

Minnesota Wild Rice Sulfate Water Quality Standard NPDES/SDS Wastewater Permit Implementation

Wild rice is important in Minnesota, and it needs to be protected. The MPCA is implementing the existing sulfate standard through monitoring and assessing waters and by developing permit conditions for facilities upstream of waters that produce wild rice. This fact sheet provides information about the standard, how it is included in National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) wastewater permits and permitting options if meeting an applicable sulfate limit is currently unattainable.

Background

The sulfate standard

Water quality standards describe conditions in a waterbody needed to protect specific beneficial uses. The sulfate standard to protect wild rice was adopted in 1973 and is codified in Minnesota Rule 7050.0224. The sulfate standard is 10 mg of sulfate per liter and applies in waters used for production of wild rice during periods when the rice may be susceptible to damage by high sulfate levels.

Where the standard applies

The MPCA has currently identified 2,394 waterbodies where the sulfate standard applies. The MPCA has an online search tool to assist in identifying waters used for the production of wild rice, as well as facilities located in a watershed upstream or partially upstream of a wild rice water: https://public.tableau.com/app/profile/mpca.data.services/viz/wild_rice_v4/Information. Additionally, the MPCA has determined that 35 waterbodies are currently impaired and are listed on the 2022 303(d) Impaired Waters List.

The determination of whether a waterbody is used for production of wild rice is done on a case-by-case basis. Due to the natural variability of wild rice populations, any documented wild rice presence is sufficient to identify a waterbody as producing wild rice and for beneficial use protections to apply, as waters with minimal stands or sparse rice have the potential to be food for wildlife and are waters that produce wild rice.

Formal documentation of the nearly 2,400 waters used for production of wild rice will occur within the Guidance Manual for Assessing the Quality of Minnesota Surface Waters for Determination of Impairment: 305(b) Report and 303(d) List which is expected to be available for public comment in the fall of 2023.

NPDES permit implementation

The MPCA’s NPDES/SDS permitting process ensures that no facility causes or contributes to the exceedance of an applicable water quality standard in any waterbodies downstream of the facility. At the time of a facility’s permit issuance or reissuance, the MPCA evaluates the applicability of standards, including the sulfate standard, and makes determinations on the need for effluent monitoring and limits.

Effluent monitoring

If a facility is upstream of waterbody where the sulfate standard applies and sulfate is known or suspected to be in the discharge as a result of the facility's processes, it’s required to conduct sulfate monitoring. Approximately 70% of NPDES/SDS permitted facilities are upstream a waterbody where the sulfate standard applies.

The table below details the effluent monitoring frequencies, which are dependent on the type of facility. The monitoring frequency is set to gather enough data to establish a baseline for the facility. Monitoring frequencies may change in future permit issuances based on results of the data, recommendation of effluent limits, and future permitting needs.

Facility type	Parameter	Sample location	Monitoring frequency	Statistical basis	Sample type	Effective period
Municipal mechanical facilities	Total Sulfate	Effluent	1 x quarter	Calendar Quarter Maximum	24-hour flow composite	Mar, Jun, Sep, Dec
Municipal ponds (controlled discharge & controlled aerated ponds)	Total Sulfate	Effluent	1 x half year	Calendar Month maximum	Grab	Jan-Dec
Municipal ponds (aerated with continuous discharge)	Total Sulfate	Effluent	1 x quarter	Calendar Quarter Maximum	Grab	Mar, Jun, Sep, Dec
Municipal water and stormwater treatment plants	Total Sulfate	Effluent	1 x quarter	Calendar Quarter Maximum	24-hour flow composite	Mar, Jun, Sep, Dec
Industrial wastewater	Total Sulfate	Effluent	1 x quarter	Calendar Quarter Maximum	Consistent with existing permit requirements	Mar, Jun, Sep, Dec

Effluent limits

The MPCA uses several data sources, including facility-specific monitoring data, to evaluate whether the discharge from the facility has the reasonable potential to cause or contribute to a violation of a water quality standard. If reasonable potential is found, the MPCA sets a limit on the amount of the pollutant allowed in the discharge in the facility’s NPDES/SDS wastewater permit.

For details about how the MPCA sets effluent limits for the sulfate standard, please see the MPCA document titled, *Procedures for implementing the Class 4A Wild Rice Sulfate standards in NPDES wastewater permits in Minnesota*.

Options to meet an effluent limit

At the time of a facility's permit issuance or reissuance if it's determined that there's a need for an effluent limit, the MPCA will work with the Permittee to determine whether the facility can currently and consistently meet the limit. The Clean Water Act allows multiple options for facilities that aren't immediately able to meet an effluent limit, including a facility upgrade, compliance schedules, and variances.

Facility upgrade

Facilities commonly reduce pollutants in wastewater by adding treatment technology so they can comply with a new limit. However, sulfate is difficult to remove from water. Currently, the best technology to reliably remove sulfate from water is reverse osmosis, but it is expensive to install and maintain and will likely be unaffordable to many facilities.

MPCA is tracking the development of new sulfate treatment technologies, and working with cities, industries, and academia to evaluate and support the development of technologies that affordably remove sulfate from wastewater.

Compliance schedule

A compliance schedule is a commonly used tool that gives facilities additional time to investigate options for meeting a limit, including conducting evaluations, identifying and reducing pollutant sources, and troubleshooting and optimizing current operations. A compliance schedule details the steps and timeline for complying with the new limit. There is no standard amount of time that is allowed under a compliance schedule, but it must be "as soon as possible", per 40 CFR 122.47.

Variance

If meeting the limit is currently not economically feasible, a Permittee may apply for a variance.

Individual variance

A variance provides time for wastewater permittees to move toward attainment of a limit. It requires an interim limit that reflects the highest attainable condition for a facility during the term of the variance and requires development of a pollutant management plan. A variance is incorporated into a draft NPDES/SDS permit and subject to public review and comment during the public notice process. The EPA allows states to adopt variance provisions but has ultimate approval over variances.

The MPCA has created a streamlined variance eligibility tool and application process for municipal wastewater facilities to apply for a chloride variance, which could be modified and used for sulfate. For many wastewater facilities, potential solutions are similar, and costs are reasonably scalable. Predetermined eligibility criteria could provide more certainty for communities and lower administrative costs for permittees and the MPCA.

Multidischarger variance

A multidischarger variance (MDV) is like an individual variance. However, multiple point sources that meet the same applicability criteria can be covered under a MDV, whereas an individual or streamlined variance only applies to a single facility. This provides for more efficient variance processing. The MPCA doesn't currently have the authority to issue MDVs and is evaluating whether it should pursue a sulfate MDV, which would likely require rulemaking. For this reason, it wouldn't likely be available for a few years.

Site-Specific Standards

Lastly, in some instances, it may be appropriate to consider a site-specific modification to a water quality standard for a specific waterbody. The Clean Water Act and Minnesota Rules provide the flexibility to tailor a water quality standard for waterbodies where unique circumstances alter the typical or expected relationship between a pollutant and the protected beneficial use. This flexibility comes through the development and application of site-specific standards (SSS) reflecting localized environmental conditions.

For details about developing a SSS for sulfate, please see the MPCA document titled, *The MPCA Framework for developing and evaluating site-specific sulfate standards for the protection of wild rice.*