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Katrina Kessler, Commissioner
Minnesota Pollution Control Agency
520 Lafayette Road N.
St. Paul, MN 55155-4194

RE: Minnesota Wild Rice Sulfate Water Quality Standard NPDES/SDS Wastewater Permit Implementation: Procedures for implementing the Class 4A wild rice sulfate standards in NPDES wastewater permits in Minnesota; and Framework for developing and evaluating site-specific sulfate standards for the protection of wild rice.

Dear Commissioner Kessler,

The following supplemental comments are submitted by WaterLegacy regarding the Minnesota Pollution Control Agency's ("MPCA") proposed implementation for the wild rice sulfate standard in the NPDES/SDS permitting process, which includes both procedures for developing and evaluating site-specific standards¹ and procedures for implementing wild rice sulfate standards in NPDES permits.² These comments supplement those submitted by WaterLegacy on July 31, 2023 ("WL July Comments"); additional Attachments begin in sequence with "Attachment E" to avoid any potential confusion.

WaterLegacy appreciates the willingness of MPCA to engage in a dialogue regarding both its proposed sulfate permitting strategy and the criteria the Agency would use in considering a request from dischargers for "site-specific standards" to allow sulfate discharge in excess of the 10 milligrams per liter ("mg/L") wild rice sulfate standard in Minn. R. 7050.0224, subp. 2. WaterLegacy's comments below make the following substantive points:

1. MPCA NPDES/SDS permits must limit sulfate discharge into low-sulfate waters to prevent mercury, methylmercury, and nutrient pollution.
2. MPCA NPDES permits must limit sulfate discharge in low-sulfate waters to prevent degradation of wild rice beneficial use.

¹ MPCA, Framework for developing and evaluating site-specific sulfate standards for the protection of wild rice (June 2023), <https://www.pca.state.mn.us/sites/default/files/wq-s6-66.pdf> ("Wild Rice Sulfate SSS Framework").

² MPCA, Procedures for implementing the Class 4A wild rice sulfate standards in NPDES wastewater permits in Minnesota, <https://www.pca.state.mn.us/sites/default/files/wq-wwprm2-109.pdf>, ("Wild Rice Sulfate Permit Procedures").

3. Site-specific standards based on MPCA’s rejected 2017-2018 rulemaking equation lack a sound scientific basis to protect wild rice beneficial use.
4. Less stringent site-specific sulfate standards likely conflict with law, and they cannot be approved unless they fully protect other uses, health, welfare, downstream waters, and wild rice beneficial use.

WaterLegacy recommends that MPCA substantially reconsider and revise its proposed Procedures for Implementing the Wild Rice Sulfate Standards in NPDES Wastewater Permits in Minnesota and its proposed Framework for Developing and Evaluating Site-Specific Sulfate Standards for the Protection of Wild Rice. We would assume that this reconsideration would involve tribal consultation pursuant to Minn. Stat. § 10.65 and the best practices reflected in the 2020 University of Minnesota study of meaningful state-tribal consultation in which MPCA participated, including the “commitment to equal decision-making power.”³

We would also request that MPCA conduct open in-person meetings to hear the input of members of the public as well as allowing another written comment period on its proposed policies regarding controlling sulfate pollution. The sulfate discharge issue affects methylmercury contamination of fish resulting in neurotoxicity to fetuses, infants, and children; algae blooms and ecosystem destruction resulting from excessive nutrient release; the abundance, genetic diversity, and nutritional value of wild rice; and the exercise by tribal members of Treaty-reserved rights to hunt, fish, and gather. MPCA’s policies for control of sulfate pollution or lack thereof profoundly affect all Minnesotans.

1. MPCA NPDES/SDS permits must limit sulfate discharge into low-sulfate waters to prevent mercury, methylmercury, and nutrient pollution.

Minnesota law requires consideration of the effects of sulfate discharge on violation of water quality standards and impairment of waters for mercury in the water column, methylmercury in fish tissue, and excessive nutrients in issuance of both NPDES and SDS permits. Minn. R. 7050.0210, subp. 13 prohibits pollution caused by discharge of industrial or other waste either “alone or in combination with other substances” as follows:

Subp. 13 Pollution prohibited. No sewage, industrial waste, or other wastes shall be discharged from either a point or a nonpoint source into the waters of the state in such quantity or in such manner alone or in combination with other substances as to cause pollution as defined by law. . . . The quality of any waters of the state receiving sewage, industrial waste, or other waste effluents shall be such that no violation of the standards of any waters of the state in any other class shall occur by reason of the discharge of the sewage, industrial waste, or other waste effluents. (emphasis added)

³ University of Minnesota, What makes state-tribal consultation meaningful? Insights gained from interviews with tribal and state leaders, Fact Sheet, 2020, Attachment E, available at <https://manoominsin.umn.edu/wp-content/uploads/2020/08/Manoomin-Fact-Sheet-Spread.pdf>

Under Minnesota law, “pollution of water” or “water pollution” is broadly defined, and would necessarily include the potentially harmful or detrimental effects and alteration of waters due to increased mercury, methylmercury, or nutrients (phosphorus and nitrogen), resulting from sulfate discharge. Minn. Stat. § 115.01, subd. 13 states:

“Pollution of water,” “water pollution,” or “pollute the water” means: (a) the discharge of any pollutant into any waters of the state or the contamination of any waters of the state so as to create a nuisance or render such waters unclean, or noxious, or impure so as to be actually or potentially harmful or detrimental or injurious to public health, safety or welfare, to domestic, agricultural, commercial, industrial, recreational or other legitimate uses, or to livestock, animals, birds, fish or other aquatic life; or (b) the alteration made or induced by human activity of the chemical, physical, biological, or radiological integrity of waters of the state.

The MPCA is required to prevent pollution and violation of standards of “any waters of the state” under both the NPDES and SDS permitting programs, including discharge of sulfate that would cause or contribute to exceedances of any numeric or narrative water quality criteria related to increased mercury, methylmercury, or nutrients. 40 C.F.R. § 122.44(d)(1)(i).

The MPCA recognized 17 years ago the problem that “[r]esearch indicates a correlation between sulfate loading and methylmercury (MeHg) production and phosphorus (P) mobilization under certain conditions. Many waters of the state are impaired as a result of MeHg in fish tissues and excess nutrients.”⁴ MPCA identified the pressing need for a “permitting strategy for existing, expanding and new domestic and industrial process wastewater discharges . . . [to] reflect varying MeHg production and P availability under differing environmental conditions.” (MPCA 2006 Sulfate Strategy at 1).

In 2006, the MPCA concluded that before development of interim procedures “NPDES permit writers . . . will need to manage projects on a case-by-case basis” (*Id.* at 2). The MPCA committed to develop interim procedures by February 28, 2007 and final guidance for NPDES permit writers by June 29, 2007 to address sulfate discharges in permitting. (*Id.* at 4).

In 2006, citing the pathbreaking research done in the U.S. Forest Service Marcell Experimental Forest adding sulfate to low sulfate wetlands,⁵ MPCA mercury scientist Ed Swain emphasized,

It is important to minimize the effect of sulfate on MeHg [methylmercury] and P [phosphorus] because Minnesota’s water quality is threatened by these chemicals state-wide. Federal NPDES permitting regulations prohibit the authorization of

⁴ MPCA Strategy to Address Indirect Effects of Elevated Sulfate on Methylmercury Production and Phosphorus Availability, Final, Oct. 19, 2006 (“MPCA 2006 Sulfate Strategy”) at 1, Attachment F.

⁵ J. Jeremiason *et al.*, Sulfate Addition Increases Methylmercury Production in an Experimental Wetland, *Environ. Sci. Technol.*, 2006, 40:3800-3806, Attachment G.

wastewater discharges that may cause or contribute to water quality impairments. Numerous water bodies in the state are listed as impaired because the MeHg concentrations in fish tissues make the fish unsuitable for frequent human consumption. Similarly, numerous water bodies are impaired because of excess P concentrations.

MPCA 2006 Sulfate Strategy at 7. The 2022 MPCA Clean Water Act Section 303(d) impaired waters list identifies approximately 1,250 waterbodies that are impaired for aquatic consumption, most of which are identified as impaired due to mercury in fish tissue and approximately 170 waterbodies that are impaired for aquatic life or aquatic recreation due to excessive nutrients.⁶

Since 2006, peer-reviewed literature has only increased the strength of the scientific evidence that sulfate increases mercury, phosphorus, and nitrogen released from sediments and mercury methylation. A 2012 follow up study of sulfate addition to experimental wetlands in the Marcell Forest concluded not only that methylmercury concentrations in porewater were 4-9X higher in wetlands where sulfate was added than in controls, but that biotic mercury concentrations increased under sulfate addition conditions and then decreased (although not to the level of controls) when sulfate loading ceased and wetlands were allowed to recover.⁷ A 2017 mesocosm study found that sulfate addition up to 300 mg/L approximately doubled mercury, nitrogen, and phosphorus release from sediments and resulted in approximately a 6X increase in methylmercury.⁸

MPCA scientists were co-authors on each of these studies. MPCA must act on the scientific evidence that sulfate discharge causes and contributes to mercury and nutrient pollution and follow through on its 2006 commitments to control sulfate in NPDES/SDS permitting. Seventeen years later, MPCA's implementation plan to set water-quality based effluent limits for sulfate must include guidance requiring NPDES/SDS permit effluent limits to prevent sulfate discharge from causing or contributing to the exceedance of standards for mercury and/or nutrients.

2. MPCA NPDES permits must limit sulfate discharge into low-sulfate waters to prevent degradation of wild rice beneficial use.

The MPCA is required to enforce the wild rice sulfate rule “under the Clean Water Act, including through the NPDES permitting program,” which responsibility encompasses setting water quality-based effluent limits for sulfate.⁹ Under Clean Water Act regulations, “[w]here the

⁶ MPCA, Impaired Waters List, available at <https://www.pca.state.mn.us/air-water-land-climate/minnesotas-impaired-waters-list>. Sections of that list identifying waters impaired due to violation of mercury or nutrient standards are provided in Attachment H and Attachment I.

⁷ J. K. Coleman-Wasik *et al.*, Methylmercury Declines in a Boreal Peatland When Experimental Sulfate Deposition Decreases, *Environ. Sci. Technol.*, 2012, 46:6663-6671, Attachment J.

⁸ Myrbo, A, *et al*, Increase in Nutrients, Mercury, and Methylmercury as a Consequence of Elevated Sulfate Reduction to Sulfide in Experimental Wetland Mesocosms, *J. Geophysical Research: Biogeosciences*, 2017, 122:2769-2785, Attachment K.

⁹ *In the Matter of the Reissuance of an NPDES/SDS Permit to United States Steel Corporation*

quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected.” 40 C.F.R. § 131.12(a)(2); derived from 33 U.S.C. § 1251(a)(2), Section 101(a)(2) of the Clean Water Act (setting a national goal to protect water quality “for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water”). Before allowing “any lowering of high water quality” for waters with a beneficial use for wildlife, the MPCA must, after intergovernmental coordination and public participation, find an important economic need for allowing lower water quality for an existing use, analyze alternatives that would prevent or lessen the degradation, and select one such alternative. 40 C.F.R. § 131.12(a)(2), (2)(ii).

In addition, MPCA permits for sulfate discharge affecting wild rice waters must meet Minnesota’s narrative standard for the protection of wild rice as a wildlife beneficial use. Under the Clean Water Act, water quality standards consist of: (1) the “designated uses of the navigable waters involved” and (2) “the water quality criteria for such waters based upon such uses.” 33 U.S.C. § 1313(c)(2)(A); 40 C.F.R. § 131.3(i). Effluent limits in NPDES permits are required when discharge has the reasonable potential to cause or contribute “an excursion above any State water quality standard, including State narrative criteria for water quality.” 40 C.F.R. § 122.44(d)(1)(i).

Minnesota Rule 7050.0224, subpart 1, states that the production of wild rice is both an agricultural and a wildlife use and provides narrative criteria that must be maintained in wild rice waters in addition to the subpart 2 numeric (10 mg/L) criterion for sulfate. Subpart 1 states that wild rice harvest and use “serve as a food source for wildlife and humans” and that for wild rice waters “[t]he quality of these waters and the aquatic habitat necessary to support the propagation and maintenance of wild rice plant species must not be materially impaired or degraded.”

It has been repeatedly affirmed that Minnesota’s wild rice rule protects wild rice beneficial use for wildlife as well as agricultural uses. The Ramsey County District Court found that application of the 10 mg/L numeric standard to natural stands of wild rice as well as to cultivated rice is “rationally related to the objective sought to be achieved” based on subpart 1 of Minn. R. 7050.0224.¹⁰ The court concluded that the rationale for the wild rice rule was that “wild rice is a food source for both wildlife and humans,” emphasizing that “the quality of the waters and the aquatic habitat necessary to support its propagation and maintenance must not be materially impaired or degraded.”¹¹

The Administrative Law Judge (“ALJ”) January 9, 2018 Report in the wild rice sulfate rulemaking cited MPCA’s statements that the benefits of wild rice accrued to “wildlife, especially the migratory waterfowl that depend on wild rice as a food source, along with the

(U.S. Steel) for its Minntac facility, 937 N.W.2d 770, 788-789 (2019).

¹⁰ *Minn. Chamber of Commerce v. Minn. Pollution Control Agency*, No. 62-CIV-10-11824, 2012 Minn. Dist. LEXIS 194 at *12-13 (Minn. Dist. Ct., 2nd Jud. Dist., May 10, 2012), Attachment L.

¹¹ *Id.*, Conclusions of Law ¶4; *see also id.* at *28-29, Conclusions of Law ¶39.

people who hunt waterfowl, engage in bird watching and other wildlife-related activities.”¹² The ALJ rejected the equation proposed to replace the wild rice sulfate standard, stating “the proposed rule will not benefit wildlife, or the Ojibwe, Dakota or other people who harvest or depend on wild rice for food, spiritual or cultural nourishment, or as a means of earning money.” ALJ Report, at 22, ¶70. The Chief ALJ specifically affirmed the ALJ’s determination that the objective of the proposed rule was “protect[ing] wild rice from the impact of sulfate, so that wild rice can continue to be used as a food source by humans and wildlife.”¹³

In its proposed framework for site-specific standards, MPCA identified “production of wild rice as a food source for wildlife as the beneficial use.” Wild Rice Sulfate SSS Framework at 2. MPCA further explained that “for a population of wild rice to yield sufficient grain for harvest by humans and to act as a food source for wildlife, it must produce enough nutritious, filled seeds to provide for the growth of future generations of wild rice in that environment.” *Id.*, at 3. It is time for MPCA to formally state that wild rice is a Clean Water Act Section 101(a)(2) use.

The map produced by MPCA during the 2014 Wild Rice Standards Study Advisory Task Force process.¹⁴ (copied on page 6 of WL July Comments) shows that many of Minnesota’s wild rice waters are located in areas with sulfate concentrations of less than 2.2 mg/L. Yet, The MPCA’s Wild Rice Sulfate Permit Procedures neither consider the narrative standard in Minn. R. 7050.0224, subp. 1 nor the potential that an increase in sulfate many times over in low-sulfate waters could result in degradation of wild rice. The MPCA cites no data demonstrating that a 2-10x increase in sulfate to just below 10 mg/L would not degrade the density, nutritional quality, seed productive capacity, or sustainability of wild rice. The need for sulfate effluent limits in NPDES permits to prevent degradation of wild rice must be evaluated on a case-by-case basis.

3. Site-specific standards based on MPCA’s rejected 2017-2018 rulemaking equation lack a sound scientific basis to protect wild rice beneficial use.

Under the Clean Water Act, state water quality standards, including “site-specific standards,” must be approved by the U.S. Environmental Protection Agency (“EPA”). The minimum requirement for state water quality standards is that “[w]ater quality criteria must be sufficient to protect the designated uses based on sound scientific rationale.” 40 C.F.R. §§ 131.5(a)(2), 131.11(a)(1). Even for uses that are not Clean Water Act section 102(a)(2) uses, standards must be “based on appropriate technical and scientific data and analyses.” 40 C.F.R. § 131.5(a)(7).

¹² Report of the Admin. Law Judge, *In the Matter of the Proposed Rules of the Pollution Control Agency Amending the Sulfate Water Quality Standard Applicable to Wild Rice and Identification of Wild Rice Rivers*, OAH 80-9003-34519, Revisor R-4324 (Minn. Off. Admin. Hr’gs., Jan. 9, 2018) (“ALJ Report”) at 21, ¶65, Attachment M.

¹³ Chief Admin. Law Judge’s Order on Review of Rules, *In the Matter of the Proposed Rules of the Pollution Control Agency Amending the Sulfate Water Quality Standard Applicable to Wild Rice and Identification of Wild Rice Rivers*, OAH 80-9003-34519, Revisor R-4324, April 12, 2018 (“Chief ALJ Order”) at 6, Attachment N.

¹⁴ MPCA, Analysis of the Wild Rice Sulfate Standard Study, June 2014 at 9, Figure 1, <https://www.leg.mn.gov/docs/2014/other/140594.pdf>, Attachment O.

Both the Cleveland-Cliffs, Inc. (“Cliffs”) proposal for a site specific sulfate standard (430 mg/L) for Perch Lake (AUID 69-0688-00) to allow continued sulfate discharge from United Taconite (“UTAC”)¹⁵ and United States Steel Corporation’s (“U.S. Steel”) proposal for a site specific standard (79 mg/L) for Hay Lake (AUID 0031-0037-00) to allow continued sulfate discharge from Keewatin Taconite (“Keetac”)¹⁶ relied heavily on the equation-based approach that was rejected in the 2018 ALJ Report and Chief ALJ Order. However, both Cliffs and U.S. Steel claimed that the ALJ and the Chief ALJ in the 2018 rulemaking had approved the scientific basis for the sulfate equation as protective of wild rice.

Cliffs asserted, “Importantly, the ALJ, in rejecting the rules, found no fault with the science underlying MPCA’s equation-based approach. To the contrary, the ALJ rejected all science-based objections to the proposed equation.” Cliffs SSS Proposal at 7. U.S. Steel claimed that the ALJ and the Chief ALJ “concluded that the equation-based approach outlined in the 2017 and 2018 guidance documents. . . was scientifically sound and supported by research.” U.S. Steel SSS Proposal at 1. These assertions are incomplete and misleading, particularly in the light of peer-reviewed published since the ALJ record was completed.

Although the ALJ did find that the MPCA “presented sufficient evidence to demonstrate that there is an adequate scientific basis to conclude that the proposed equation-based sulfate standard is supported by peer-reviewed science and is needed and reasonable,” ALJ Report at 60, ¶251, the ALJ did point out an important exception. The ALJ found:

The exception, for which the MPCA did not offer a convincing response, was raised by several parties, most notably Dr. John Pastor, one of the scientists on whose foundational research the MPCA relied for its conclusions that sulfide, rather than sulfate, is the direct cause of damage to naturally-occurring wild rice. Dr. Pastor’s continuing mesocosm research has indicated that, while increased iron may counter the toxicity of sulfide to wild rice seedlings in the springtime, iron sulfide plaques form and precipitate on the plants’ roots during the flowering and seed production phases of the wild rice life cycle. These plaques result in fewer and smaller seeds, with reduced nitrogen content, leading to extinction of the wild rice plant within 4 or 5 years at about 300 mg/L of sulfate, and greatly reducing wild rice plant population viability at lower concentrations of sulfate.

Id. at 60-61, ¶253.

¹⁵ Cleveland Cliffs cover letter July 14, 2022 and Barr Engineering, Request for Site-Specific Modification of the Minnesota Class 4A Sulfate Water Quality Standard Applicable to Perch Lake, Prepared for United Taconite LLC (“UTAC”), July 2022, (“Cliffs SSS Proposal”), Attachment P.

¹⁶ U.S. Steel cover letter, August 17, 2022 and Barr Application for Sulfate Site-Specific Standard Hay Lake Prepared for United States Steel Corporation, August 2022, with Appx. A-B (“U.S. Steel SSS Proposal”), Attachment Q (not including all appendices).

The sole reason why the ALJ found that MPCA “could rationally choose to proceed with the equation-based sulfate standard from a scientific standpoint” was that “Dr. Pastor’s continued research regarding the harmful effects of increased sulfate with increased iron are not yet the subject of peer-reviewed publication.” *Id.* at 61, ¶256. In declining to grant MPCA its requested relief and approve an equation-based standard, the Chief ALJ made no additional statements validating the proposed equation. *See* Chief ALJ Order at 6.

The absence of peer-reviewed publication of Dr. Pastor’s research—and that of Sophia Lafond-Hudson—can no longer be used to claim the proposed equation-based sulfate standard is supported by peer-reviewed science. In September 2018, Dr. LaFond-Hudson published her first peer-reviewed article with Dr. Pastor and Dr. Nathan Johnson, another scientist on whose research the MPCA has relied.¹⁷ This peer-reviewed research exposed wild rice to elevated sulfate in the presence of iron and found that “[d]uring the onset of seed production, root surfaces amended with sulfate transitioned within 1 week from iron (hydr)oxide plaques to iron sulfide plaques . . . Sulfate-amended plants produced fewer and lighter seeds with less nitrogen than unamended plants.” (LaFond-Hudson 2018). The paper depicted sulfate amended and unamended roots as below:



Fig. 2 Sulfate-amended (left) and unamended (right) roots.

¹⁷ S. LaFond-Hudson, *et al.*, Iron sulfide formation on root surfaces controlled by the life cycle of wild rice, *Biogeochem*, 2018 (“LaFond-Hudson 2018”), Attachment C to WL July Comments.

Follow-up research published in 2020 found that sulfate amended plants “produced 33 % fewer seeds ($p = 0.03$), 50 % less total seedhead mass ($p = 0.01$), and 40 % total seedhead nitrogen ($p = 0.02$) compared to unamended plants. . . Individual seeds were smaller by 33 % ($p = 0.02$) and [s]ulfate amended plants had lower vegetative biomass (leaves and stems) during late flowering ($p < 0.01$, $n = 4$).”¹⁸ Iron sulfide precipitation on root surfaces was “coincident with the beginning of seed production.” (La-Fond Hudson 2020 at 5). Research published by Dr. LaFond-Hudson with Dr. Pastor and Dr. Johnson in 2022 confirmed that results of long-term mesocosm studies did not support the theory that high iron concentrations protect wild rice from elevated sulfate. The plain language summary of this research explained:

Plants that naturally grow in freshwater do not survive well if the water contains elevated concentrations of sulfate. Sulfate reduction produces sulfide that subsequently inhibits the uptake of nitrogen, an essential plant nutrient. . . We investigated the combined effect of sulfate and natural biomass cycles on the stability of wild rice populations by growing plants in large tanks and exposing them to high-sulfate and low-sulfate concentrations, high and low iron concentrations, and with plant matter from the previous growing season either returned or removed. Nearly all plant populations exposed to high sulfate had died by 6 years into the experiment, regardless of iron concentration or litter removal.¹⁹

By now, Dr. Pastor’s research regarding the harmful effects of increased sulfate in the presence of elevated iron has been the subject of several peer-reviewed publications, co-authored by the scientists the MPCA selected as authoritative. Even if the equation proposed in the 2017-2018 rulemaking may have seemed at the time to be “reasonable” or to have a “sound scientific rationale,” that argument has been supplanted by the scientific evidence. A specified level of sulfide in porewater does not demonstrate that wild rice will be protected, since iron sulfide plaques on wild rice roots impair nitrogen uptake, impair seed production, and reduce biomass. The MPCA must clearly reject the “novel” equation-based approach upon which both Cliffs and U.S. Steel relied to propose site specific standards for increased sulfate. This approach would not protect wild rice beneficial use and may result in wild rice extinction.

4. Less stringent site-specific sulfate standards likely conflict with law, and they cannot be approved unless they fully protect other uses, health, welfare, downstream waters, and wild rice beneficial use.

In reconsidering and revising its proposed framework for developing and evaluating site-specific sulfate standards for the protection of wild rice, the MPCA must first unequivocally reject the equation-based approach as lacking a sound scientific rationale.

¹⁸ S. LaFond-Hudson, *et al.*, Interactions between sulfide and reproductive phenology of an annual aquatic plant, wild rice (*Zizania palustris*), *Aquatic Biology*, 2020 (“LaFond-Hudson 2020”) at 5, Attachment C to WL July Comments.

¹⁹ S. LaFond-Hudson, *et al.*, Sulfur Geochemistry Destabilizes Population Oscillations of Wild Rice (*Zizania palustris*), *J. Geophysical Research: Biogeosciences*, 2022 (“LaFond-Hudson 2022”), Attachment C to WL July Comments.

In addition, the MPCA must also do the following: a) impose and enforce the 10 mg/L wild rice sulfate standard in existing, reissued, and proposed NPDES permits; b) recognize that Minnesota Rule 7050.0220, subp. 7 was not intended to provide for less stringent site-specific sulfate standards; c) preclude the use of less stringent site-specific standards to circumvent Clean Water Act requirements to restore wild rice waters impaired due to sulfate; d) ensure that any site-specific sulfate standards protect public health, welfare, and the quality of downstream waters; e) preclude the use of less stringent site-specific sulfate standards unless the proponent has met its burden of proof that such standards fully protect the beneficial use of wild rice. The MPCA's current proposed framework does not satisfy any of these conditions.

a. Impose limits and enforce the 10 mg/L wild rice sulfate standard.

The MPCA has neither enforced sulfate water quality-based effluent limits in existing NPDES permits nor issued or reissued NPDES permits to include those limits. In October 2011, the MPCA approved NPDES permits for the U.S. Steel Keetac mine (MN0031879) and the Keetac tailings basin (MN0055948).²⁰ After interim periods where only monitoring was required, the Keetac mine permit set a 14 mg/L average monthly limit for sulfate and a 24 mg/L maximum limit for sulfate at surface discharge stations SD002, SD003, and SD012; and the Keetac tailings basin permit set the same limits for surface discharge stations SD001, SD005, and SD009. *Id.*, Permit MN0031879 at 7-12; Permit MN0055948 at 7-10. U.S. Steel was required to comply with these numeric effluent limits for sulfate by August 17, 2018 for the mine site and by August 17, 2019 for the tailings basin site. Findings of Fact for Permit MN0031879 at 6, ¶¶39-40; Findings of Fact for Permit MN0055948 at 7, ¶¶39-40.

U.S. Steel filed no administrative appeal challenging any of the sulfate effluent limits in its 2011 NPDES permits. However, as shown by MPCA's online records of discharge monitoring from August 2018 through June 2023 for the Keetac mine and from August 2019 through June 2023 for the Keetac tailings basin, neither the U.S. Steel Keetac mine nor the U.S. Steel Keetac tailings basin have complied with their sulfate permit limits since the dates that they became effective.²¹ No publicly available information indicates that enforcement action is underway.

The MPCA did not include sulfate effluent limits in either the U.S. Steel Minntac tailings NPDES permit or the PolyMet NPDES permit for discharge to wild rice waters. Both permits have been reversed and remanded to the MPCA.²²

²⁰ MPCA, Citizens' Board Materials for Authorization to Issue NPDES/SDS Permits MN0031879 and MN0055948, Oct. 14, 2011, ("Keetac Permits Packet"), Attachment R.

²¹ U. S. Steel – Keetac (MN0031879) and U.S. Steel [Keetac] Tailings (MN0055948) Discharge Monitoring Reports since Aug. 2018 for MN0031879 and Aug. 2019 MN0055948, showing bulk data for all sulfate monitoring, Attachment S.

²² *U.S. Steel*, 937 N.W.2d at 789 (Minntac NPDES permit reversed and remanded to MPCA to address if surface discharge complies with wild rice rule); *In the Matter of the Denial of Contested Case Hearing Requests and Issuance of NPDES/SDS Permit No. MN0071013 for the Proposed NorthMet Project*, 993 N.W.2d 627 (2023) (MPCA decision rejecting WQBELs remanded due to incomplete administrative record and "arbitrary or capricious decision-making").

MPCA’s first priority in NPDES permit implementation of the wild rice sulfate water quality standard must be to enforce U.S. Steel’s violations of the Keetac mine and tailings basin permits. MPCA also must establish water quality-based effluent permits for sulfate in existing and proposed permits based on compliance with the 10 mg/L wild rice sulfate standard, protection of water quality, health and public welfare, and restoration of impaired waters.

b. Minnesota Rule 7050.0220, subp. 7.

MPCA has stated that the Agency has authority to consider a less stringent site-specific wild rice sulfate standard under Minn. R. 7050.0220, subp. 7. The nature of that authority is not clear. In the 2017-2018 rulemaking, MPCA proposed language for Minn. R. 7050.0224, subp. 5(C) that would have allowed adoption of a “site-specific sulfate standard using the process in part 7050.0220, subpart 7, or 7052.0270 when the commissioner determines that the beneficial use is not harmed.”²³ However, that provision was among those rejected by the ALJ and Chief ALJ in their 2018 Report and Order on Review. It has not been adopted in any other rule.

The existing language in Minn. R. 7050.0220, subp. 7 appears to be written to allow new or more stringent standards, not less stringent ones. The rule contains no language requiring preservation of the beneficial use. In fact, the rule suggests that the discharger, rather than the use, is at risk from its application, stating, “Any effluent limit determined to be necessary based on a modified standard shall only be required after the discharger has been given notice of the specific proposed effluent limits and an opportunity to request a hearing as provided in part 7000.1800.” Minn. R. 7050.0220, subp. 7(C).

Other parts of Minnesota’s rules that address site-specific standards, detail the beneficial uses to be protected and the methods that must be used. *See e.g.*, Minn. R. 7050.0217 (setting objectives for site-specific standards to protect aquatic life from toxic pollutants in the absence of numeric standards); Minn. R. 7050.0218 (setting criteria and methods to determine health-based and consumption-based site-specific criteria for toxic pollutants not addressed in rules); Minn. R. 7050.0222, subp. 2a(D), subp. 3a(E), subp. 4, subp. 41(E) (detailing eutrophication standards and authority for their modification); Minn. R. 7050.0222, subp. 3, subp. 4 (allowing dissolved oxygen standards to be modified on a site-specific basis under 7050.0220, subp. 7 within certain numerical bounds). No language in Minn. R. 7050.0224 states that the 10 mg/L wild rice sulfate standard can be modified and made less stringent through a “site-specific standard.”

c. Restoring impaired waters under the Clean Water Act.

The Clean Water Act requires that States act to reduce pollutants and restore impaired waters, not to exempt them from applicable water quality standards. States must establish a total maximum daily load (“TMDL”) “at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.” 33

²³ MPCA Draft Wild Rice Sulfate Rule, Minn. R. 7050.0224, July 24, 2017, wq-rule4-15h, Attachment T.

U.S.C. § 1313(d)(1)(C). The Act also states that effluent limitations cannot be revised for Section 303(d) listed waters where the “water quality standard has not yet been attained” unless “(i) the cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard, or (ii) the designated use which is not being attained is removed in accordance with regulations established under this section.” 33 U.S.C. § 1313(d)(4)(A).

Both Cliffs’ request for a site-specific sulfate standard for Perch Lake and U.S. Steel’s request for a site-specific sulfate standard for Hay Lake appear to be responses to the EPA’s November 2021 finalization of its decision adding these wild rice waters to Minnesota’s Clean Water Act Section 303(d) List of Impaired Waters due to sulfate in excess of 10 mg/L.²⁴ Rather than requesting a temporary variance from an effluent limit and attempting to meet the conditions for its approval under Minn. R. 7050.0190, these applicants have asked the MPCA to sweep away the wild rice sulfate standard without analysis of controls that can be attained, let alone conditions for restoring the beneficial use of impaired waters.

Adoption of a less stringent site-specific sulfate standard in response to a Section 303(d) listing is diametrically opposed to the Clean Water Act and the EPA’s and MPCA’s listing of wild rice waters impaired due to excessive sulfate. Such a radical maneuver must not be rewarded.

d. Protection of public health, welfare, downstream waters.

The Clean Water Act requires states, whenever they adopt or revise water quality standards, to “protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter [of the Act]” 33 U.S.C. § 1313(c)(2)(A); 40 C.F.R. § 131.3(i). “Serving the purposes of this chapter” or “of the Act” requires protecting Section 101(a)(2) uses. 40 C.F.R. § 131.2.

In addition to rejecting the MPCA’s proposed equation-based sulfate standard as failing to meet the requirements of a rule and as unconstitutionally void for vagueness, which are procedural grounds that may not apply to the same extent with a site-specific standard, the ALJ also rejected the equation-based sulfate standard on substantive Clean Water Act grounds that would apply to a site-specific standard as well. The ALJ concluded that MPCA had failed to make an affirmative presentation of facts in the face of “challenges raised by the public concerning increased mercury methylation, further harm to wild rice, and degradation of waters due to algae blooms as a result of elevated sulfate standards.” ALJ Report at 53, ¶226. The MPCA had thus failed to demonstrate that increased levels of sulfate in wild rice waters allowed by the equation would comply with other applicable law by “protecting the public health or welfare, enhancing the

²⁴ EPA, Transmittal Letter and Final List of 32 Waters Added by EPA to the Minnesota 2020 Impaired Waters List due to wild rice sulfate criterion exceedance, Nov. 2021, Attachment U. In their requests, Cliffs cited the EPA’s listing of Perch Lake as an impaired water, while. U.S. Steel argued that Hay Lake “has not been designated a wild rice water in Minnesota Rules” and failed to mention EPA’s listing. Cliffs SSS Proposal at 10; U.S. Steel SSS Proposal at 7.

quality of water, and ensuring that the proposed water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters.” *Id.*

In declining to grant MPCA’s requested relief, the Chief ALJ cited MPCA’s claim in its Resubmissions that ensuring compliance with mercury and eutrophication standards was “so fundamental” to its work that it “escaped mention” in its written response to the public’s comments on this issue. Chief ALJ Order at 10. The Chief ALJ then stated that if the Agency were to submit the rule again, “it should include evidence in the record to support its allegations regarding its ability to ensure that all applicable water standards are met.” *Id.*

Neither Cliffs’ nor U.S. Steel’s site-specific standards proposals demonstrated that an elevated site-specific sulfate standard for Perch Lake or Hay Lake would not increase mercury methylation, increase algae blooms, or fail to protect public health, welfare, water quality, and downstream waters. Although the MPCA’s proposed Wild Rice Sulfate SSS Framework (page 3) mentions downstream water quality sufficient to allow tribal exercise of treaty-reserved rights to harvest wild rice, the Framework does not consider other downstream tribal rights or water quality standards and requires no proof that increased sulfate will not impair water quality due to mercury in the water column, mercury in fish tissue, and/or excessive nutrients.

e. Burden to prove wild rice beneficial use will be protected.

The MPCA’s proposed Wild Rice Sulfate SSS Framework raised important issues regarding the historical context and the comparison of “current population productivity relative to historical benchmarks,” and whether the wild rice population is “sustainable.” *Id.* at 6, 10.²⁵ The Framework also, as noted above, defines the wild rice beneficial use as yielding sufficient grain for harvest by humans and to act as a food source for wildlife, with enough nutritious, filled seeds that provide for the growth of future generations of wild rice in that environment. *Id.*, at 3. These are good beginning points, but the Framework does not clearly state that the burden of proof for a site-specific standard for sulfate in excess of 10 mg/L rests solely on the proponent or set forth the specific showings that a proponent must make.

UTAC previously operated as Eveleth Taconite (“EvTac”), saw gradual growth through the 1970s and boom times until the early 1980s, was purchased out of bankruptcy by a Chinese firm in 2003, and was repurchased by Cliffs in 2008.²⁶ Even the modest historical data in Cliffs’ application for a site-specific standard suggests that the acreage of wild rice in Perch Lake identified in recent surveys by Barr Engineering (1.6 acres in 2020 and 4.5 acres in 2021) is substantially less than the wild rice prevalence historically found by the DNR. Cliffs SSS Proposal at 32. MPCA reviewed the example of Perch Lake, noting that historical sulfate levels

²⁵ MPCA’s Framework stated that historical wild rice information “is valuable, if available and known,” is “relevant,” and “should be discussed in the application.” Wild Rice Sulfate SSS Framework at 6, 10-11. But the Framework did not require proof based on this history.

²⁶ J. Myers, United Taconite to celebrate 50 years with ceremony, tours, *Duluth News Tribune* Sept. 8, 2014, <https://www.duluthnewstribune.com/news/united-taconite-to-celebrate-50-years-with-ceremony-tours>.

in Perch Lake were measured at 1 mg/L, nearby waters had sulfate levels less than 2 mg/L, sulfate loading from UTAC had increased over 80-100 fold, and wild rice documentation in recent years was infrequent. Wild Rice Sulfate SSS Framework at 11. MPCA stated that the “historical population health of wild rice in Perch Lake could have been affected by increased sulfate levels.” *Id.*

The U.S. Steel Keetac taconite mine has operated since 1967.²⁷ But, U.S. Steel’s site-specific standard request provided information on wild rice acreage and density in Hay Lake only from 2009 through 2021. U.S. Steel SSS Proposal at 12-13. Its cited information on wild rice density and health varied wildly and provided no indication of historical wild rice abundance. *Id.* U.S. Steel noted that a Trygg map of Swan Lake identified the area as an “Indian Village,” and the likelihood that this village was used as a “Ricing Camp” led to the discussions with tribal biologists who identified Hay Lake, Swan Lake, and Moose Lake as potential wild rice waters. *Id.* at pdf 92. MPCA’s Wild Rice SSS Framework did not discuss the Hay Lake example or the paucity of U.S. Steel’s data regarding historic wild rice beneficial use.

WaterLegacy believes that neither the authority nor the need for any site-specific wild rice sulfate standard less stringent than 10 mg/L has been demonstrated and that increased sulfate discharge and failure to restore sulfate-impaired wild rice waters would result in harm to health, public welfare, aquatic life, recreation, and downstream water quality due to mercury, methylmercury, and nutrient impacts, as well as due to impacts on wild rice beneficial use for wildlife and humans. Should the MPCA nonetheless proceed with the development of its Wild Rice Sulfate SSS Framework, the proponent (discharger or MPCA) of a wild rice sulfate standard less stringent than 10 mg/L should be required to prove the absence of harm to wild rice beneficial use as food for wildlife and humans. Before a site-specific standard weakening the 10 mg/L wild rice sulfate standard can be considered, the following must be demonstrated:

- For existing discharges, the proponent must prove based on independent research—from the time historic sulfate discharge began to the present—the absence of harm to wild rice beneficial use, including harm to wild rice abundance, seed productivity, genetic diversity, and/or nutritional quality.
- For new or expanded discharges, the proponent must prove based on at least 6 years of independent research, using site-specific wild rice seeds and sediment in a mesocosm setting, that the proposed sulfate levels would not cause harm to wild rice beneficial use, including harm to wild rice abundance, seed productivity, genetic diversity, and/or nutritional quality.

In summary, WaterLegacy makes the following specific requests for MPCA revisions of its sulfate NPDES/SDS implementation procedures:

²⁷ U.S. Steel Keetac Taconite Mine Expansion Project Final EIS, Nov. 2010, ES-7, https://files.dnr.state.mn.us/input/environmentalreview/keetac/final_eis/keetac_mine_expansion_f_eis.pdf

1. MPCA should set effluent limits in NPDES/SDS permits to prevent sulfate pollution from causing or contributing to violation of standards for mercury in the water column, mercury/methylmercury in fish tissue, or excessive nutrients.
2. MPCA should adopt an NPDES/SDS permitting strategy that reflects the need to prevent degradation of the beneficial use of wild rice in low-sulfate waters.
3. MPCA should clarify that wild rice beneficial use is a Clean Water Act Section 101(a)(2) wildlife use as well as an agricultural use.
4. MPCA should explicitly reject the use of the equation proposed in 2017-2018 rulemaking as lacking a sound scientific basis and unprotective of wild rice.
5. MPCA should re-examine whether any Minnesota rule authorizes approval of a site-specific sulfate standard less stringent than the 10 mg/L wild rice rule.
6. MPCA should reject the use of site-specific standards as a method to avoid TMDL and waste load allocation processes that restore impaired wild rice waters.
7. MPCA should require the proponent of a less stringent site-specific sulfate standard for existing discharge to prove that the relaxed standard would not result in increased mercury methylation, further harm to wild rice, degradation of waters due to algae blooms or other harm to public health, welfare, or water quality, including compliance with the water quality standards of downstream States.
8. MPCA should require the proponent of a less stringent site-specific sulfate standard for existing discharge to prove based on independent research—from the time historic sulfate discharge began to the present—the absence of harm to wild rice beneficial use, including harm to wild rice abundance, seed productivity, genetic diversity, and/or nutritional quality.
9. MPCA should require an applicant for a less stringent sulfate standard for new discharge to prove based on 6 or more years of independent mesocosm research using site-specific wild rice seeds and sediment that the proposed sulfate levels would not cause harm to wild rice beneficial use, including harm to wild rice abundance, seed productivity, genetic diversity, and/or nutritional quality.
10. MPCA should prioritize setting and enforcing sulfate effluent limits in order to protect the beneficial use of waters for wild rice and to demonstrate the Agency's commitment to upholding the wild rice sulfate standard.

Respectfully submitted,



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Attachments E – U Enclosed