

# Update for New Impaired Water Listings: Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids Upper Fox and Wolf Basins

Submittal to U.S. Environmental Protection Agency



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Including Forest, Langlade, Menominee, Shawano, Outagamie, Waupaca, Winnebago, Waushara, Calumet, Fond Du Lac, Green Lake, Marquette, Columbia, Adams, Dodge, and Portage Counties, Wisconsin

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## **APPENDIX B. IMPAIRMENTS REQUIRING ADDITIONAL EVALUATION**

**Updated November 2021**

The Total Maximum Daily Load (TMDL) report for the Upper Fox and Wolf River Basins (UFWB) addresses most of the impaired waters listed for total phosphorus or total suspended solids/sediment in the UFWB; however, there are additional impairments for waterbodies in the UFWB that are related to excess phosphorus and sediment loading that are not addressed in the UFWB TMDL report. These impairments require further evaluation to determine if the allocations presented in the TMDL report will be sufficient to achieve water quality criteria. More detailed studies, site-specific restoration plans, adoption of site-specific criteria, revised or more detailed TMDLs for the sepcific waterbodies, and/or other measures may be needed to achieve water quality goals in these waterbodies. This appendix lists the waterbodies requiring additional evaluation.

In Table 1 is the list of waterbodies requiring additional evlauation that was included in the original UFWB TMDL approved by the U.S. Environmental Protection Agency (EPA) on February 27, 2020. Details on Wisconsin's assement and listing process as well as definitions for the different listing catagories can be found at: <https://dnr.wisconsin.gov/topic/SurfaceWater/WisCALM.html>

**Table 1. Waterbodies and impairment listings on the WDNR 2018 303(d) list that require further evaluation to determine if the allocations presented in the TMDL report will be sufficient to achieve water quality criteria.**

Waterbody Name	WATERS ID	WBIC	County	Source Category	Impairment Indicator(s)	Pollutant(s)	TMDL Subbasin
Crane Lake	10605	388500	Forest	NPS	Excess Algal Growth	Unknown	76
Pages Slough (L. Poygan)	26906	251700	Winnebago	Other	Degraded Habitat, Turbidity	TSS	72
					Eutrophication	TP	
Pine Lake	127787	406900	Forest	NPS	Excess Algal Growth	Unknown	78
Rolling Stone Lake	10607	389300	Langlade	PS/NPS	Excess Algal Growth	Unknown	80
Tree Lake	10324	289400	Portage	NPS	Excess Algal Growth	Unknown	63
Wolf Lake	899093	241100	Portage	PS/NPS	Impairment Unknown	TP	66

TSS = Total Suspended Solids

TP = Total Phosphorus

NPS = Nonpoint Source

PS = Point Source

Since approval of the TMDL, additional waterbodies have been assessed. The 2020 and 2022 Wisconsin Impaired Waters List includes additional listings within the UFWB. Table 2 provides a summary of the listing status of the newly assessed waters. Like the waterbodies listed in Table 1 above, these waterbodies have been deemed as needing additional evaluation and may not be adequately addressed in the UFWB TMDL.

**Table 2. Waterbodies and Listing Status**

Waterbody Name	WBIC	WATERS ID (AU ID)	EPA ID	Year Listed	Listing Status	Waterbody Category
DeNeveu Lake	139300	10996	WI10000952	2020	303(d) Listed	Category 5P
Pope Lake	262900	26194	WI10016632	2020	303(d) Listed	Category 5C
Grand Lake (Millpond)	161100	10696	WI10000737	2022	Proposed for List	Category 5P
Little Twin Lake	146400	18168	WI10026278	2022	Proposed for List	Category 5A

Details concerning these waterbodies are included in Table 3. While the downstream target maybe less than the waterbody’s criteria, it is important to note that the downstream criteria is expressed as a median of monthly samples and the lake criteria is expressed as the mean on monthly samples so the two criteria are not directly comparable. While it is possible that the lakes could meet criteria, additional lake modeling or analysis is warranted to ensure water quality criteria and standards are attained. In cases where the pollutant is listed as unknown, the phosphorus criteria is being attained but the lake is still impaired likely necessitating the adoption of site-specific criteria or evaluating other potential pollutants or stressors that maybe contributing to the impairment.

For each of the waterbodies, implementation of the existing TMDL allocations is anticipated to result in improvements in water quality. As such, an adaptive approach maybe warranted in which once a certain level of implementation and adoption of pollutant reducing measures is attained, an assessment is conducted to see if the existing TMDL allocations will be adequate or if additional reductions, targeted measures, or site-specific criteria are needed. Additional information including maps and allocations can be found at: <https://dnr.wisconsin.gov/topic/SurfaceWater/RestorationViewer/index.html>

**Public Comment Period:**

A public comment period was held from November 29, 2021 to January 7, 2022. No comments were received.

**Table 3. Waterbodies and impairment listings on the WDNR 2020 and 2022 303(d) lists that require further evaluation to determine if the allocations contained in the EPA approved TMDL report will be sufficient to achieve water quality criteria.**

Waterbody Name	WBIC	WATERS ID (AU ID)	EPA ID	County	Source Category	Pollutant	Impairment Indicator(s)	TMDL Subbasin	Waterbody Criteria (ug/L)	Subbasin / Downstream Target (ug/L)
DeNeveu Lake	139300	10996	WI10000952	Fond Du Lac	PS/NPS	TP	Impairment Unknown	39	20	75 /25
Pope Lake	262900	26194	WI10016632	Waupaca	NPS	TP	Impairment Unknown	66	15	75 / 24
Grand Lake (Millpond)	161100	10696	WI10000737	Green Lake	NPS	TP	Impairment Unknown	14	40	75 / 30
Little Twin Lake	146400	18168	WI10026278	Green Lake	NPS	TP	Eutrophication, Excess Algal Growth	79	40	75 / 65

TP = Total Phosphorus  
 NPS = Nonpoint Source  
 PS = Point Source

**APPENDIX P. TMDL Status for Impaired Waters on the 2018, 2020, and 2022 Listing Cycles**

**Appended November 2021 to the EPA approved “Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids Upper Fox and Wolf Basins”**

Appendix P is being appended to the “Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids Upper Fox and Wolf Basins” (UFWB TMDL) that was approved by the U.S. Environmental Protection Agency (EPA) on February 27, 2020. Appendix P provides an update to Tables 1 and 2 (pages 4 through 10) contained in the UFWB TMDL. Tables 1 and 2 contained in the UFWB TMDL report provide a list of river and stream segments that were assessed as impaired for total phosphorus or total suspended solids and are addressed in the EPA approved UFWB TMDL. A full copy of the UFWB TMDL and appendices can be found at: <https://dnr.wisconsin.gov/topic/TMDLs/FoxWolf/index.html>

Since EPA’s approval of the UFWB TMDL, additional waterbodies have been assessed. The 2018, 2020, and 2022 Wisconsin Impaired Waters List includes additional listings within the Upper Fox Wolf Basin (UFWB). Table 1 provides a summary of the listing status of the newly assessed waters. Three waters from 2018, which were included in the 2020 listing cycle, are also included. The three waters from 2018 were inadvertently not included in the original UFWB TMDL documentation because the UFWB TMDL development process was too far along to include the proposed 2020 listings. Details on Wisconsin’s assessment and listing process as well as definitions for the listing categories can be found at: <https://dnr.wisconsin.gov/topic/SurfaceWater/WisCALM.html>

**Table 1. Waterbodies and Listing Status**

Waterbody Name	WATERS ID (AU ID)	WBIC	EPA ID	Year Listed	Listing Status <sup>(1)</sup>	TMDL Status	Proposed Listing Category <sup>(2)</sup>
Bear Creek	10413	292100	WI10000518	2020	TMDL Approved	Covered	Category 4A
Fox River	5535277	117900	WI10033740	2022	Proposed for List	Covered	Category 4A
Fox River	6778560	117900	WI10039711	2022	Addition	Covered	Category 4A
Klawitter Creek	10713	164900	WI10000748	2018	TMDL Approved	Covered	Category 4A
Local Water	3993744	146515	WI10028705	2022	Proposed for List	Covered	Category 4A
Parsons Creek	10993	136000	WI10000950	2020	TMDL Approved	Covered	Category 4A
Pipe Creek	10979	132800	WI10000938	2020	TMDL Approved	Covered	Category 4A
Thiel Creek	10332	280100	WI10000457	2018	TMDL Approved	Covered	Category 4A
Unnamed Creek	5746464	131130	WI10038320	2018	TMDL Approved	Covered	Category 4A
Unnamed Stream	6918644	257800	WI10041923	2020	TMDL Approved	Covered	Category 4A
Unnamed Stream	6918660	257900	WI10041924	2020	TMDL Approved	Covered	Category 4A
Unnamed Stream	8110754	3000189	WI10044505	2020	TMDL Approved	Covered	Category 4A
Unnamed Stream	8111202	5020550	WI10044543	2020	TMDL Approved	Covered	Category 4A
Unnamed Stream	8110960	5020640	WI10044525	2020	TMDL Approved	Covered	Category 4A



Waterbody Name	WATERS ID (AU ID)	WBIC	EPA ID	Year Listed	Listing Status <sup>(1)</sup>	TMDL Status	Proposed Listing Category <sup>(2)</sup>
Unnamed Stream	8110723	5025714	WI10044503	2020	TMDL Approved	Covered	Category 4A
Unnamed Stream	6938642	5026041	WI10043044	2020	TMDL Approved	Covered	Category 4A
Unnamed Trib to Hill Creek	5476549	5027219	WI10030963	2020	TMDL Approved	Covered	Category 4A
Unnamed Trib to N Br Pigeon River	6853164	3000102	WI10039794	2020	TMDL Approved	Covered	Category 4A
Unnamed Trib to Silver Creek	5476612	147000	WI10030981	2020	TMDL Approved	Covered	Category 4A
Unnamed Trib to Waupaca River	6775847	5021414	WI10039523	2020	TMDL Approved	Covered	Category 4A
White Creek	11026	146600	WI10000972	2020	TMDL Approved	Covered	Category 4A

- (1) Listing Status: “TMDL Approved” indicates that the impaired water, listed either prior to or during the 2020 listing cycle is covered by the EPA approved TMDL. “Proposed for List” indicates that the waterbody is proposed for the 2022 listing cycle and is covered by the EPA approved TMDL. “303(d) Listed” indicates that the waterbody is not covered by the EPA approved TMDL.
- (2) Proposed Listing Category indicates waterbodies listed either prior to or during the 2020 listing cycle that will be moved from category 5 to category 4A due to their change in status of being covered by the EPA approved TMDL. Waterbodies proposed for the 2022 listing cycle that are covered by the EPA approved TMDL are listed as category 4A. Waterbodies determined not to be covered by the EPA approved TMDL remain under category 5.

The waterbodies listed in Table 1 are covered by the loading capacity and allocations contained within the February 27, 2020 EPA approved UFWB TMDL report meaning that attainment of the applicable allocations will allow attainment of water quality criteria. This determination was made based for each listed segment by comparing the river or stream criteria for the listed segment against the subbasin or downstream water quality target for the subbasin(s) that contains the listed segment. Table 2 provides a summary of the water quality criteria and the subbasin and downstream targets for each waterbody and listed segment.

The subbasin target is the water quality criteria used in setting the TMDL loading capacity and allocations for that subbasin. The downstream target is the simulated resulting water quality concentration in that subbasin that is needed to attain water quality criteria for downstream waterbodies that have more restrictive water quality criteria. For example, Lake Winnebago has a total phosphorus criterion of 40 ug/L and requires upstream subbasins to have lower total phosphorus concentrations than may otherwise be needed to meet local water quality criterion. In all cases, the downstream target is lower than the applicable water quality criteria for the subbasin listed.

A newly listed river or stream segment is deemed covered by the existing TMDL when either the subbasin target or the downstream target is equal to or lower than the waterbody criteria (see Table 2).

During TMDL development process, subbasins were delineated to account for the location of point sources, significant changes in flow, changes in land use, and other significant factors that could impact the loading capacity for that subbasin. Additional information can be found in the EPA approved TMDL at <https://dnr.wisconsin.gov/topic/TMDLs/FoxWolf/index.html> and on the Watershed Restoration Viewer at <https://dnr.wisconsin.gov/topic/SurfaceWater/RestorationViewer/index.html>

**Public Comment Period:**

A public comment period was held from November 29, 2021 to January 7, 2022. No comments were received.

**Table 2. Waterbodies and impairment listings on the WDNR 2020 and 2022 303(d) list addressed in this TMDL report.**

Official Name	Waterbody Name	WATERS ID (AU ID)	WBIC	EPA ID	County	Start Mile	End Mile	Pollutant Source	Impairment(s)	Pollutant	TMDL Subbasin(s)	Waterbody Criteria (ug/L)	Subbasin Target (ug/L)	Downstream Target (ug/L)
Bear Creek	Bear Creek	10413	292100	WI10000518	Outagamie	0	8.41	PS/NPS	High Phosphorus Levels	TP	64, 70	75	75 and 100	25 and 27
Fox River	Fox River	5535277	117900	WI10033740	Columbia	175.98	183.18	NPS	Impairment Unknown	TP	5	75	75	34
Fox River	Fox River	6778560	117900	WI10039711	Green Lake, Marquette	126.83	134.25	PS/NPS	Degraded Biological Community	TP	9, 16	75	75	20 and 21
Klawitter Creek	Klawitter Creek	10713	164900	WI10000748	Marquette	0	3.75	NPS	Impairment Unknown	TP	10	75	75	18
Unnamed	Local Water	3993744	146515	WI10028705	Green Lake	0	1.88	NPS	Impairment Unknown	TP	83	75	75	17
Parsons Creek	Parsons Creek	10993	136000	WI10000950	Fond Du Lac	3.49	5.68	NPS	Degraded Habitat	Sed/TSS	41	Narrative	12 mg/L	NA
Pipe Creek	Pipe Creek	10979	132800	WI10000938	Fond Du Lac	0	2.5	NPS	Degraded Biological Community	TP	75	100	75	32
Thiel Creek	Thiel Creek	10332	280100	WI10000457	Waupaca	0	6.7	NPS	Degraded Biological Community, High Phosphorus Levels	TP	81	75	75	61
Unnamed	Unnamed Creek	5746464	131130	WI10038320	Calumet	0	1.89	NPS	High Phosphorus Levels	TP	75	75	75	32
Unnamed	Unnamed Stream	6918644	257800	WI10041923	Waupaca	0	2.88	NPS	Impairment Unknown	TP	66	75	75	24
Unnamed	Unnamed Stream	6918660	257900	WI10041924	Waupaca	0	2.6	NPS	Impairment Unknown	TP	66	75	75	24

Official Name	Waterbody Name	WATERS ID (AU ID)	WBIC	EPA ID	County	Start Mile	End Mile	Pollutant Source	Impairment(s)	Pollutant	TMDL Subbasin(s)	Waterbody Criteria (ug/L)	Subbasin Target (ug/L)	Downstream Target (ug/L)
Unnamed	Unnamed Stream	8110754	3000189	WI10044505	Fond Du Lac	0	2.46	NPS	Degraded Biological Community	TP	75	100	75	32
Unnamed	Unnamed Stream	8111202	5020550	WI10044543	Waupaca	0	1.61	NPS	Impairment Unknown	TP	66	75	75	24
Unnamed	Unnamed Stream	8110960	5020640	WI10044525	Waupaca	0	0.95	NPS	Impairment Unknown	TP	66	75	75	24
Unnamed	Unnamed Stream	8110723	5025714	WI10044503	Fond Du Lac	0	1.86	NPS	Degraded Biological Community	TP	75	75	75	32
Unnamed	Unnamed Stream	6938642	5026041	WI10043044	Fond Du Lac	0	1.54	NPS	Degraded Biological Community	TP	75	75	75	32
Unnamed	Unnamed Trib to Hill Creek	5476549	5027219	WI10030963	Green Lake	0	2.37	NPS	Degraded Habitat	Sed/TSS	79	Narrative	12 mg/L	NA
Unnamed	Unnamed Trib to N Br Pigeon River	6853164	3000102	WI10039794	Shawano, Waupaca	0	3.38	NPS	Impairment Unknown	TP	60	75	75	29
Unnamed	Unnamed Trib to Silver Creek	5476612	147000	WI10030981	Fond Du Lac, Green Lake	0	2.11	NPS	Degraded Habitat	Sed/TSS	19	Narrative	12 mg/L	NA
Unnamed	Unnamed Trib to Waupaca River	6775847	5021414	WI10039523	Waupaca	0	3.37	NPS	Degraded Biological Community	TP	66	75	75	24
White Creek	White Creek	11026	146600	WI10000972	Green Lake	0	1.11	NPS	Impairment Unknown	TP	20	75	75	65