

W.J. McCabe Chapter, Izaak Walton League of America

Re: Proposed MPCA proposed framework for site-specific sulfate standards for the protection of wild rice

Dear Commissioner Kessler,

Thank you for the opportunity to comment on Minnesota Pollution Control Agency's (MPCA) proposed site-specific sulfate standard framework policy plan. These comments are provided by the W.J. McCabe Chapter of the Izaak Walton League of America. The IWLA has a major interest in the protection and restoration of our nation's waters, and has a long history of action on matters pertaining to fishable and swimmable aquatic resources.

The Duluth chapter, representing approximately 125 members in northeastern Minnesota, has been engaged in a wide range of issues concerning public policy and natural resources in northeastern Minnesota dating back to the 1950s, including the policy discussions and proposals surrounding the sulfate water quality standard and wild rice. Please accept these comments regarding our concerns about the proposed framework.

As proposed, the framework for site specific standards (SSS) for wild rice waters would offer a deviation from the Minnesota standard for sulfate, provide a way to allow sulfate standards and associated pollution higher than the current 10 parts per million (10ppm), and provide a way to avoid limiting sulfate discharge for individual sites using just about any approach as justification. The proposed framework will not protect wild rice.

While the introductory section describes beneficial use in broad terms (production, biomass) and recognizes tribal interests and uses, and while apparently MN statutes allow for setting SSS, the proposed implementation of setting SSS is open-ended and seems not to recognize these principles of beneficial use. Determining the sulfate "effects threshold" is particularly concerning, as extensive research has shown that the current 10ppm standard is, in fact, the effects threshold.

MPCA's concept that sulfate discharge limits will not consider degradation but rather capacity to absorb pollution, will mean that a permit would allow sulfate discharge much higher than the sulfate standard if the wild rice waters downstream have a low sulfate concentration. An example is Big Sandy Lake, with an average sulfate concentration of 1.2mg/l, which would ostensibly allow loading from the proposed Talon Metals to degrade the lake for wild rice and cause a huge increase in mercury in fish tissue and risk to human health.

The approaches in the framework suggest either setting the current sulfate standard or taking "novel approaches" which are not defined. All the suggested "novel" approaches seem to open the door to justify sulfate loading into wild rice waters far above the current standard, in ways that are not supported by scientific evidence or knowledge. The section on demonstration of wild rice health using "experimental endeavors" completely ignores the research and demonstrations by Minnesota scientists (Paster, Johnson, Myrbo and others, which are cited in the literature section). The two

examples of historical data (Mississippi River and Perch Lake) are puzzling as they show, in the first case, that wild rice stands in backwaters likely have not been measured for sulfate, but nearby river channels have high amounts of sulfate. In the second case, sulfate caused a decline in wild rice. These examples offer nothing in terms of examples for this framework.

The last section on documenting ambient sulfate in regional waters seems irrelevant to the topic of SSS in wild rice waters. Figures show that sulfate is higher in samples from various waterbodies in SW Minnesota without connecting those data to any wild rice waters that may have been sampled. An examination of the MPCA map of wild rice waters shows that only a small handful of wild rice waters are located on the boundary between high and low sulfate waters in the state - the vast majority of wild rice waters in Minnesota are located where sulfate levels are generally far less than 10mg/l (see attached map). There was no attempt to demonstrate how regional waters could effectively be used to predict wild rice beneficial use in an SSS.

The framework begins by setting a goal of protecting wild rice but offers only a jumble of unjustified and open-ended approaches.

The McCabe Chapter of the Izaak Walton League makes the following recommendations for this framework:

- MPCA must enforce Minnesota's wild rice sulfate standard of 10 parts per million under the Clean Water Act and decisions of the Minnesota courts. MPCA has no discretion to continue to delay or deny enforcement. 10ppm sulfate is the "effects threshold" for wild rice degradation.
- Both the Clean Water Act and Minnesota law prohibit degradation of water quality in Minnesota lakes, streams, and wetlands. MPCA must not allow polluters to degrade high quality, low-sulfate wild rice waters. MPCA must not allow pollution discharge into known and listed degraded waters.
- Many of Minnesota's most abundant wild rice stands in the Boundary Waters, the Lake Superior watershed, and north central Minnesota (including the Big Sandy Lake area) have far less than 10 parts per million of sulfate. MPCA permitting should not allow sulfate in these wild rice waters to increase at all, even to just below the standard.
- Peer-reviewed scientific evidence does not support allowing more sulfate when there is also a high level of iron in sediments. Adding sulfate to waterbodies with high levels of iron coats wild rice roots with iron sulfide and interferes with wild rice seed quality, production and sustainability of this important annual plant.
- MPCA's "equation" method to determine if wild rice production would be protected without the 10 parts per million standard was debunked in contested case proceedings in 2018. The "site-specific standards" loophole should not be used to resurrect this scientifically unsupported theory.
- The wild rice sulfate standard is not advisory. Any discharger asking for MPCA to consider a "site-specific standard" for sulfate must prove that wild rice beneficial use will be protected long-term.
- Before a "site-specific standard" can be considered for wild rice waters that currently exceed the

wild rice sulfate discharge, the proponent (discharger or MPCA) 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 density, productivity, genetic diversity, and nutritional quality.

- Before a "site-specific standard" can be considered for a new or expanding discharge to wild rice waters, the proponent (discharger or MPCA) must prove based on at least 5 years of independent 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 density, productivity, genetic diversity, and nutritional quality.
- Sulfate pollution increases toxic mercury contamination of fish due to release of mercury from sediments and increased mercury methylation. MPCA must consider the effects of lax sulfate standard enforcement on mercury and methylmercury, and the resultant increase in mercury contamination of fish - damage the developing brains of fetuses, infants, children, and people who rely on fish for subsistence; and impairment of the exercise of tribal Treaty-reserved rights.
- No "site-specific standard" for discharge of sulfate to wild rice should be approved by MPCA without tribal consultation and tribal consent, and a formal and public rulemaking process.
- Unless and until a more stringent "site-specific standard" is formally approved as required under state law and the Clean Water Act, the MPCA must apply the 10 parts per million wild rice sulfate standard in setting and enforcing permit limits and in preparing TMDL studies and implementation plans to restore wild rice waters listed as impaired due to excessive sulfate. This includes all waters that have historically supported wild rice.

The McCabe Chapter of the Izaak Walton League urges the MPCA to remember its purpose and mission to protect our waters, especially including our wild rice waters and wild rice heritage, and protect human health and wellbeing from sulfate and other pollution by enforcing the current 10ppm wild rice sulfate standard. We especially encourage the MPCA to listen to our Tribal leaders and experts, as they depend on wild rice for community health, culture and other benefits.

Attached in the uploaded document are two illustrations supporting our recommendations. I have also attached the IWLA's past comments on this issue for history.

Julie O'Leary
President, W.J. McCabe Chapter
Izaak Walton League of America
PO Box 3063
Duluth, MN 55812

Submitted to MPCA Public Comment web page

September 4, 2023
Commissioner Katrina Kessler
Minnesota Pollution Control Agency
520 Lafayette Road
Saint Paul, MN 55155-4914

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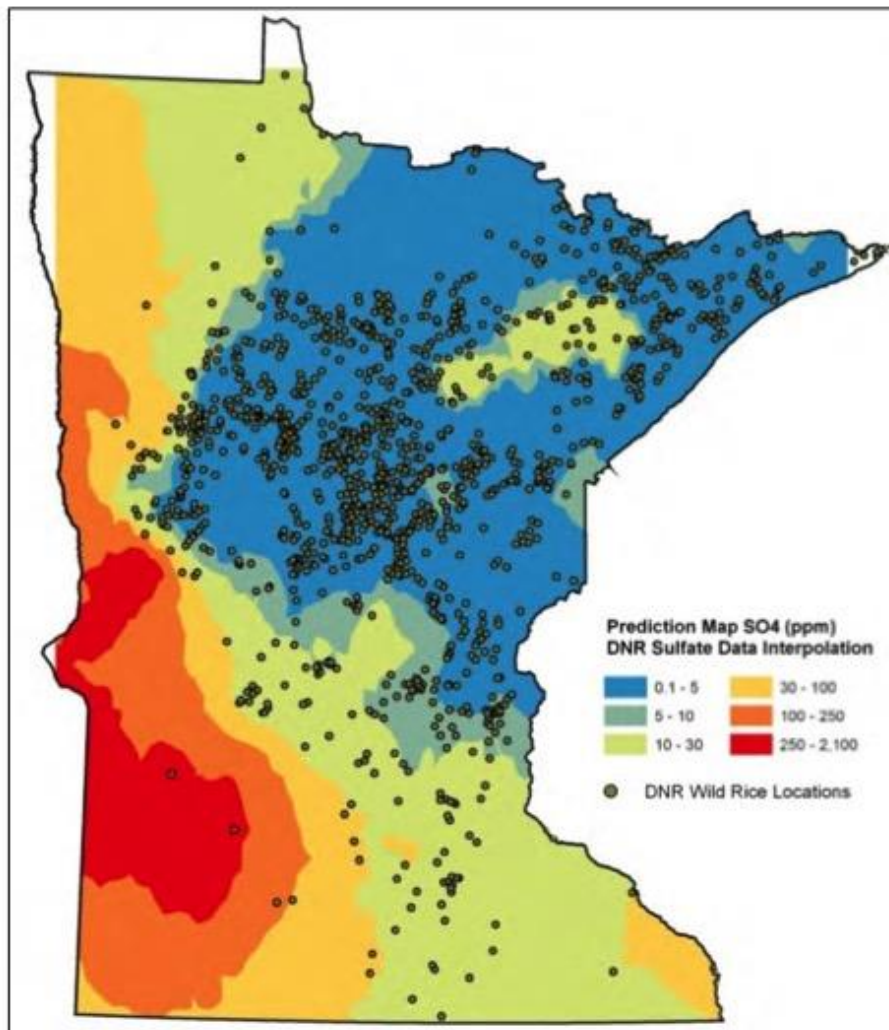
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Attached below are two illustrations supporting our recommendations. I have also attached the IWLA's past comments on this issue for history.

Julie O'Leary
President, W.J. McCabe Chapter
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PO Box 3063
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Wild Rice Locations and Sulfate Concentrations Map (MPCA & DNR Data)



Scientific Research Image from S. LaFond-Hudson, Iron sulfide formation on root surfaces controlled by the life cycle of wild rice, Biogeochem. (2018)



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

Abstract: “We exposed a model annual wetland plant, *Zizania palustris* [wild rice], to elevated sulfate concentrations (3.1 mM) and quantified the development of iron oxide and iron sulfide precipitates on root surfaces throughout the plant life cycle. During 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.”



W.J. McCABE (DULUTH) CHAPTER IZAAK WALTON LEAGUE OF AMERICA

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Date Submitted

Carol Nankivel
Minnesota Pollution Control Agency
520 Lafayette Road N.
St. Paul, MN 55155
carol.nankivel@state.mn.us

Dear Ms. Nankivel,

These comments are being submitted by the W. J. McCabe (Duluth) Chapter of the Izaak Walton League of America (IWLA). The Izaak Walton League has a major interest in the protection and restoration of our nation's waters, and has a long history of action on matters pertaining to fishable and swimmable aquatic resources. Since 1922, the Ikes have been a national leader as a defender of our soil, air, woods, waters and wildlife.

The Duluth chapter has been engaged in a wide range of issues concerning public policy and natural resources in northeastern Minnesota dating back to the 1950s. That desire to protect our environmental quality continues to this day. Therefore, please accept these comments regarding our concerns and observation over the proposed rulemaking for wild rice/sulfate standards.

While most of our members are not scientists with extensive education and years of experience in wild rice research and aquatic studies, we have done our best to educate ourselves on the issue of sulfate/sulfide interactions with wild rice. Having had public programs on the subject, and listened to multiple researchers and natural resource managers intimately familiar with this issue, including but not limited to, Dr. John Pastor at UMD, Nancy Schuldt at Fond du Lac Natural Resources, and Dr. Joel Hoffman at EPA, we believe there is still insufficient understanding of the complex relationship between wild rice, water chemistry, and microbial interactions, to move forward with the proposed new sulfate standard for wild rice.

We have the following concerns with the revised wild rice sulfate standard and rulemaking:

1. The proposed model is untested. We do not know that its implementation would protect and sustain natural stands of wild rice.
2. The impact of the revised standard upon mercury contamination of fish has not been considered.
3. Natural wild rice stands should be classified under the aquatic life use (Class 2), not the agriculture/wildlife use (Class 4).
4. The list of wild rice waters in northern Minnesota should include all waterbodies that currently or in the past supported natural stands of wild rice.

At a recent meeting with Dr. John Pastor, we received a briefing on his current research on wild rice. Earlier observations had discovered an iron precipitate encrusting the root tissue of wild rice exposed to elevated (>50mg/L) levels of sulfate. His research is now looking at the associations between oxygen around the plant root surface, type of rooting substrate, available iron, presence and levels of sulfate (to produce sulfide), and the microbes found near the germinating root system, as well as the timing of

nutrient uptake for rice seed formation and development. His research points to the fact that the microbes are causing iron sulfide to precipitate out when oxygen is absent at the root surface in the late stages of the wild rice life cycle. This iron sulfide precipitate is building up around the roots, and is effectively shutting off the uptake of critical nutrients (N and P) just as the seeds are forming and maturing, resulting in poor seed viability. With prolonged (multi-year) exposure to sulfate levels in excess of 50 mg/L, this issue of poor viability compounds itself year after year, until eventually the stand could collapse and disappear.

Dr. Pastor advises that more research is needed to fully understand this complex relationship. But his preliminary results indicate that the existing sulfate standard of 10mg/L should continue to be used until there is definitive proof to revise it.

However, we do feel that the MPCA model must be demonstrated to be protective of wild rice under a variety of conditions, particularly with respect to differences in sediment chemistry. We recognize that the dedicated scientists at the MPCA may have developed a workable model to protect, enhance, and restore wild rice across the state. But the model is as yet untested in the real world, where variations in local conditions, whether alone or in combination, can contribute to poor survival. These conditions may be directly related to the model, including sulfide concentrations, root substrate variability, and within-water body and seasonal fluctuations in water and sediment chemistry, or indirectly related, including wild rice genetic variability. It is important to recognize that there is a great deal of uncertainty in the relationship between surface water sulfate concentrations and within sediment sulfide concentrations, and that sediment carbon and iron availability only partially explain this relationship

Secondly, we must not overlook the connection between sulfate/sulfide, and mercury, in the formation of methylmercury, and the serious problem of its accumulation in fish tissue. This toxic form of mercury is bio-accumulating through the food chain and is likely causing long-term consequences to humans, particularly the young. A recent Minnesota Department of Health study found that 10% of newborn babies in our region had elevated levels of mercury in their blood. For these individuals, this neuro-toxin could inhibit fetal development, lead to childhood learning disabilities and possible long-term chronic health issues. Because elevated levels of sulfate in our waters are one of the factors that promote the conversion of elemental mercury to methylmercury, the reduction of sulfate levels should be a priority to help our state solve this long-term human health issue. We need to understand what the impact of revising the sulfate standard for wild rice might have upon methylmercury production and its uptake by fish.

Thirdly, we cannot support categorizing wild rice waters under agricultural/wildlife use for stock watering and irrigation (Class 4). Natural wild rice stands should be classified under the broader protections provided by the aquatic life use (Class 2). After all, wild rice is a native aquatic plant, not an agricultural crop. In fact, wild rice only inhabits the highest quality waters, with specific chemical and physical characteristics. The water that flows out of wild rice lakes tends to be very clean. Healthy wild rice stands are an indicator of some of the highest quality fish and wildlife habitats and environments in the state.

Wild rice is a key indicator species for a very productive, biodiverse ecosystem type, supporting many species of fish, wildlife and waterfowl. It has a high coefficient of conservatism, meaning that its presence in a waterbody signifies that it is relatively unaltered from pre-settlement condition and represents a high quality natural area.

In the “Wild Rice Monitoring Handbook” by Tonya Kjerland (University of Minnesota Sea Grant Program – publication #SH16) in the chapter “*Biology of Wild Rice*” page 75 “*Water Quality*”, it states, “Wild rice is considered to be a bio-sentinel for water quality due to its tendency to thrive under specific conditions.”

We expect our MPCA to protect our unique wild rice resource with the high status that it deserves. To relegate it to a class of water that is only suitable for irrigation and livestock drinking water, is unimaginable and wrong. Incorrectly classifying these waters is a clear disregard for the importance of these waters and this indicator species.

Finally, it is not clear to us at this time what waterbodies will be included in the list of designated wild rice waters. We believe that the list of wild rice waters in northern Minnesota should include all waterbodies that currently or in the past supported healthy stands of wild rice. We also must be careful to not assume that the wild rice conditions of today reflect the wild rice conditions of the past.

In conclusion, we suspect the revision of the sulfate standard for wild rice would not be happening without the undue influence of industry. We recognize the challenge faced by the MPCA to enforce the current sulfate standard in the face of the costs to industry and municipal wastewater treatment systems to meet the standard. Some flexibility may be reasonable and needed. However, changing the sulfate standard should be based on science, not economically driven political pressure. This is especially important with the prospect of copper-nickel mining on the horizon and of large mining operations in high sulfide ores where excessive sulfate discharges are expected.

It appears to us that the MPCA has not done its duty to protect our wild rice stands by enforcing the current 10mg/L sulfate standard, which was enacted into law forty-three years ago, but which has seldom been enforced. Minnesota needs a standard that is protective of wild rice and that will be enforced, so that both industry and the public have a clear understanding of what is needed and what will be required. Until there is a scientifically supported standard with consensus among researchers, resource managers, the Tribes and agency regulators that will in fact protect, enhance and restore our wild rice, the current standard of 10 mg/L must remain in place and be enforced.

We believe it is the responsibility of the MPCA to ensure broad compliance through enforcement of an acceptable sulfate standard for wild rice. We will do our best to support and defend such an effort. It is our hope that regulators, conservationists and industry could find a way to work together to solve this problem.

The quantity and quality of natural wild rice stands in Minnesota is unique to our nation. Although much reduced from its past abundance, wild rice is still an important and highly valuable natural resource in our state. It is our responsibility to manage this nationally significant resource wisely. We need a wild rice sulfate standard for water quality that is protective of our remaining stands, that will allow for the restoration of stands that have been degraded, and that protects human health from sulfate related methylmercury contamination. The incredible environmental and social values of Minnesota's wild rice waters should not be sacrificed for the short term economic gains of mining or other industries.

We appreciate the opportunity to provide these comments, and we hope they are helpful to you as this process moves forward.

Sincerely,

Rich Staffon, President
W. J. McCabe Chapter, IWLA

Matt Hansen, Conservation Issues Chair
W. J. McCabe Chapter, IWLA



W.J. McCABE (DULUTH) CHAPTER IZAAK WALTON LEAGUE OF AMERICA

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Date Submitted

Paul Proto, Environmental Scientist
US EPA, Region 5, Water Division, Watersheds and Wetlands Branch
77 W. Jackson Blvd., WW-16J
Chicago, IL 60604
Via Electronic Mail: proto.paul@epa.gov

Dear Mr. Proto,

I am writing to provide our comments on the U.S. Environmental Protection Agency (EPA) identification of 30 water quality limited segments impaired for sulfate for inclusion on Minnesota's 2020 List of Impaired Waters under Section 303(d) of the Clean Water Act. We strongly support EPA taking this action to require the Minnesota Pollution Control Agency (MPCA) to list wild rice waters that are impaired due to sulfate contamination, primarily caused by discharge from mining and waste water treatment. Our wild rice waters are a highly unique and valuable natural resource that are threatened and deserve such protection under the Clean Water Act, which the MPCA has been unwilling or unable to provide.

The time to take action is long overdue and we thank the EPA for doing this. We especially appreciate that EPA is consulting with and listening to the concerns raised by Minnesota's Tribal governments. Of all the people of Minnesota, their history and culture are the most closely tied to wild rice. Its protection is especially vital to them, and they have a great deal of knowledge about the state's wild rice waters.

These comments are being submitted by the W. J. McCabe (Duluth) Chapter of the Izaak Walton League of America (IWLA). The IWLA has a major interest in the protection and restoration of our nation's waters, and has a long history of action on matters pertaining to fishable and swimmable aquatic resources. Since 1922, the IWLA has been a national leader as a defender of our soil, air, woods, waters and wildlife.

The Duluth chapter has been engaged in a wide range of issues concerning public policy and natural resources in northeastern Minnesota dating back to the 1950s. That desire to

protect our environmental quality continues to this day. Therefore, please accept these comments regarding our concerns and observation over the need for listing of additional waters in Minnesota that are impaired by the anthropogenic discharge of sulfates. Our concerns are threefold:

- Sulfate pollution has historic and ongoing impacts that negatively affect the health and survival of wild rice, and the subsequent spiritual, cultural, and nutritional impact this has on native peoples, the broader society, and fish and wildlife.
- Sulfate through reduction produces hydrogen sulfide, which even at very low levels (2 ug/L) is toxic in aquatic communities¹.
- The well recognized role that sulfates play in the methylation of mercury and accumulation in fish tissue has resulted in negative human health impacts in northeastern MN.

Sulfate must not only be examined under the confines of the wild rice sulfate standard. The entirety of its role in the environment should be considered when listing impaired water bodies.

While most of our members are not scientists with experience in wild rice research and aquatic studies, we have tried to educate ourselves on the issue of sulfate/sulfide interactions with wild rice. We've held public programs on the subject, and listened to researchers and natural resource managers intimately familiar with this issue, including Dr. John Pastor, University of Minnesota-Duluth, Nancy Schuldt, Water Projects Coordinator for the Fond du Lac Band of Lake Superior Chippewa, and Dr. Joel Hoffman, Duluth EPA Office of Research and Development. We believe there is an undeniable link between sulfates and impacts to wild rice from natural sources, or more commonly from human caused pollution discharge, primarily associated with mining, energy production from fossil fuels, pollutants from industrial sources, and wastewater treatment facilities.

Years of extensive research supports the currently adopted Minnesota sulfate water quality standard of 10 mg/L, found in *MPCA Rule 7050.0222, (subpart 4a Cool and warm aquatic life and habitat, drinking water, and associated use class A. Miscellaneous Substance, Characteristic, or Pollutant - 31)*, and as adopted by the EPA and incorporated into standards of the CWA for the protection of wild rice.

The MPCA has published a short list of select waters/water segments that are intended to be protective of wild rice using the present 10mg/L standard.² We find this list too limiting,

and in fact it should be viewed as an abdication of MPCA responsibility to enforce the standard under both Minnesota Rule and the CWA.

First, the true distribution of wild rice waters in northern Minnesota is far more extensive than MPCA's published list. Both the Minnesota Department of Natural Resources (MNDNR) and various Tribal entities, including individual Bands, 1854 Treaty Authority, and Great Lakes Indian Fish and Wildlife Commission (GLIFWC), have lists that are far more inclusive of all the bodies of water that should be included in Minnesota's list of wild rice waters. We believe that all waters that currently or historically supported wild rice should be included in the list of waters protected under the CWA for sulfate.

At a meeting with Dr. John Pastor, we were briefed on his research on wild rice. His observations discovered an iron precipitate encrusting the root tissue of wild rice exposed to elevated (>50 mg/L) levels of sulfate. He looked at associations between oxygen around the plant root surface, type of rooting substrate, available iron, presence and levels of sulfate (to produce sulfide), microbes found near the germinating root system, and timing of nutrient uptake for rice seed formation and development. The research pointed to the fact that the microbes caused iron sulfide to precipitate out when oxygen is absent at the root surface in the late stages of the wild rice life cycle. As this iron sulfide precipitate builds up around the roots it shuts off the uptake of critical nutrients (N and P) just as the seeds are forming and maturing, resulting in poor seed viability. With prolonged exposure to sulfate levels in excess of 50 mg/L, this issue of poor viability compounds itself year after year, until eventually the stands collapse and disappear.

Dr. Pastor advised that more research is needed to fully understand this complex relationship. But his preliminary results indicate that the existing sulfate standard of 10 mg/L should continue to be used until there is definitive scientific proof to revise it.

As recently as 2017 MPCA attempted to model a new sulfate standard that could be protective of wild rice under a variety of conditions, particularly with respect to differences in sediment chemistry. Their model was untested in real world environments where variations in local conditions might have contributed to poor wild rice survival. This variation might have been directly related to model parameters including sulfide concentration, root substrate, and seasonal fluctuations in water and sediment chemistry; or indirectly related to things like wild rice genetic variability. It is important to recognize that there is a great deal of uncertainty in the relationship between surface water sulfate concentrations and within sediment sulfide concentrations, and that sediment carbon and iron availability only partially explain this relationship. Nonetheless, MPCA proposed adopting and implementing this new methodology.

After a contested case hearing before an Administrative Law Judge (ALJ), where the proposed new model for sulfate was dismissed, the Chief Administrative Law Judges Order on Review found that the ALJ was correct, that among other things, this methodology lacked transparency, that MPCA's assertion that methylation of mercury was outside the scope of the rulemaking process was incorrect, and that the process proposed was invalid because it was "insufficiently specific to be approved", and was not "rationally related to the Agency's objective" of "protect(ing) wild rice from impact of sulfate, so that wild rice can continue to be used as a food source by humans and wildlife." ³

Secondly, EPA and MPCA are missing the opportunity to protect fish and macro-invertebrate communities (fish-food organisms) which are adversely affected by sulfate reduction to hydrogen sulfide (H₂S), just like wild rice plants are affected lethally.

The US EPA water quality criterion for the protection of fish and aquatic life is 0.002 mg/L hydrogen sulfide (USEPA GOLD BOOK 1986). Compared to the sulfate standard for wild rice of 10 mg/L, only a small percentage of the 10 mg/L sulfate (< 0.1 %) when converted to the toxic form of H₂S, would be needed to adversely affect fish, fish food (phytoplankton and macro-invertebrates), and viable long-term populations!⁴

So, not only do we need to protect wild rice from sulfate, we need to recognize and acknowledge the fact that fish are also being placed at risk by discharging sulfate into these natural waters, either from point sources or from non-point sources, most commonly associated with mining, fossil fuel energy production and wastewater treatment.

EPA must not overlook the connection between sulfate/sulfide and mercury in the formation of methylmercury, and the serious problems associated with its bio-accumulation into fish tissue. This toxic form of mercury moves up through the food chain and is likely causing long-term consequences in humans, where the problems are particularly acute for women and their fetus during pregnancy, and in young children. A 2011 Minnesota Department of Health study, "Mercury Levels in Blood from Newborns in the Lake Superior Basin", (<https://www.health.state.mn.us/communities/environment/fish/techinfo/newbornhglsp.html>) found that 10% of newborn babies in our region had elevated levels of mercury in their blood. For these individuals, this neuro-toxin could inhibit fetal development, lead to childhood learning disabilities and possibly long-term chronic health issues. Because elevated levels of sulfate in our waters are one of the factors that promote the conversion of elemental mercury to methylmercury, the reduction of sulfate levels should be a priority to help our region solve this long-term human health issue. We need to consider what the impact of failing to enforce the sulfate standard for wild rice, and to list all impaired waters, might have upon methylmercury production, its uptake by fish, and human health.

We believe that MPCA set a bad precedent when it failed to list all impaired wild rice waters, because it provides a “backdoor pass” to those industries that are responsible for contributing sulfate and mercury to our state waters, resulting in non-compliance for pollution standards long established under the CWA.

Wild rice only inhabits high quality waters that exhibit unique chemical and physical characteristics. The water that flows out from wild rice lakes and rivers tends to be of the highest quality. The presence of healthy wild rice stands is an indicator of some of the best fish and wildlife habitats and environments in the state. This knowledge points to the importance for EPA and MPCA to protect these valuable waterbodies.

Wild rice is a key indicator species for a very productive, biodiverse ecosystem type, supporting many species of plants, fish and wildlife. Its presence in a waterbody signifies that it is relatively unaltered from pre-settlement condition and represents a high-quality natural area.

In the “Wild Rice Monitoring Handbook” by Tonya Kjerland (University of Minnesota Sea Grant Program – publication #SH16) in the chapter titled “*Biology of Wild Rice*” on page 75 “*Water Quality*”, it states, “Wild rice is considered to be a bio-sentinel for water quality due to its tendency to thrive under specific conditions.”

Citizens have a reasonable expectation that our regulatory agencies will utilize the CWA to protect our unique wild rice resource with the high status it deserves. Unfortunately, MPCA has relegated it to a class of water that is only suitable for irrigation and livestock drinking water, which we see as unimaginable and wrong. Incorrectly classifying wild rice waters in this way disregards their importance and is a capitulation to industry. We recommend that wild rice waters should be included under Class 1 – Domestic Consumption, or Class 2 – Aquatic life and Recreation. As a sentinel species for high water quality, Class 1 and 2 are more appropriate.

Finally, the lack of inclusion and transparency by MPCA, and its failure to utilize scientifically credible, publicly available information in the listing of Minnesota’s wild rice waters leaves a gaping hole in the protection of these environmentally important and culturally significant waters. We believe that the list of wild rice waters throughout Minnesota must include all waterbodies that currently or in the past supported healthy stands of wild rice. We also must be careful to not assume that the wild rice/aquatic conditions of today, reflect the wild rice/aquatic conditions of the past. Many waters have for decades suffered from the impacts of pollution and degradation from multiple sources, and these may no longer sustain once thriving populations of wild rice. We must not grandfather in past sulfate pollution, especially if it results from past lax MPCA oversight.

We do again want to thank the EPA for taking this important first step in addressing a major flaw in the enforcement of CWA standards related to sulfate and wild rice, by insisting that MPCA add 30 wild rice waters to the state's List of Impaired Waters. But we cannot be satisfied with just listing the "dirty 30". EPA should use the MNDNR and Tribal lists of wild rice waters, and include all those that are impaired by sulfates, ranking them from the most to least impaired. Waters that historically sustained wild rice but are no longer able to do so as a result of sulfate impairment, should be included.

This listing should not exclude waters that are or might someday be impacted by mining or industrial development. We suspect the exclusion of important wild rice waters, including some upper segments of the St. Louis River, would not be happening without the undue influence of industry and our state's recent political makeup.

We recognize the challenges faced by the MPCA to enforce the current sulfate standard in the in the face of political interference, and the costs that would be incurred by the mining and power industries, and municipal wastewater treatment systems. Some flexibility may be reasonable and needed when enforcing the standard, particularly for waterbodies that are near the 10 mg/L standard, and current impacts appear minimal. However, the listing of wild rice waterbodies should be based on sound science, and not solely on economically driven political pressure. This is especially important with the prospect of untested copper-nickel mining on the horizon, where mining operations in sulfide ore bodies are likely to discharge sulfates into the downstream waters.

The MPCA has not done its duty to protect our wild rice stands by enforcing the current 10 mg/L sulfate standard, enacted into law more than 45 years ago, and seldom enforced, despite documented exceedances over the years. This has led to a known loss of wild rice stands over time. Minnesota needs its 10 mg/L standard along with a comprehensive list of the state's wild rice waters, and a reasonable assurance that these standards will be enforced by regulators. It is also very important that MPCA require industry to monitor for sulfate in their NPDES permits so the standard can be enforced. In that way both industry and the public would have a clear understanding of what is needed and what will be required.

An additional concern with monitoring is that the occasional flushing of water retention facilities at mines or power plants may result in pulses of high concentrations or volumes of sulfates in downstream waters. The impacts from these could be significant, especially if they happen during the sensitive period of the growth cycle of wild rice. Periodic monitoring for sulfates may miss these events, underestimating the actual impacts to wild rice waters.

We believe it is the responsibility of the EPA, under the Clean Water Act, to ensure that MPCA complies with enforcement of the currently adopted sulfate standard on all justifiable wild rice waters, that currently support or historically supported wild rice stands. It is our hope that regulators, conservationists, industry and the legislature will find a way to work together to solve this problem. Instead of blocking sound regulations, our legislature should consider providing financial assistance to help industry meet the standards and protect our precious natural resources. To assist in addressing cleanup of sulfate discharges into wild rice waters, we recommend that EPA work with Federal elected officials to incorporate funding for upgrading wastewater treatment facilities into the National Infrastructure Bill.

In conclusion, the quantity and quality of wild rice waters in Minnesota is unique to our nation. Although reduced from its past abundance, wild rice is still an important and highly valuable natural resource in our state. It is our responsibility to manage this nationally significant resource wisely. We need enforcement of the sulfate standard to protect the water quality in our remaining wild rice stands, and to restore stands that have been degraded over time. Our regulatory agencies should insist on water quality standards that protect human health from sulfate-related methylmercury contamination. The incredible long-term environmental and social values of Minnesota's wild rice waters should not be sacrificed for the short-term economic gains of mining or other industries.

We appreciate the opportunity to provide these comments, and we hope they are helpful to you as this process moves forward.

Sincerely,

Rich Staffon, President
W. J. McCabe Chapter, Izaak Walton League of America
1405 Lawrence Road,
Cloquet, MN 55720
218-879-3186 h, 218-451-1415 c, rcstaffon@msn.com

¹ "Sulfide as a soil phytotoxin – a review" by Leon P. M. Lamers, et. al. – Frontiers in Plant Science – Plant Physiology – July 2013 – Volume 4 – Article 268

² 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, Minnesota Rules parts 7050.0130, 7050.0220, 7050.0224, 7050.0470, 7050.0471, 7053.0135, 7053.0205 and 7053.0406

³OAH 80-9003-34519 Revisor R-4324

CHIEF ADMINISTRATIVE LAW JUDGE'S ORDER ON REVIEW OF RULES UNDER MINN. STAT. § 14.16, SUBD. 2, AND MINN. R. 1400.2240, SUBP. 5.

II. Proposed List of Waters

Federal law delegates to states the authority to establish designated uses of waters and to establish water quality criteria to protect those designated uses in bodies of water.⁴⁷ States are prohibited from removing a designated use, if such a use is an “existing use,” unless a use with more stringent criteria is added.⁴⁸ An existing use is one “actually attained in the water body on or after November 28, 1975, whether or not it is included in the water quality standards.”⁴⁹

In the proposed rule, the Agency identified a list of approximately 1,300 waters at Minn. R. 7050.0471. The MPCA based its list upon, among other sources, a comprehensive, reviewed list compiled by the Minnesota Department of Natural Resources (DNR) in a 2008 Report to the Legislature.⁵⁰ The MPCA recognized that the DNR’s list “is widely considered the most comprehensive source of information regarding where rice may be found in Minnesota” and so extensively reviewed the DNR list when making its designations.⁵¹ In compliance with its legislative directive, the MPCA also consulted with the various Tribes when compiling its list.⁵²

In making its determinations as to which water bodies would be included in the list, the MPCA did not explicitly apply the standards it intends to use in future rulemakings to determine whether a water body should be added to the list of wild rice waters.⁵³ Instead, the Agency used a “weight of evidence” standard to identify waters that met its criteria for “beneficial use as a wild rice water.”⁵⁴ The rulemaking record does not identify each water considered and rejected for inclusion on the list, nor does it reveal on what basis the Agency rejected any proposed water from inclusion on the list.⁵⁵ The MPCA

⁴⁶ MPCA Resubmission, at 6 (“Protection of downstream waters is required by 40 CFR 131.10(b). The MPCA already complies with this requirement and there is now a state rule that expressly requires such compliance, Minn. R. 7050.0155.... [To protect these waters, MPCA will] ‘facilitate consistent and efficient implementation and coordination of water quality-related management actions’ such as permits.”).

⁴⁷ 40 C.F.R. § 131.3.

⁴⁸ 40 C.F.R. § 131.11(h)(1).

⁴⁹ 40 C.F.R. § 131.3(e); See Report of the Administrative Law Judge at 65, 68, Findings 269, 283.

⁵⁰ Report of the Administrative Law Judge at 63-64, Findings 263, 265.

⁵¹ *Id.* at 64, Finding 265.

⁵² *Id.* at 62, Finding 261.

⁵³ *Id.* at 67, Finding 279.

⁵⁴ *Id.* at 67, Finding 278.

⁵⁵ *Id.* at 67, Finding 279. According to its Resubmissions, the Agency recently asked the federal Environmental Protection Agency (EPA) how uses are designated and whether an existing use can be a designated use. The EPA responded in a March 5, 2018 letter to the Agency (March 28 letter, Att. 1, at 5- 8). The only discussion of “existing use” is a clarification of the regulatory definition at 40 CFR 131.3 (e) (“those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.”) The EPA explains “that existing uses are known to be ‘actually

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acknowledged that it may not have included in the proposed list all waters where the wild rice use has existed since Nov. 28, 1975.⁵⁶

The Administrative Law Judge disapproved the proposed list, concluding that the MPCA’s approach excluded hundreds of water bodies previously on lists from the DNR and other sources, including the 1854 Treaty Authority’s 2016 and 2017 lists of wild rice waters.⁵⁷ The Administrative Law Judge determined that these exclusions violated the federal prohibition against removing a designated use if such a use is an existing use.⁵⁸ She also expressed concerns with the reasonableness of the Agency’s exclusion of waters without any explicit standards or discussion.⁵⁹

In its Resubmissions, the Agency argued that it compiled its list in consultation with the DNR and tribes, but insisted that it alone can determine what constitutes an “existing use” in Minnesota for purposes of the federal Clean Water Act (CWA).⁶⁰ Citing Minn. Stat. §§ 115.03, subd. 1(b) and 115.44, the MPCA argues that it is the only state agency with legal authority to classify waters of the state and assign designated uses.⁶¹

The Agency’s authority is not as clear as it asserts. Minn. Stat. §§ 115.03, subd. 1(b) and 115.44 address the Agency’s authority to classify waters, not specifically to determine existing uses for purposes of the CWA. While federal law provides that “the state” may determine existing uses, it does not specify which agency within a state has that unique authority.⁶²

Even if the MPCA can establish that its authority trumps that of the DNR or any other state agency, it cannot establish that it is the sole decider of what constitutes an existing use for purposes of federal law. The CWA specifically authorizes certain Indian tribes to make designations as well. The Fond du Lac Band and the Grand Portage Band of Lake Superior Chippewa are both authorized to do so based on approved agreements with the federal government regarding water quality standards.⁶³ Both Bands agreed that, in rejecting the DNR’s report and the 1854 Treaty Authority’s list, the MPCA was removing waters that the Bands had already designated as having wild rice as an existing use under federal law.⁶⁴

attained’ when the use has actually occurred *and* the water quality necessary to support the use has been attained. EPA

recognizes, however, that all necessary data may not be available to determine whether the use actually occurred or the water quality to support the use has been attained. When determining an existing use, the EPA provides substantial flexibility to states and authorized tribes to evaluate the strength of the available data" See MPCA Resubmissions, Attachment 1 at 8, citing 80 Fed. Reg. 51027.

⁵⁶ Report of the Administrative Law Judge at 67, Findings 280-282.

⁵⁷ *Id.* at 65, Finding 269.

⁵⁸ *Id.* at 69, Finding 287.

⁵⁹ *Id.* at 68, Finding 283.

⁶⁰ MPCA Resubmissions at 8-10.

⁶¹ *Id.* at 9.

⁶² The Chief Administrative Law Judge notes that the MPCA is designated as the "agency responsible for providing section 401 certifications for nationwide permits: under the CWA. Minn. Stat. 115.03, subd. 4a (2016).

⁶³ MPCA Resubmissions at 9, n 44.

⁶⁴ Report of the Administrative Law Judge at 65, Finding 269, n 395.

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⁴ Email correspondence with Dr. Gary Glass, retired EPA researcher.

Gary Glass <gglass143@charter.net>

Sun, May 16, 2021 at 2:26 PM

To: Craig Sterle <csterle777@gmail.com>

Hi Craig,

Note my comments on WLSSD's permit regarding sulfate are relevant, and the literature cited on H2S plant toxicity.

Feel free to use this info for adding to the IKES comments, especially for protecting against fish and plant toxicity from sulfate reduction in sediments to toxic hydrogen sulfide.

Cheers,
GEG. 218-391-4242.

Begin forwarded message:

From: Gary Glass <gglass143@charter.net>

Date: December 5, 2014 3:05:06 PM CST

To: "Nancy (MPCA) Drach" <nancy.drach@state.mn.us>

Subject: GEG comments on WLSSD draft permit: please acknowledge receipt

MEMORANDUM:

December 5, 2014

To:

Nancy J. Drach, MPCA 4th Floor Minnesota Pollution Control Agency [520 Lafayette Road](https://www.mn.gov/520-Lafayette-Road) North St. Paul, MN 55155-4194 Phone: 651-7572317 Email: nancy.drach@state.mn.us

From:

Gary E. Glass, Ph.D. Adjunct Professor of Geochemistry, Univ. Minn. - Duluth;

Research Chemist, US. Environmental Protection Agency, Duluth Lab. (Retired 2002).

[143 Occidental Boulevard, Duluth, MN 55804](#)

Office Phone 218-525-2384. Cell: 218-391-4242 Email: gglass143@charter.net.

Subject:

Public Comments on Draft Permit MN0049786, for WLSSD, Duluth, MN.

1. My interest in this permit is that the MPCA get the applicable science in place so the treatment of municipal and industrial wastes by WLSSD be cost effective and protective of the environment. I've served on the WLSSD board and at the USEPA for 35 years in conducting research on environmental protection including extensive studies on mercury impacts and assessment. I also am a property owner on Park Point and want the fish caught in the adjacent waters of Superior Bay and Lake Superior to be safe to eat by all my children, both grand- and great-grandchildren.

2a. SULFATE: I commend the MPCA for adding the monitoring of sulfate to the list of parameters to be monitored for the needed protection of wild rice in the Saint Louis River estuary. However, without recognizing that the toxic mechanism by which sulfate pollutes is through the conversion of sulfate to hydrogen sulfide in the surface sediments, the true extent of the damage to aquatic resources may not be realized. The water quality criterion for hydrogen sulfide is 2 micrograms per liter and game fish and fish food organisms can be adversely affected by sulfate conversion to hydrogen sulfide and its toxic effects in surface sediment habitat and its diffusion into over-lying waters causing fish eggs to be killed or adversely affected.

The sections of the permit writing dealing with sulfate and wild rice should be expanded to include the greater potential for fishery damage from sulfate and its toxic conversion product, hydrogen sulfide. Dissolved, gaseous hydrogen sulfide is as toxic as cyanide to aquatic plants (see **Sulfide as a soil phytotoxin—a review** *Leon P.M.Lamers, et. al* *Frontiers in Plant Science | PlantPhysiology | July 2013 | Volume 4 | Article 268*) and to aquatic animals (USEPA **Gold Book** 1986). The WQC for hydrogen sulfide should be added to the permit as a requirement for protecting the aquatic resources.

2b. MERCURY: It is a mistake to give a variance to a protective standard just because the standard can not be met at this time. Clearly, the fish mercury concentrations exceed safe consumption levels and will cause harm to those who eat the fish, especially, young children and mothers who are expecting to have children. It is also bad precedent to give

variances through the "back door" to the industries who's mercury contributions to the WLSSD discharge may be contributing to the non-compliance of the mercury concentrations being discharged.

However, the biggest omission with the draft permit is the lack of recognition that the total mercury in the discharge is not the only problem, it is the amount of methylmercury that is being formed and discharged by the WLSSD into the waters of the estuary where the fish are above the toxic response level for human consumption because of the methylmercury concentrations in the fish tissue. The formation of methylmercury from total mercury is ignored in the write-up and rationale for the permit. Methylmercury is the toxic form of mercury and the processes and mechanisms for its formation must be included in the WLSSD cleanup processing, solids formation, and final emissions and discharge composition. The percent methylmercury in the discharge of total mercury is an important factor in assessing the contribution of bioaccumulatable mercury immediately available to the fish and fish-food chain in the estuary and Saint Louis River. The nutrients, including sulfate, which affect the microbes that methylate mercury must also be taken into account and monitored.

The major sources of water to the WLSSD are through the Duluth municipal water system which uses Lake Superior water and the Cloquet water line which also takes its water from Lake Superior. The mercury content of this source water is less than one nanogram per liter.

Additions of chemicals by water treatment and industrial sources adds to the mercury content, as does the domestic use of water for waste disposal. Detailed examination of the sources of mercury need to be done to partition the easily separable and identifiable source mechanisms so that the appropriate controls and restrictions may be created. The WLSSD has a series of pretreatment regulations which could be brought into play to deal with the specific sources of mercury once they are identified. The sources which generate methylmercury concentrations are those which need to be dealt with first. Clearly, methylmercury must be one of the parameters which must be measured and controlled for if the most cost effective ways and means are to be found to reduce the fish mercury content of the estuary and Saint Louis River.

3. The basis for the reasons changes are needed in the WLSSD draft permit, supporting my comments and suggestions are contained in the many studies I have conducted.

Gary E. Glass, Ph.D. Degree in Chemistry UMinn.1967; Senior Research Chemist USEPA

National Health and Environmental Effects Research Laboratory, Duluth MN, 1968-2002.

Published 54 journal articles on studies of molecular structure of organometallic aquo ions, contaminant measurement methods, asbestiform fibers, disinfection, acidic precipitation watershed susceptibility, mercury deposition, cycling, and toxicity mitigation, and hydrologic cycle of water, law and policy.

Published reports and articles on mercury studies are given below:

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