demand, chemical oxygen demand, total organic carbon, nitrogen, chloride, sulfate, surfactants, bicarbonates, salinity, total dissolved solids, specific conductance, and a wide range of metals) as a condition for permit reissuance for an existing mining discharger. Minn. R. 7001.1060, Subp. 1. The Minntac Tailings Basin Draft Permit only applies this requirement at SD001 or the nearest downstream monitoring point on the Dark River and to a single sample that the permittee deems representative of the recirculating tailings pool water.[110] No similar broad analytical data is required at any site reflecting impacted surface waters on the east side of the Tailings Basin (Admiral Lake, Sandy Lake, Little Sandy Lake, Sand River) or in any location where effluent is discharged to groundwater.

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[103] MPCA Fact Sheet, *supra*, Ex. 2, p. 46.
[104] MPCA Enforcement Action Mar. 1, 2016, *supra*, Ex. 30.
[105] MPCA Fact Sheet, *supra*, Ex. 2, p. 11.
[106] GLIFWC, John Coleman email to MPCA, Suzanne Baumann re Pre-public notice review: US Steel Minntac tailings basin draft water permit reissuance, Dec. 19, 2014 and associated photo, p. 1, attached as Exhibit 32.
[107] *Id.*, referencing MPCA Draft Fact Sheet 2014, *supra*, Ex. 6, p.7. See also MPCA Fact Sheet, *supra*, Ex. 2, p. 7, "MPCA has regulated under NPDES permits all seepage that emerges either from the side of the basin dam, or within the vicinity of the toe of the dam, that creates surface flow or ponded features that would not exist in the absence of the tailings basin. That practice will continue under this permit."
[108] GLIFWC Review of Minntac pre-public notice draft permit, *supra*, Ex. 32, p. 1 and photo at p. 3.
[109] *See* Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, p. 8, monitoring sites.
[110] *Id.*, p. 31.

Finally, although the Draft Permit proposes that reduction in Minntac Tailings Basin concentrations will result in compliance with both surface water and groundwater standards, the monitoring proposed to evaluate the fate and transport of Tailings Basin pollutants is inadequate. Despite decades of failed schedules of compliance, rather than requiring a rigorous monitoring plan as a permit condition open to public and federal scrutiny, the Draft Permit suggests that the permittee will devise its own field data collection and analysis plan once a permit has already been issued.[111] The Draft Permit fails to specify the number, locations, or types of groundwater and surface water monitoring sites needed to evaluate Minntac Tailings Basin discharge impacts.

Recommendations:

- The final Minntac Tailings Basin Permit should retain monitoring at SD002 or the nearest measurable flow of surface seepage, and should require monitoring at multiple additional surface seepage points along the perimeter and in the vicinity of the toe of the dam to represent surface discharge on all sides of the Tailings Basin.

- The final Minntac Tailings Basin Permit should require collection of analytic data on the full range of effluent parameters required for permit reissuance[112] at several representative locations where effluent may discharge to surface waters and groundwater, which locations should be identified in the Permit.

- The final Minntac Tailings Basin Permit should require installation of multiple nested wells along the perimeter of the tailings basin (estimate of 30-40 additional wells) to assess background condition, fate and transport of Tailings Basin pollutants and the efficacy of mitigating tailings basin concentrations to achieve compliance with standards applicable to impacted surface and groundwater.[113]

C. Insufficient Evaluation and Testing of Toxicity

Neither the Minntac Tailings Basin Draft Permit nor the MPCA Fact Sheet accompanying the Draft Permit discusses whether Minntac chemical additives may be toxic to aquatic life.

U.S. Steel's 2011 Application for an NPDES/SDS permit provided a comprehensive analytical summary of water quality results for SD001.[114] Reliance on this testing data to reissue a permit is problematic. Since NPDES permits expire every five years, the regulatory regime does not contemplate reliance on data that is five or more years old. The MPCA Fact Sheet cites no current analytical results and provides no demonstration that Minntac processes and production have remained unchanged for the past five years.

In fact, the chemical products in use identified by U.S. Steel in its 2011 application do not appear to be similar either in composition or in usage rates to the millions of pounds per year of various

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[111] *Id.*, p. 23.
[112] See Minn. R. 7001.1060, Subp. 1 and parameters proposed to be monitored at SD001 for permit reissuance in the Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, p. 28.
[113] The MPCA Fact Sheet, *supra*, Ex. 2 notes at p. 37, "it is currently impossible to predict the time to compliance for a specific water body."
[114] U.S. Steel Corp. Minntac Tailings Basin NPDES/SDS Permit Application, Permit #MN0057207 (December 2011), Appendix B, autop. 57-61, attached as Exhibit 33.

flocculants and flotation reagents identified in the Draft Permit.[115] No information is provided in the MPCA Fact Sheet or the Draft Permit regarding potential aquatic toxicity of any of the chemical additives identified in the Draft Permit.

The Minntac Tailings Basin Draft Permit does not set a limit for whole effluent toxicity (WET) of Minntac Tailings Basin discharge,[116] so findings of toxicity to aquatic life would result in no permit violation or requirement for action.

WET testing results may also be affected by significant dilution. The only WET testing required on the Sand River side of the tailings basin would be done at SW005, a surface water sampling site on Little Sandy Lake, more than a mile from the Minntac Tailings Basin.[117] Should there be insufficient flow in SD001 for chronic toxicity testing, rather than requiring testing of effluent at the nearest location with sufficient surface flow for testing, the Draft Permit authorizes WET testing at the "next active downstream monitoring location."[118]

The methods proposed for whole effluent testing of Minntac Tailings Basin effluent are also insufficient to ascertain whether major anions and major cations and resulting elevated conductance in tailings basin discharge are toxic to aquatic life. The two organisms proposed for each test battery are the fathead minnow and Ceriodaphnia dubia, a water flea.[119] There is substantial peer-reviewed research suggesting that C. dubia is less sensitive to mining discharge and elevated specific conductance than invertebrates such as mayflies, stoneflies, and caddisflies (i.e., Ephemeroptera, Plecoptera, Trichoptera taxa),[120] which taxa are present in unimpacted Minnesota streams and are affected by elevated specific conductivity in Minnesota mining-impacted streams.[121] Toxicity testing conducted with C. dubia alone is likely to underrepresent the sensitivity of species present in receiving waters for Minntac Tailings Basin discharge.

Recommendations:

- Comprehensive analytic data on existing Minntac Tailings Basin effluent (Minn. R. 7001.0160) should be updated prior to issuance of the final Minntac Tailings Basin Permit.

- The final Minntac Tailings Basin Permit should reconcile and disclose the chemical composition, volume and aquatic toxicity of process additives, including flocculants and flotation reagents, the use of which is implicitly authorized in the permit.

- The final Minntac Tailings Basin Permit should set a whole effluent toxicity limit of 1.0, require toxicity testing of undiluted effluent from both the east and the west sides of the tailings basin and conduct testing using at least one invertebrate species in

[115] Compare U.S. Steel Minntac 2011 Application, *supra*, Ex. 33, Appendix C-1 Minntac Chemical Products in Use and Approved Usage Rates autop. 63-64 with Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, p. 4.
[116] Minntac Tailings Basin Draft Permit, *supra*, Ex. 1, p. 33
[117] *Id.*, p. 33. Location of SW005 mapped *Id.*, p. 8.
[118] *Id.*, p 33. Location of the first monitoring location for the Dark River (SW008) mapped *Id.*, p. 8.
[119] *Id.*, p. 33.
[120] See, e.g. Kuntz et al., "Use of Reconstituted Waters to Evaluate Effects of Elevated Major Ions Associated with Mountaintop Coal Mining," *Env. Toxicol & Chem*, Vol. 32, No. 12, pp. 2833-34, attached as Exhibit 34. See also EPA 2011 Conductivity Benchmark, *supra*, Ex. 20, p. 2; EPA 2016 Conductivity Methods, *supra*, Ex. 21, pp. 2, 17, A-12 to A-13.
[121] Johnson & Johnson (2015), *supra*, pp. 10, 21-23, 25-29, 39-41.

Minnesota ecoregion streams known to be sensitive to conductivity and the major anions and cations in Minntac Tailing Basin discharge.

6. Monitoring and pollution reduction mechanisms in the Minntac Tailings Basin Draft Permit should be revised to reflect impacts of excessive sulfate discharge on mercury methylation and phosphorus release from sediments.

WaterLegacy is dismayed that neither the Minntac Tailings Basin Draft Permit nor the MPCA's accompanying Fact Sheet consider the effects of excessive sulfate discharge from the Minntac Tailings Basin on mercury methylation and resulting bioaccumulation or on phosphorus release and resulting eutrophication and turbidity. MPCA, thus, fails to consider that excessive sulfate from the Minntac Tailings Basin may be contributing to downstream impairments of water for aquatic life and the health of humans and wildlife consuming mercury contaminated fish.

MPCA's Fact Sheet acknowledges a plethora of impaired waters downstream of the Minntac Tailings Basin. Two reaches of the Sturgeon River, seven reaches of the Little Fork River, seven reaches of the Rainy River and a portion of the main lake of Lake of the Woods near the border with Canada are impaired due to mercury in fish tissue. Known impairments of Minntac Tailings Basin downstream waters also include four reaches of the Little Fork River impaired for turbidity and two reaches of the main lake of Lake of the Woods impaired for eutrophication.[122] The sole response to these impairments in the MPCA Fact Sheet is a statement that no waste load allocations have been set for Minntac tailings discharge.[123] The Minntac Tailings Basin Draft Permit doesn't even mention impairments of downstream receiving waters.

For at least ten years, the MPCA has recognized that excessive sulfate loading can increase methylmercury production and phosphorus mobilization, affecting impairments of state waters due to methylmercury in fish tissue and excessive nutrients.[124] In high-risk situations including areas where discharge impacts wetlands, lakes with organic sediment, rivers with slow-moving back waters, streams with fluctuating water levels and bordering wetlands, thermally stratified lakes or impoundments or low-sulfate waters (background below 40 parts per million), the MPCA recommended steps be taken in NPDES permitting to prevent impairments of downstream waters. These steps included: considering monitoring for methylmercury, reactive phosphorus and total phosphorus in effluent and/or receiving waters; evaluating treatment technologies and pollution prevention opportunities; and specifically working with MPCA mercury scientists to respond to the environmental risk from sulfate discharges.[125] MPCA also planned to develop more specific procedures by 2007 for NPDES permitting to address effects of elevated sulfate on methylmercury production and phosphorus availability.[126]

In the intervening ten years, the MPCA has failed to develop more specific procedures for NPDES permits to address elevated sulfate discharge. For the Minntac Tailings Basin Draft

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[122] MPCA Fact Sheet, *supra*, Ex. 2, p. 23.
[123] *Id.*
[124] MPCA, Strategy to Address Indirect Effects of Elevated Sulfate on Methylmercury Production and Phosphorus Availability, Oct. 19, 2006, pp. 1, 6-7, attached as Exhibit 35.
[125] *Id.*, p. 3.
[126] *Id.*, pp. 3-4.

Permit, the MPCA declined even to take the interim preliminary steps recommended in 2006 to protect downstream waters from impairment due to mercury methylation and bioaccumulation and phosphorus release from sediments.

The threat of excessive sulfate from the Minntac Tailings Basin to aquatic life, wildlife, human health and environmental justice highlights the need to revise the Draft Permit as specified in the five preceding sections of these comments. In addition, at a very minimum, the MPCA should follow through on its 2006 strategies to protect downstream waters of the state, waters of the United States, treaty resources of Bands of the Lake Superior Chippewa,[127] and potentially impacted international waters.

Recommendations:

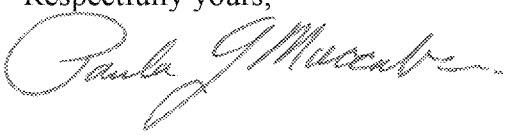
- The final Minntac Tailings Basin Permit and Fact Sheet should include a comprehensive analysis of the multiple factors in receiving waters that make discharge of elevated sulfate to the Sand River and Dark River sub-watersheds and the Little Fork River and Rainy River watersheds a high-risk situation for mercury in fish tissue, eutrophication and turbidity impairments.

- The final Minntac Tailings Basin Permit should require monitoring for methylmercury, reactive phosphorus and total phosphorus in both effluent and receiving waters, with similar monitoring in unimpacted background waters.

- The final Fact Sheet and Minntac Tailings Basin Permit schedule of compliance should discuss whether proposed treatment technologies and pollution reduction requirements are appropriate and sufficient to reduce risks of mercury methylation and phosphorus release from sediments affecting receiving waters.

WaterLegacy has appreciated the chance to comment on the Minntac Tailings Basin Draft Permit. We would welcome the opportunity to discuss the issues raised and recommendations made in our comments, and we look forward to revisions of the Minntac Tailings Basin Permit to fully comply with applicable law and protect the beneficial uses of Minnesota waters.

Respectfully yours,



Paula Goodman Maccabee
Counsel/Advocacy Director for WaterLegacy

Exhibits Enclosed

cc: Barbara Wester, U.S. EPA Region 5 (with exhibits)

[127] *See* Grand Portage and Fond du Lac Bands of Lake Superior Chippewa, Comments on pre-public notice draft for Minntac Tailings Basin Permit MN0057207, Dec. 19, 2014, p. 2, attached as Exhibit 36.