

Minnesota Pollution Control Agency (MPCA) Environmental Analysis and Outcomes Division

Notice of Availability of Draft Upper and Lower Red Lake Site-Specific Lake Eutrophication Standards and Request for Comment

Public Comment Period Begins: April 22, 2024

Public Comment Period Ends: June 14, 2024

The Minnesota Pollution Control Agency (MPCA) is requesting comments on proposed site-specific water quality standards for Upper (04-0035-01) and Lower (04-0035-02) Red lakes in Beltrami County. The proposed site-specific standards (SSS) are a collaborative effort between the Red Lake Nation and MPCA and include site-specific modifications to the lake eutrophication standards (LES) for Upper and Lower Red lakes. Information pertaining to the SSS is available for review at:

<https://www.pca.state.mn.us/water/site-specific-water-quality-standards>.

Background

The MPCA designates beneficial uses for all waters of the state and develops water quality standards to protect those uses. Most waters of the state are designated Class 2 for the protection of aquatic life and recreational beneficial uses. These beneficial uses are protected in aquatic systems which include streams, rivers, drainage ways, lakes, ponds, wetlands and other waters of the state as defined in [Minn. Stat. § 115.01](#), subd. 22. Class 2 protects: 1) recreation such as the ability to swim in and boat on the water; and 2) aquatic life, which includes the organisms that live in or on the water or aquatic substrates, as well as the organisms that depend on aquatic habitats to fulfill any part of their life cycle.

Excess nutrients from human-made sources, such as phosphorus, can harm recreational uses by causing excessive algal growth and creating conditions that are unsuitable for swimming and boating. This can include conditions that are unpleasant to the senses and harmful to the health of humans and pets. Algal blooms can also harm aquatic life by decreasing oxygen levels in the water and altering food webs. The problem of excess nutrients causing algal growth is called eutrophication. The MPCA has adopted regional LES to protect aquatic life and recreation in lakes and reservoirs. The State's existing regional eutrophication standards can be found in [Minn. R. 7050.0222](#). In some lakes, site-specific data indicates that different standards are appropriate to protect aquatic life and recreation. In these cases, the MPCA can modify existing standards with a site-specific standard approved by the U.S. Environmental Protection Agency (EPA). Such a modification requires public notice, a public meeting, and the opportunity for comment.

Red Lake

Upper and Lower Red lakes are large, important lakes in northern Minnesota. All of Lower Red Lake and a portion of Upper Red Lake is contained within the Red Lake Reservation. Upper Red Lake is very shallow with a maximum depth of only about 16 feet whereas Lower Red Lake reaches about 33 feet in depth. Both lakes periodically stratify during the summer, but they are mixed for most of the summer. As a result, both lakes more closely match the definition of a polymictic or shallow lake. Upper and Lower Red lakes are within the Upper/Lower Red Lake watershed (8-digit Hydrologic Unit Code 09020302), which encompasses 1,241,690 acres. Much of the watershed is in the Northern Minnesota Wetlands Ecoregion with smaller portions in the North Central Hardwood Forests and the Northern Lakes and Forests Ecoregions. As a result, the Upper/Lower Red Lake watershed has characteristics of multiple ecoregions. The watershed is largely natural and is dominated by wetland, open water, and forest/shrub land covers. The high proportion of wetlands is of particular importance because this cover type can naturally increase nutrient loading to downstream waters.

The current LES does not specify standards for lakes in the Northern Minnesota Wetlands ecoregion; however, the northern region LES (total phosphorus < 30 µg/L, chlorophyll-*a* < 9 µg/L, and Secchi depth

≥ 2.0 m) would likely be most appropriate for Red Lake. Assignment of LES to Upper and Lower Red lakes is further complicated by draft standards that would revise LES for northern lakes, including lakes in the Northern Minnesota Wetlands ecoregion. Since Upper and Lower Red lakes do not regularly stratify in the summer, they may be more appropriately classified as polymictic or shallow lakes. The draft LES for northern, polymictic lakes is total phosphorus < 30 µg/L, chlorophyll-*a* < 16 µg/L, and Secchi depth ≥ 1.1 m. However, the morphology of Upper and Lower Red lakes is unlike most lakes in Minnesota and both the adopted and draft regional standards are not appropriate. These lakes also straddle multiple ecoregions and have a large proportion of wetland land cover in their contributing watershed. Research on other lakes has indicated that such attributes often result in lakes not conforming to the trophic patterns observed in most lakes. In addition, review of the status of beneficial uses (i.e., aquatic life and recreation) in these lakes indicate that these uses are currently being met in Upper and Lower Red lakes. A paleolimnological study also demonstrated that the trophic state in these lakes has not greatly changed from historical conditions. The current conditions are also not contributing to nonattainment of beneficial uses in downstream waters (i.e., Red Lake River). Based on these results, Red Lake Nation and MPCA staff concluded that Upper and Lower Red lakes are currently meeting aquatic life and recreation goals and that SSS should be based on contemporary conditions. These proposed site-specific water quality standards are the subject of this public notice and comment period.

Proposed Site-Specific Standards for Upper and Lower Red Lakes

The standards in the table below show the differences between the proposed SSS for Upper and Lower Red lakes and relevant existing and draft LES. No Secchi depth standards are proposed for Upper and Lower Red lakes because water clarity was determined to be naturally low due to factors other than algal density. These standards are based on current conditions and will protect downstream uses as current assessments of the Red Lake River below Lower Red Lake indicate attainment of river eutrophication standards. To assess compliance with these criteria, a minimum of four samples are required per year over at least two years. These values are calculated as an average summer concentration.

Draft site-specific standards for Upper and Lower Red lakes with relevant regional lake eutrophication standards. *applicable to lakes in the Northern Lakes and Forests ecoregion. #applicable to the Northern Lakes and Forest and Northern Minnesota Wetlands ecoregions.

Ecoregion	Total Phosphorus (ppb)	Chlorophyll- <i>a</i> (ppb)	Secchi depth (m)
Proposed Red Lake site-specific standards*			
Lower Red Lake	42	14	-
Upper Red Lake	50	17	-
North (current standards)			
North (Class 2B)*	30	< 9	≥ 2.0
North (draft standards)			
North, polymictic (Class 2B)#	30	16	1.1
North, dimictic (Class 2B) #	20	9	1.8

Site-Specific Standard Basis and Rationale

The Clean Water Act and Minnesota’s Rules establish opportunities to use site-specific approaches. Site-specific options allow the MPCA to consider data on local lake characteristics to apply more precise numeric standards to protect the beneficial uses of an individual lake. [Minn. R. ch. 7050](#) provides water quality standards for waters of the state as well as the legal basis for consideration and adoption of site-specific water quality standards ([Minn. R. 7050.0220](#), subp. 7). The MPCA considered many factors in the development of these SSS. Some of the most important factors were:

- 1. Upper and Lower Red lakes are unique:** The drainage catchment, ecoregion, and morphology of Upper and Lower Red lakes make these waterbodies unique in several aspects compared to other lakes in Minnesota. The size and morphology of Upper and Lower Red lakes are unique. Despite

their large surface area, they are relatively shallow, and the water column is largely mixed during the summer months. There is also a high proportion of wetlands in the contributing watershed which results in higher phosphorus loading compared to other natural lakes dominated by other land cover types such as forest. Red Lake is also located on the border of three ecoregions which means the watershed shares characteristics of multiple ecoregions and classification into a single ecoregion is problematic. As a result of the 1) unique lake morphology, 2) high proportion of wetlands in the watershed, and 3) location within an ecotone, regional LES should not be assigned to Upper and Lower Red lakes.

2. **Recreation:** User surveys indicate that the lake at least meets a condition that is defined as: “Very minor aesthetic problems; excellent for swimming, boating, enjoyment.” This can be considered to be in attainment of the recreational beneficial use.
3. **Aquatic life:** Based on available biological data, gamefish populations are doing well and indicate that the aquatic life beneficial use is currently supported. Similarly, a macrophyte survey collected by the Minnesota Department of Natural Resources indicates that Upper Red Lake supports a diverse macrophyte community.
4. **Current conditions:** Upper and Lower Red lakes maintain chlorophyll-*a* concentrations near the draft northern shallow lake standard. Maximum chlorophyll-*a* levels are low and rarely reach levels that could be considered nuisance.
5. **Paleolimnology:** Reconstruction of historical total phosphorus concentrations demonstrated that current levels of total phosphorus in Upper and Lower Red lakes are consistent with trophic conditions in the last 200 years.
6. **Protection of downstream uses:** Review of downstream standards and impairment indicate that the recommended SSS for Red Lake will not result in an impairment to downstream waters (i.e., Red Lake River). There are currently no impairments downstream of Lower Red Lake, and total phosphorus concentrations in Red Lake River meet the applicable river eutrophication standards. In addition, the recommended SSS LES for Lower Red Lake is below the standard applicable to Red Lake River.

For further detail and explanation regarding this proposal, see the supporting technical document entitled “Technical Justification for Site-Specific Lake Eutrophication Standards for Upper and Lower Red Lakes (04-0035-01 and 04-0035-02)” on the MPCA’s SSS webpage (<https://www.pca.state.mn.us/water/site-specific-water-quality-standards>).

Preliminary Determination on the Draft Site-Specific Standard

The MPCA Commissioner has made a preliminary determination that the modification of the LES is justified. Comments to the proposed site-specific eutrophication standards will be considered before being sent to the EPA for approval.

Public Comments

You and all interested or affected persons, including representatives of associations and other interested groups, will have an opportunity to submit comments. **Under this notice, you have until Friday, June 14, 2024**, to submit written comment in support of or in opposition to the proposed site-specific eutrophication standards for Upper and Lower Red lakes. Written comments must include:

1. A statement of your interest in the proposed SSS;
2. A statement of the action you wish the MPCA to take, including specific references to sections of the proposed SSS that you believe should be changed; and
3. The reasons supporting your position, stated with sufficient specificity as to allow the Commissioner to investigate the merits of your position.

Please submit written comments by email or U.S. mail to **Will Bouchard (Minnesota Pollution Control Agency)** using the contact information provided in the Contact Persons section of this notice. Any comments or materials that you present or submit must relate to the proposed SSS.

Public Meeting

A public meeting is a formal meeting that the MPCA is required hold to solicit public comment and statements on matters before the MPCA and to help clarify and resolve issues. A public meeting on the proposed site-specific LES for Upper and Lower Red lakes will be held at the North Beltrami Community Center in Kelliher, MN on Tuesday, June 11, 2024, at 5:00 p.m.

Contact Persons

Written comments and requests for more information should be directed to:

Will Bouchard

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You may also call the MPCA at 651-296-6300 or 800-657-3864 or use your preferred relay service, or email info.pca@state.mn.us.

Dated: 4/1/2024