Whitefish Lake 2024 Cycle Assessment (WBIC 2392000)

Assessors: Scott Van Egeren and Ashley Beranek **Date**: October 2023

Waterbody Information	**Water Type**: Lake	**Natural Community**: Two-Story Fishery
	Size: 800 acres	**AL Designation**: Default FAL
	Assessment Unit ID: 18750	**PHW Designation**: Non-Drinking Water
	EPA ATTAINS ID: WI10006603	**REC Designation**: Full Body Contact

2022 Assessment (Prior)	**Category**: 5P	**Pollutants:** *Total Phosphorus*
	Methodology: 2022 WisCALM	**Observed Effects:** *Organic Enrichment*
	Data Used: 2016 - 2020	**List:** Impaired Waters

2024 Assessment (Proposed)	**Category**: 2A	**Pollutants:** *None*
	Methodology: 2024 WisCALM	**Observed Effects:** *None*
	Data Used: 2018 - 2022	**List:** Waters Attaining Standards

Decision Summary	Whitefish Lake is attaining Aquatic Life and Recreation uses. This lake is proposed for delisting based on new phosphorus data.

Background

Whitefish Lake, in the Couderay River Watershed, is an 800-acre lake that falls in Sawyer County and the Town of Sand Lake. This lake is an Outstanding Resource Water under Chapter NR 102 of Wisconsin Administrative Code. It has an inlet stream from Sand Lake and an outlet flowing into Lac Courte Oreilles Lake. The maximum depth is 105 feet on the south side of the central basin and has an average depth of approximately 45 ft.; 70% of the lake is over 20 feet deep and only 8% is less than 3 feet deep. The Whitefish Lake Property Owners Association, in conjunction with WI DNR, Lac Courte Oreilles Conservation, and Endangered Resources Services, LLC, released an aquatic plant and lake management plan in 2021.

Total Phosphorus & Chlorophyll-*a* (Aquatic Life and Recreation Uses)

Phosphorus and chlorophyll-*a* were clearly below listing thresholds in the 2024 assessments (Table 1). Both of these metrics support both uses of Aquatic Life (AL) and Recreation (REC). The mean phosphorus level has decreased since the 2020 cycle, and this cycle the confidence interval is below the criterion for the first time. Based on phosphorus levels clearly below the criterion, the phosphorus listing is recommended for removal.

Table 1. 2024 cycle phosphorus and chlorophyll-a calculations, threshold, and comparison to Recreation (REC) and Aquatic Life (AL) use thresholds. Header colors correspond to Figures 1 and 2.

Phosphorus

Uses	Station ID	Earliest Date	Latest Date	Grand Mean (ug/L)	LCL (ug/L)	UCL (ug/L)	TP Threshold (ug/L)	Relation to Threshold
REC & AL	583088	JUN 2018	SEP 2022	13	12	14	15	Clearly Meets

Chlorophyll-*a*

Use	Station ID	Earliest Date	Latest Date	Grand Mean	LCL	UCL	Chl-*a* Threshold	Relation to Threshold
REC	583088	JUL 2018	JUL 2022	0%	0%	0%	5%	Clearly Meets
AL				3 ug/L	2 ug/L	4 ug/L	8 ug/L	Clearly Meets

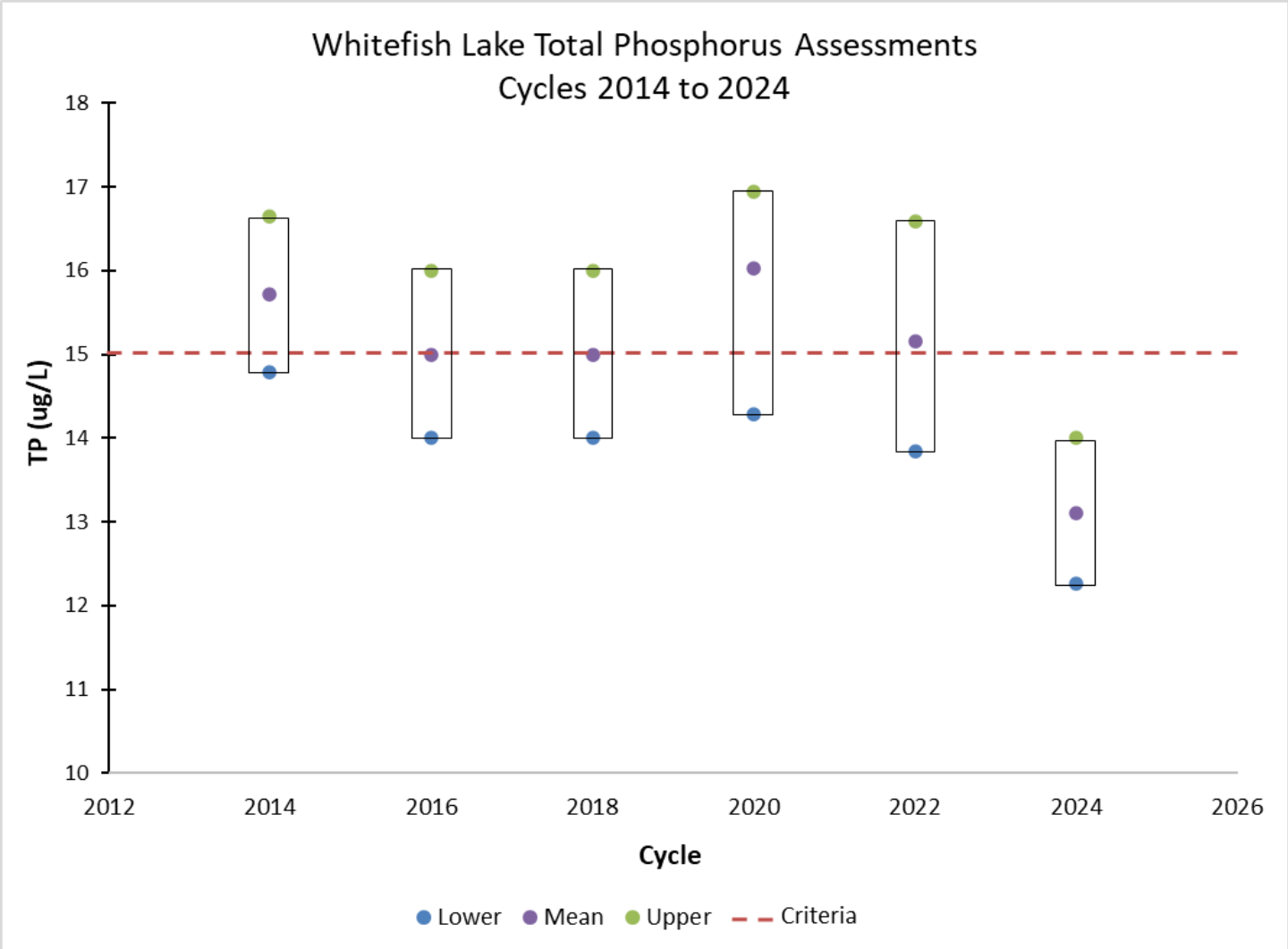

Figure 1. Total phosphorus assessments across six cycles. Upper and lower confidence limits, mean, and interval are shown. The phosphorus criterion for a Two Story Fishery lake is 15 ug/L. In the 2024 cycle all values are below the criterion, prompting a delisting proposal.

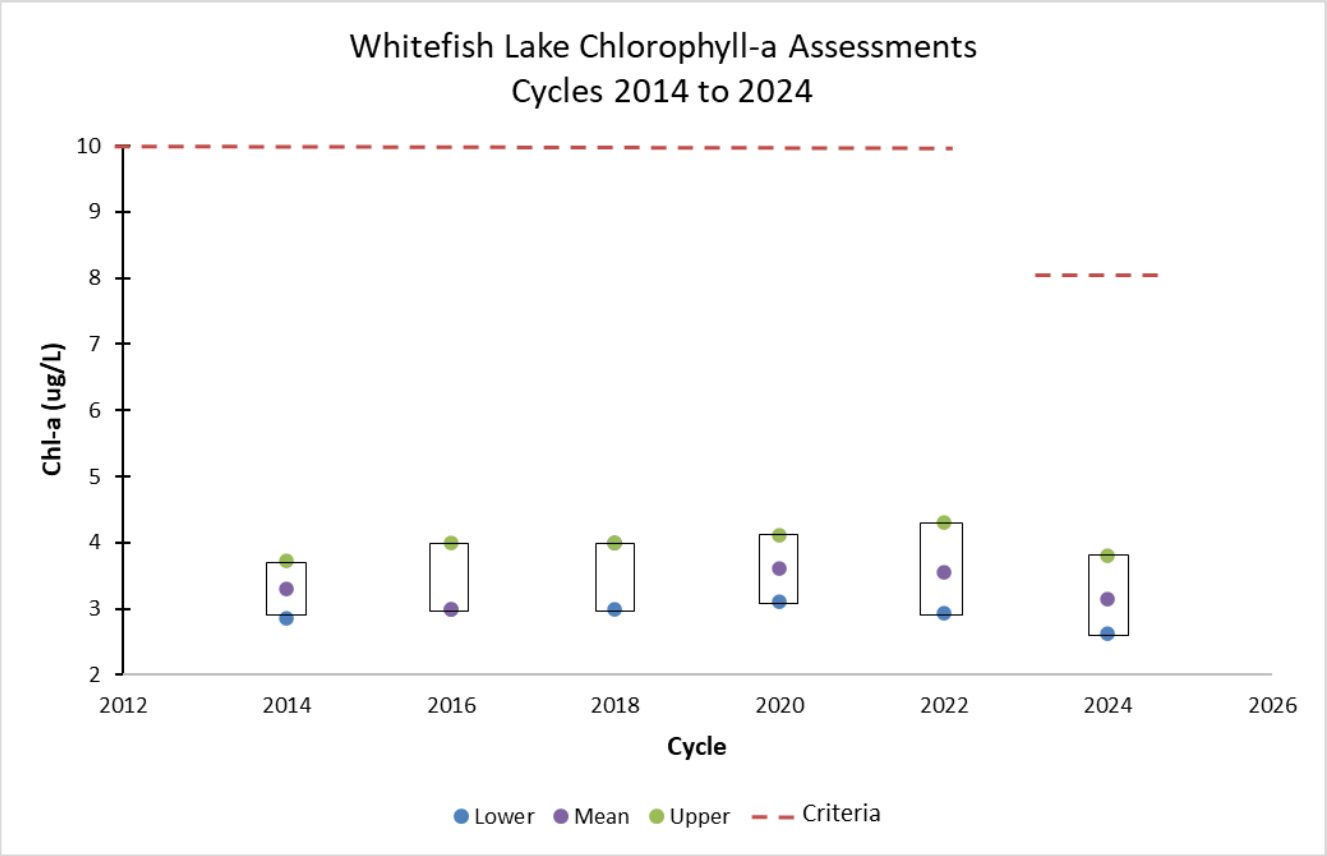

Figure 2. Algae (chlorophyll-*a*) assessments across six cycles for Aquatic Life use. Upper and lower confidence limits, mean, and interval are shown. In all cycles the confidence intervals are below the criterion. The lake has shown consistentlv low chl-*a* levels.

Oxythermal Habitat (Aquatic Life Use)

Oxygen and temperature profiles from 2018 to 2023 indicate there is plentiful habitat for coldwater fish species (> 1 meter). Profiles were compared against the temperature threshold for Whitefish, a species found in the lake.

Table 3. Available habitat with the appropriate temperature (≤ 66 F) and sufficient oxygen (dissolved oxygen ≥ 6 mg/L). Oxythermal habitat depth was greater than 3 feet for all dates. Sample depth intervals were 5 feet, making it unclear if an exceedance occurred on 8/21/2022.

Date	Depth (feet)	Date	Depth (feet)
5/18/2018	70	8/30/2020	10
5/28/2018	70	6/14/2021	60
6/25/2018	55	7/26/2021	5
7/30/2018	10	8/28/2021	5
9/3/2018	10	6/5/2022	90
6/15/2019	85	7/10/2022	5
7/26/2019	30	8/21/2022	< 5
9/2/2019	30	6/16/2023	75
5/12/2020	90	6/30/2023	70
6/18/2020	70	7/21/2023	60
7/20/2020	50	8/18/2023	50

Assessment Determination

With phosphorus below criteria this lake is recommended for delisting. The pollutant "Total Phosphorus" with observed effect of "Unknown" ("Organic Enrichment" in EPA's database) will be removed.

Based on new and existing information we can conclude that Whitefish Lake is supporting Aquatic Life and Recreation uses (Table 5). The delisting of phosphorus and two uses supported changes the lake's categorization from 5P (Impaired Waters) to 2A (Waters Attaining Standards).

Table 5. Use support for each use with parameters used for the decision.

Uses	Aquatic Life	Recreation	Public Health & Welfare	Fish Consumption	Wildlife
Support	Fully Supporting	Fully Supporting	Not Assessed	Not Assessed	Not Assessed
Parameters	TP, Algae, Oxythermal	TP, Algae			

Recommendations

The new phosphorus data indicate delisting is appropriate. Whitefish Lake is attaining two designated uses based on several measures (Table 5), which means it can be placed in Category 2A, on the Waters Attaining Standards List.

References

WI DNR. 2023. Wisconsin Consolidated Listing and Assessment Methodology (WisCALM) 2024. https://apps.dnr.wi.gov/swims/Documents/DownloadDocument?id=343906539

Whitefish Lake Property Owners Association. 2020. Lake Management Plan – Whitefish Lake WBIC: 292000. https://whitefishlakepoa.org/runApp?lvid=235&file=/wlpoa/documents/LakeManagementPlan2020.pdf