**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:
W-15J

Glenn Skuta, Watershed Division Director
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Dear Mr. Skuta:

The U.S. Environmental Protection Agency has completed its review of the Blue Earth River Watershed TMDL study. The twenty three TMDLs address twelve streams impaired by *E. coil* and eleven lakes impaired by excess nutrients. The waterbodies are located in the Minnesota portion of the Blue Earth River Watershed, which includes portions of Blue Earth, Jackson, Martin, Faribault, and Freeborn counties. The *E. coli* TMDLs address impaired aquatic recreation uses due to excessive bacteria, and the total phosphorus (TP) TMDLs address impairments to aquatic recreation and/or aquatic life uses due to excessive nutrients.

The TMDLs meet the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations set forth at 40 C.F.R. Part 130. Therefore, EPA approves Minnesota's twelve *E. coli* TMDLs and eleven TP TMDLs for a total of twenty three TMDLs. EPA describes Minnesota's compliance with the statutory and regulatory requirements in the enclosed decision document.

EPA acknowledges Minnesota's efforts in submitting these TMDLs and look forward to future TMDL submissions by the State of Minnesota. If you have any questions, please contact Mr. James Ruppel, at 312-886-1823 or ruppel.james@epa.gov.

Sincerely,

8/1/2023

X 

Tera L. Fong
Division Director, Water Division
Signed by: Environmental Protection Agency

Enclosure

cc: Andrea Plevan, MPCA
Paul Davis, MPCA

wq-iw7-60g

**U.S. Environmental Protection Agency (EPA)**
**Final Review & Decision**
***(August of 2023)***

# Final Minnesota Blue Earth River Watershed Total Maximum Daily Load (TMDL) Report

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable TMDLs. Additional information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable. These TMDL review guidelines are not themselves regulations. They are an attempt to summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any differences between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations themselves.

This document is the final review and decision documentation for the Minnesota (MN) TMDL document titled:

> *Blue Earth River Watershed*
> *Total Maximum Daily Load-Report, July 2023*
> *E. coli and phosphorus TMDLs for impaired streams and lakes*

---

## Section 1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the waterbody as it appears on the State's/Tribe's 303(d) list. The waterbody should be identified/georeferenced using the National Hydrography Dataset (NHD), and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the waterbody and specify the link between the pollutant of concern and the water quality standard (see Section 2 of this decision document).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the National Pollutant Discharge Elimination System (NPDES) permits within the waterbody. Where it is possible to

separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA's review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

(1) The spatial extent of the watershed in which the impaired waterbody is located;
(2) The assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
(3) Population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;
(4) Present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and
(5) An explanation and analytical basis for expressing the TMDL through *surrogate measures*, if applicable. *Surrogate measures* are parameters such as percent fines and turbidity for sediment impairments; chlorophyll *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

## Section 1 Review Comments:

The waterbody(s) are identified as they appear on the 303(d) list.

The impaired waterbodies are identified in Section 1.2 and summarized in Table 2 of the final TMDL document (Table DD-1 of this Decision Document). A comparison of Table 2 of the final TMDL document to Minnesota's Final 2022 Impaired Waters List[1] confirms that all of the waterbody impairments identified in the table also appear on the State's list of impaired waters.

EPA notes that Table 2 of the final TMDL document indicates the State's intent to place the waterbody pollutant combinations into category 4A in future 303(d) lists. This TMDL decision document applies only to the review and approval of the TMDLs themselves. Decisions on future Minnesota (MN) 303(d) list categorizations remains subject to review and decision at the time the future MN 303d lists are submitted to EPA.

A portion of the Blue Earth River Watershed is in Iowa (Section 1.1 and Figure 2 of the final TMDL document). The TMDL analysis focuses solely on the Minnesota portion of the watershed, and does not assign any allocations to Iowa.

The TMDL document clearly identifies the pollutant for which the TMDL is being established.

Table 2 of the final TMDL document identifies the pollutants for which the respective TMDLs are being established.

[1] https://www.pca.state.mn.us/air-water-land-climate/minnesotas-impaired-waters-list

The Minnesota Pollution Control Agency (MPCA) identifies *E. coli* as the pollutant for which TMDLs are being established to address the stream reaches impaired for Aquatic Recreational designated uses.

MPCA identifies Total Phosphorus (TP) as the pollutant for which the TMDLs are being established to address the lakes impaired for Aquatic Recreation and Aquatic Life designated uses.

The link between the pollutant of concern and the water quality impairment is specified.

The link between *E. coli* and the impairment to the Aquatic Recreation designated use is established by MN through the numerical criteria in the MN Water Quality Standards (WQS) which are discussed further in Section 2 of this review document. MPCA discusses the water quality monitoring results and impairment due to excessive *E. coli* in Section 3.6 of the final TMDL document and presents the results of water quality monitoring for *E. coli* concentrations in Table 11 of the final TMDL document. Table 11 of the final TMDL document shows that monitoring results indicate that *E. coli* concentrations exceeded the monthly geometric mean WQS 100% of the time for all of the *E. coli* impaired stream reaches while the monitoring was being conducted and exceeded the 1,260 orgs/100 mL portion of Minnesota's WQS between 7% and 27% depending on the impaired stream reach in question.

The link between impairment of the Aquatic Recreational and Aquatic Life designated uses, and the nutrient related parameters of Total Phosphorus (TP), Chlorophyl A (Chl-a) concentrations, and Secchi disk depth visibility are established by the State through the use of numerical thresholds in the MN WQS which are discussed further in Section 2 of this review document. It should be noted that the MN WQS for nutrient related impacts is a three-part standard that includes TP as well as the two response variables of Chl-a, and Secchi disk depth. However, TP is the pollutant for which the TMDL loading allocations are allocated by MPCA (Section 2.4.2 of the final TMDL document).

Excessive loading of phosphorus may result in excessive algal growth in the impaired lakes, resulting in high Chl-a concentrations and reduced visibility as measured by Secchi disk depth. Dense algal matts and algal blooms, as well as excessive aquatic macrophyte growth resulting from high nutrient concentrations may impair aquatic recreational uses. Eventual die off of the excessive algal and plant biomass can lead to a deficit of dissolved oxygen in the water column as the plant matter decays, resulting in negative impacts on aquatic life including fish species.

Section 3.6 of the TMDL document discusses the linkage between TP, Chl A, and Secchi Disk transparency depth and the eutrophication WQS violation. Table 12 of the final TMDL document shows growing season mean values for TP concentrations, Chl-a concentrations, and Secchi disk transparency for the impaired lakes. In all except three of the lakes mean concentrations for TP exceed the WQS criteria. The Chl-a concentration portion of the WQS

criteria are exceeded for all of the lakes, while Secchi disk depth portion of the WQS criteria is exceeded in five of the eleven lakes. Three of the lakes, Hall, Budd, and Sisseton Lakes, did not meet the Chl A criteria despite meeting the TP criteria. Additional information on the numerical values of the WQS nutrient criteria are included in Section 2 of this Decision Document.

Section 1.2 of the final TMDL document discusses the link between TP WQS violations and the Aquatic Life designated use fish impairments. Table 5.1 (page 31) of the Stressor ID report for the Blue Earth River Watershed[2], identifies eutrophication (excess nutrients) as a candidate cause for stressors associated with the biologically impaired lakes in the watershed.

Table 5-1. Summary of the stressors associated with the biologically impaired and vulnerable lakes in the BERW.

| Lake name | DOW | Candidate causes[1] | | | | |
|---|---|---|---|---|---|---|
| | | Eutrophication (excess nutrients) | Physical Habitat Alteration | Decreased Dissolved Oxygen | Altered Interspecific Competition | Pesticide Application |
| Imogene | 46-0012-00 | | | | | |
| South Silver | 46-0020-00 | | | | | |
| Sisseton | 46-0025-00 | | | | | |
| Budd | 46-0030-00 | | | | | |
| Hall | 46-0031-00 | | | | | |
| Amber | 46-0034-00 | | | | | |
| Fox | 46-0109-00 | | | | | |
| Cedar | 46-0121-00 | | | | | |
| Big Twin | 46-0133-00 | | | | | |
| Fish | 46-0145-00 | | | | | |

[1] red indicates support for the candidate cause as a stressor, blue refutes support of the candidate cause as a stressor, and yellow indicates evidence is inconclusive as to whether the candidate cause is a stressor.

*From Page 31 of The Blue Earth River Watershed Stressor Identification Report – Lakes (DNR 2022a)*

Waters within Indian Country, (as defined in 18 U.S.C. Section 1151) are identified and discussed.

Section 1.3 of the TMDL document discusses the presence of tribal lands within the Blue Earth River Watershed. No part of the watershed is within the boundaries of a federally recognized Indian reservation, nor are any pollutant loads allocated to federally recognized tribal sources.

The location and quantity of point and non-point sources are identified.

Section 3.7 of the final TMDL document discusses the types and sources of pollutants within the Blue Earth River Watershed. Additional details about the sources to each of the impaired waterbodies is presented in Section 4 of the final TMDL document.

[2] *The Blue Earth River Watershed Stressor Identification Report – Lakes (DNR 2022a*)

Wastewater Treatment Plants (WWTPs)

Section 3.7.1.1 of the final TMDL document discusses wastewater facilities as both a source of permitted discharge of *E. coli* as well as a source of unpermitted discharge of *E. coli* through the release of untreated wastewater during wet weather high flows and during dry weather due to mechanical failures.

Table 13 of the final TMDL document provides a summary of the releases that occurred both due to wet weather, and to mechanical failures during dry weather between the years of 2010 and 2019. Releases occurred 53 times due to wet weather and an additional 6 releases occurred due to mechanical failures. While all NPDES permitted facilities are required to meet the terms of their respective permits, given the relatively smaller contribution of NPDES permitted waste loads during high flow events, MPCA determined that it is less likely that such releases play a major role in *E. coli* WQS violations during high flows. However, mechanical failures resulting in releases of untreated wastewater during dry weather pose a greater risk depending on the concentrations of *E. coli* in the wastewater and the flow and *E. coli* concentration in the receiving water (Section 3.7.1.1 of the final TMDL document). EPA notes that such releases are not authorized pollutant discharges and any allocations approved as part of this TMDL decision document do not authorize the unpermitted release of wastewater pollutants.

Table 18 of the TMDL document identifies 11 Wastewater Treatment Plants (WWTPs), including the associated NPDES permit numbers, that are potential sources of *E. coli* to the impaired stream reaches. MPCA assigns *E. coli* Wasteload Allocations (WLAs) to these 11 WWTPs which are reflected in Table 18 of the final TMDL document, in the applicable TMDL summary tables, as well as in Table DD-2 in Appendix DD-A of this Decision Document. The impaired waterbodies to which the 11 WWTPs discharge *E. coli* are identified in the respective TMDL summary tables in Appendix B of the final TMDL document and included in Appendix DD-B of this Decision Document.

The Great River Energy – Lakefield Junction Station, NPDES permit MN0067709, is identified by MPCA as a potential source of TP to Cedar Lake (AUID 46-0121). Table 21 of the final TMDL document, and Table DD-3 of this Decision Document provide the NPDES permit number and other relevant information on the Great River Energy WWTP. No other NPDES permitted sources of municipal or industrial wastewater are identified in the TMDL document as potential WWTP sources of TP to the impaired lakes noted in Table DD-1 of this Decision Document).

MS4s

In Section 3.7.1.1 of the final TMDL document, the City of Fairmont, MN is identified by MPCA as the only MS4 source within the basin that may contribute pollutant loads of *E. coli* or TP to the impaired waterbodies. The City of Fairmont MS4 (MS400239) is identified as a source of *E. coli* to the impaired reach Blue Earth River (Center Cr to Elm Cr) (AUID

07020009-514) and as a source of TP to the Fairmont chain of lakes, including lakes Amber (AUID 46-0034-00), Hall (AUID 46-0031-00), Budd (AUID 46-0030-00), Sisseton (AUID 46-0025-00), and George (AUID 46-0024-00).

#### Stormwater

In Section 3.7.1.1 of the final TMDL document MPCA states that construction and industrial stormwater are not identified as significant sources of *E. coli* and no *E. coli* WLAs are provided in the document. Construction and industrial stormwater are considered to be minor sources of TP to the impaired lakes, are identified as regulated pollutants, and TP WLAs are assigned in each of the lake TP TMDLs.

#### Concentrated Animal Feeding Operations (CAFOs)

MPCA has identified CAFOs in the Blue Earth River Watershed (Section 3.7.7.1 of the final TMDL document). As explained by MPCA, CAFO production areas must be designed to contain all manure, and direct precipitation and manure-contaminated runoff from precipitation events up to the 25-year, 24-hour storm event. In the event of a discharge, the discharge cannot cause or contribute to a violation of a water quality standard (WQS). MPCA noted that any precipitation-caused runoff from the land application of manure at agronomic rates is not considered a point source discharge and is accounted for in the load allocation (LA) of the TMDL.

### Non-Point Sources

#### *E. coli*

In Section 3.7.2 of the TMDL document MPCA identifies non-permitted sources to be the primary contributors of *E. coli* to the impaired streams. MPCA identifies livestock sources, including runoff from feedlots, manure stockpiles, pastures, and manure applied to agricultural fields, as significant sources of *E. coli* to the impaired stream segments. Livestock given direct access to riparian areas are also identified as a potential source of *E. coli*.

The TMDL document identifies failing Subsurface Sewage Treatment Systems (SSTSs or septic systems) as a potential source of both TP and *E. coli* to the impaired waterbodies. MN considers SSTS systems that discharge untreated wastewater directly to the land surface or to waterbodies to be an Imminent Threats to Public Health and Safety (ITPHS). Table 17 of the final TMDL document provides a summary of the MPCA estimated percent of failing and IPHT SSTSs in each county. Because rates of SSTSs that are considered ITPHS range from 12% to 28%, MPCA noted that this source is considered to be a likely contributor of *E. coli* to the impaired waterbodies. EPA notes that SSTSs are not permitted to discharge to surface waters and it is expected that over time any measures necessary to eliminate such discharges will be taken.

### TP

In Section 3.7.3 of the TMDL document, MPCA identifies runoff from cropland and internal recycling of TP from lake bottom sediments as the primary non-point sources (NPS) of TP to the impaired lakes. Figure 17 of the final TMDL document provides a breakdown by percentage of the primary sources, including NPS sources, to each of the impaired lakes showing the aforementioned sources as the overwhelming majority of the NPS load of TP. Table 15 of the TMDL document shows the TP unit area loading rates from the various land uses within the Blue Earth River Watershed as estimated using the Hydrological Simulation Program – FORTRAN (HSPF) watershed model. Cropland, yielding 0.60 pounds per acre per year (lb/ac-yr), along with developed land (0.30 lb/ac-yr) and pastureland (0.28 lb/ac-yr) are estimated to be the largest contributors of TP on a per acre basis.

### Land Use

Land cover is discussed in Section 3.5 of the final TMDL document. Agriculture is identified by MPCA as the predominant land use. Corn and soybean are the dominant crops in the Blue Earth River Watershed with other crops composing less the 3% of the land use. Table 8 of the final TMDL document provides a breakdown of the primary land use categories in the watersheds draining to each of the impaired streams and impaired lakes. Figure 11 of the final TMDL document shows the land use distribution within the MN portion of the Blue Earth River watershed.

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the first criterion.

---

## Section 2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribal water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction

of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus, and the numeric water quality target is expressed as Dissolved Oxygen (DO) criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

## Section 2 Review Comments:

Applicable WQS are identified, described, and a numerical water quality target is included.

MPCA discusses applicable WQS in Section 2 of the TMDL document. A general discussion of MN WQS is included followed by the specific identification of the WQS for the *E. coli* impaired reaches and for the TP impaired reaches.

Table 3 of the TMDL document provides the specific water quality criteria that serve as the target for the *E. coli* TMDLs. The water quality criteria from the applicable *E. coli* MN WQS serve as the numeric water quality targets and are cited by MPCA as:

> *"Not to exceed 126 organisms per 100 milliliters as a geometric mean of not less than five samples representative of conditions within any calendar month, nor shall more than 10% of all samples taken during any calendar month individually exceed 1,260 organisms per 100 milliliters. The standard applies only between April 1 and October 31."*

In Section 2.4.1 of the TMDL document, MPCA acknowledges that both the geometric mean and the 1,260 orgs/100 mL portion of the *E. coli* WQS criteria apply, however, the TMDL is written to meet the chronic water quality numerical criteria and MPCA determined that meeting the geometric mean will also result in the 1,260 orgs/100 mL portion of the WQS being met. MPCA also investigated the *E. coli* criteria for Iowa, which is immediately upstream of portions of the Blue Earth River Watershed. The investigation indicates the Iowa WQS are as stringent as MN's for the Middle Branch impairment, and no data exists on the Iowa side regarding the West Branch impairment. The criteria for the *E. coli* TMDLs is the WQS of ≤ **126** org/100 mL (monthly geometric mean)
≤ **1,260** org/100 mL (individual sample).

The WQS for the nutrient impaired lakes are discussed in Section 4.2 of the TMDL document. The impaired lakes for which TMDLs are developed are classified under MN WQS as shallow lakes in the Western Corn Belt Ecoregion. TP is identified by Minnesota as the pollutant for which the TMDL is developed. The WQS for TP includes values for TP (the causal variable), as well as for Chl A concentrations and SD transparency depth (two response variables). Table 5 of the TMDL document provides a summary of the numerical water quality thresholds which will serve as the numerical targets of the TMDL. MN's

eutrophication WQS apply only during the summer growing season, June 1 through September 30. MPCA explains that in addition to meeting the TP WQS criteria, either the Chl-a concentration criteria and/or the Secchi transparency criteria must also be met for a waterbody to be considered meeting the WQS. For the lake TMDLs, the target is **90** ug/L TP.

**Table 5. Eutrophication criteria for class 2B lakes and shallow lakes in the Western Corn Belt Plains Ecoregion.**

| Parameter | Shallow lakes |
|---|---|
| TP (µg/L) | ≤ 90 |
| Chl-*a* (µg/L) | ≤ 30 |
| Secchi transparency (meters [m]) | ≥ 0.7 |

*Excerpted from the TMDL document.*

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the second criterion.

## Section 3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a water body for the applicable pollutant. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The pollutant loadings may be expressed as either mass-per-time, toxicity, or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account *critical conditions* for stream flow, loading, and water quality parameters as part of the analysis of loading capacity (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable *critical conditions* and describe their approach to estimating both point and nonpoint source loadings under such *critical conditions*. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

## Section 3 Review Comments:

The loading capacity is presented for the pollutant of concern (including daily loads).

The *E. coli* loading capacity is presented for each of the impaired stream reaches in Appendix B of the final TMDL document as both load duration curves, which serve as the actual TMDL flow dependent values, and also as TMDL summary tables that break down the flow into five flow regimes (Very High, High, Mid, Low, and Very Low). The *E. coli* loading capacity is specified in units of billions of organisms per day in both the load duration curve figures and the summary tables.

MPCA used the Load Duration Curve method to develop the loading capacity for the impaired streams (Section 3.6.1 of the final TMDL document). Typically loading capacities are expressed as a mass per time (e.g., pounds per day). However, for *E. coli* loading capacity calculations, mass is not always an appropriate measure because *E. coli* is expressed in terms of organism counts. This approach is consistent with the EPA's regulations which define "load" as "an amount of matter that is introduced into a receiving water" (40 C.F.R. § 130.2). To establish the loading capacities for the Blue Earth River Watershed bacteria TMDLs, MPCA used Minnesota's WQS for *E. coli* (126 orgs/100 mL). A loading capacity is, "the greatest amount of loading that a water can receive without violating water quality standards." (40 C.F.R. § 130.2). Therefore, a loading capacity set at the WQS will assure that the water does not violate WQS. MPCA's *E. coli* TMDL approach is based upon the premise that all discharges (point and nonpoint) must meet the WQS when entering the water body. If all sources meet the WQS at discharge, then the water body should meet the WQS and the designated use.

The LDC plots were subdivided into five flow regimes; very high flow conditions (exceeded 0–10% of the time), high flow conditions (exceeded 10–40% of the time), mid-range flow conditions (exceeded 40–60% of the time), low flow conditions (exceeded 60–90% of the time), and very low flow conditions (exceeded 90–100% of the time). LDC plots can be organized to display individual sampling loads with the calculated LDC. Watershed managers can interpret LDC graphs with individual sampling points plotted alongside the LDC to understand the relationship between flow conditions and water quality exceedances within the watershed. Individual sampling loads which plot above the LDC represent violations of the WQS and the allowable load under those flow conditions at those locations. The difference between individual sampling loads plotting above the LDC and the LDC, measured at the same flow, is the amount of reduction necessary to meet WQS.

The TP loading capacity for the impaired lakes is also presented in Appendix B of the final TMDL document in TMDL summary tables. The TP load is provided in units of pounds of phosphorus per day.

The method to establish a cause and effect relationship between the pollutant of concern and the numerical target is described, and the TMDL analysis is documented and supported

MN WQS directly specify the maximum numerical water quality criterion for *E. coli* that determines impairment of the Aquatic Recreational designated use. The load duration curve method specifies the loading capacity for *E. coli* as a direct function of stream discharge and the *E. coli* concentration specified by the WQS.

Phosphorus is related to the eutrophication of lakes as demonstrated by the response variables of Chl A concentrations and reduced visibility as measured by SD transparency depth. MN WQS specify the maximum allowable TP concentrations, Chl A concentrations, and SD transparency depth for lakes based on lake depth and which ecoregion the lakes are located within.

The HSPF model was used by MPCA to predict watershed runoff and TP loads to the lakes. The BATHTUB model was used to predict the TP and Chl A concentrations and the Secchi Disk transparency within the lakes based on the HSPF simulated inputs. Section 4.5.1 provides a discussion of the BATHTUB modeling used to predict water quality conditions within the impaired lakes, and Appendix C of the TMDL document provides further details.

MPCA subdivided the lake loading capacities among the WLA, LA, and MOS (10% of the loading capacity) components of the TMDL (Appendix DD-B of this Decision Document). These calculations were based on the critical condition, the summer growing season, which is typically when the water quality in each lake is typically degraded and phosphorus loading inputs are the greatest. TMDL allocations assigned during the summer growing season will protect the lakes during the worst water quality conditions of the year. MPCA assumed that the loading capacities established by the TMDL will be protective of water quality during the remainder of the calendar year (October through May).

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the third criterion.

## Section 4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, load allocations should be described separately for natural background and nonpoint sources.

### Section 4 Review Comments

The load allocations for existing NPS are accounted for (and future if applicable).

### *E. coli*

Load allocations are provided for each of the *E. coli* impaired stream segments in units of billions of organisms per day both in the form of Load Duration Curves, and in the TMDL summary tables for each of the impaired stream segments found in Appendix B of the TMDL document and in Appendix DD-B of this Decision Document.

In instances of very low stream flow the State applies the *E. coli* WQS criterion at the point or place of discharge. Under such conditions, the allowable load allocation to the waterbody is a function of the *E. coli* WQS concentration criteria and the hydrologic flow. The LA is calculated as the flow contribution from a given source multiplied by the *E. coli* WQS criterion of 126 org *E. coli*/100 mL.

### TP

Load allocations for the Phosphorus impaired lakes are included in units of lbs of TP per day in the TMDL summary tables found in Appendix B of the TMDL document and in Appendix DD-B of this Decision Document.

### Loads Originating Outside of MN

A portion of the Blue Earth River Watershed is within the jurisdictional boundaries of the State of Iowa. In instances where a portion of the loads allocated to achieve a TMDL originate from Iowa, MPCA assumes a boundary condition load that is consistent with meeting the TMDL loading rate. The boundary condition is explained in Section 4.4.3 of the final TMDL document. The boundary condition was calculated by subtracting the watershed area in Iowa from the overall Blue Earth watershed area. The loading calculations in the tables of this Decision Document reflect only the Minnesota portion of the watershed.

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the fourth criterion.

---

## Section 5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h), 40 C.F.R. §130.2(i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit. The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting

process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permittees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

## Section 5 Review Comments

The waste load allocations are properly assigned.

*E. coli*

*E. coli* WLAs were assigned to WWTPs identified in Table DD-2 of this Decision Document based on the *E. coli* geometric mean WQS multiplied by the facility's design flow. In instances of very low flow, it is anticipated that some waterbodies may become effluent dominated. In such instances, MPCA applies the WQS *E. coli* criterion at the point of discharge. Under such conditions, the WLA is calculated as the flow contribution from a given source multiplied by the WQS criterion of 126 org *E. coli*/100 mL (Section 4.4.4.1 of the final TMDL document). Waste load allocations are provided for each of the *E. coli* impaired stream segments in units of billions of organisms per day in the form of Load Duration Curves and TMDL summary tables in Appendix B of the TMDL document and Appendix DD-B of this decision document. NPDES permit numbers are provided in the TMDL summary tables and are also included in Table DD-2 of this decision document.

MPCA also explained in Section 4.4.4.1 of the final TMDL document that the WLA for each individual WWTP was calculated based on the *E. coli* WQS but that WWTP permits are regulated for the fecal coliform effluent limit (200 orgs/100 mL geometric mean) and that if a facility is meeting its fecal coliform limits, which are set in the facility's discharge permit, MPCA assumes the facility is also meeting the calculated *E. coli* WLA. The WLA was therefore calculated using the assumption that the *E. coli* standard of 126 orgs/100 mL provides equivalent protection from illness due to primary contact recreation as the fecal coliform WQS of 200 orgs/100 mL.

MPCA noted that there is one MS4 in an impaired subwatershed; the City of Fairmont (MS400239). The WLA was calculated by MPCA based upon the MS4 permit area multiplied by the *E. coli* WQS (Section 4.4.4.2 of the final TMDL document). MPCA noted that the City has a pre-existing WLA as part of the 2007 Blue Earth River Watershed fecal

coliform TMDL. As noted above, MPCA has determined that the fecal coliform WQS is consistent with the *E. coli* WQS, and therefore will have no impact on current operations.

MPCA acknowledged the presence of CAFOs in the Blue Earth River Watershed in Section 3.7.7.1 of the final TMDL document. CAFOs and other feedlots are generally not allowed to discharge to waters of the State (Minnesota R. 7020.2003). CAFOs were assigned a WLA of zero (WLA = 0) by MPCA for the Blue Earth River Watershed bacteria TMDLs. As explained by MPCA, CAFO production areas must be designed to contain all manure, and direct precipitation and manure-contaminated runoff from precipitation events up to the 25-year, 24-hour storm event, and even in the event of a discharge, the discharge cannot cause or contribute to a violation of a WQS. MPCA noted that any precipitation-caused runoff from the land application of manure at agronomic rates is not considered a point source discharge, and is accounted for in the LA section of the TMDL.

### TP

TP WLAs for the WWTP, stormwater runoff, and the MS4 are included in units of lbs of TP per day in the TMDL summary tables.

The Great River Energy—Lakefield Junction Station discharges within the Cedar Lake watershed and is the only WWTP that is identified by MPCA as potentially discharging TP to an impaired lake (Section 4.5.4 of the final TMDL document). MPCA noted that the Great River Energy facility does not currently have a TP effluent limit as part of its NPDES permit, however a WLA of 0.016 lb of TP/day is allocated (Table DD-3 of this Decision Document). If the facility is found by Minnesota to have a reasonable potential to cause or contribute to a TP WQS exceedance at the time the facility permit is reissued, MPCA asserts that it will be assigned a limit that is consistent with this TMDL WLA allocation.

The City of Fairmont MS4 (MS400239) is allocated a WLA of 7.7 lbs of TP per day as shown in Table 77 of the TMDL document.

EPA notes that in Appendix D of the TMDL document, MPCA provides guidance for complying with the City of Fairmont MS4 TP WLA. While such information is included as an Appendix to the TMDL document, EPA's review of the TMDL document is limited to the required elements of the TMDLs themselves. The approval of this TMDL document does not imply approval or disapproval of the guidance discussed in Appendix D ("*Guidance for documentation of compliance with MS4 TP WLA for the City of Fairmont"*). While such implementation guidance may prove useful, and EPA does not object to its inclusion in TMDL documents, it should be understood that it is beyond the scope of this TMDL review and decision.

Individual WLAs are calculated for each impaired lake watershed for construction and industrial stormwater and included in each of the TMDL summary tables located in Appendix B of the TMDL document (Sections 4.5.4.3 and 4.5.4.4 of the final TMDL document). The construction stormwater WLAs were set at 0.23% of the load allocation for a

given subwatershed after subtracting any upstream boundary condition loads and waste load allocations. MPCA based this figure on the observation that at any given time approximately 0.23% of the Blue Earth River Watershed is undergoing construction activities. In the case of construction activities within the Fairmont MS4, the permitted construction stormwater WLA is combined with the MS4 WLA based on the presumption that any construction site stormwater will discharge within the MS4 boundaries. A similar method was used to calculate the industrial stormwater wasteload allocations.

MPCA acknowledged the presence of CAFOs in the Blue Earth River Watershed in Section 3.7.7.1 of the final TMDL document. CAFOs and other feedlots are generally not allowed to discharge to waters of the State (Minnesota R. 7020.2003). CAFOs were assigned a WLA of zero (WLA = 0) by MPCA for the Blue Earth River Watershed bacteria TMDLs. As explained by MPCA, CAFO production areas must be designed to contain all manure, and direct precipitation and manure-contaminated runoff from precipitation events up to the 25-year, 24-hour storm event, and even in the event of a discharge, the discharge cannot cause or contribute to a violation of a WQS. MPCA noted that any precipitation-caused runoff from the land application of manure at agronomic rates is not considered a point source discharge, and is accounted for in the LA section of the TMDL.

### Future Growth

Consideration for future growth is addressed in Section 5 of the TMDL document. MPCA did not consider it necessary to reserve a portion of the total loading allocation to account for future growth. Section 5.1 of the final TMDL document discusses the process to transfer a portion of the load allocation to the waste load allocation to accommodate new or expanding MS4s, or to transfer WLA between MS4s. MPCA and EPA have established procedures for conducting such expansions for TSS and/or *E. coli* WLAs that will discharge at or below the WQS. EPA notes that the agreed upon procedure does not apply to TP discharges and could not be used to expand TP WLAs in the future. The Great River Energy—Lakefield Junction Station discharges within the Cedar Lake watershed, and although it does not currently have a TP effluent limit, it is assigned a TP WLA to be available should it be determined in the future that it has a reasonable potential to cause or contribute to a TP WQS exceedance when the facility permit is reissued.

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the fifth criterion.

## Section 6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety (MOS) to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). EPA's 1991 TMDL Guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL

as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

## Section 6 Review Comments:

A margin of safety (MOS) is provided and justified. If an implicit MOS is used, conservative assumptions are identified, and their relative impacts discussed.

### *E. coli*

A MOS of 10% is included in the *E. coli* TMDLs. A robust flow data set and good calibration of the HSPF model used to derive the FDC is cited by MPCA for justification of this MOS.

As noted in Section 4.4.2 of the final TMDL document, MPCA explained that the Blue Earth River Watershed HSPF model was calibrated and validated with 21 years of flow data from 3 long-term stream gages. The results indicate a generally good agreement between the observed lake water quality and the model results, and therefore no additional MOS is needed.

Challenges associated with quantifying *E. coli* loads include the dynamics and complexity of bacteria in stream environments. Factors such as die-off and re-growth contribute to general uncertainty that makes quantifying stormwater bacteria loads particularly difficult. The MOS for the Blue Earth River Watershed bacteria TMDLs also incorporated certain conservative assumptions in the calculation of the TMDLs. No rate of decay, or die-off rate of pathogen species, was used in the TMDL calculations or in the creation of load duration curves for *E. coli*. Bacteria have a limited capability of surviving outside their hosts, and normally a rate of decay would be incorporated. MPCA determined that it was more conservative to use the WQS (126 orgs/100 mL) and not to apply a rate of decay, which could result in a discharge limit greater than the WQS.

As discussed in *EPA's Protocol for Developing Pathogen TMDLs* (EPA 841-R-00-002), many different factors affect the survival of pathogens, including the physical condition of the water. These factors include, but are not limited to sunlight, temperature, salinity, and nutrient deficiencies. These factors vary depending on the environmental condition/circumstances of the water, and therefore it would be difficult to assert that the rate of decay caused by any given combination of these environmental variables was sufficient to meet the WQS of 126 orgs/100 mL. Thus, it is more conservative to apply the State's WQS as the bacteria target value because this standard must be met at all times under all environmental conditions.

TP

The TMDLs for Rice, Iowa, East Chain, Fish, Cedar, and Ida lakes include an explicit MOS of 10% (These are the non-Fairmont Chain of Lakes). The quality of the data set used to calibrate the HSPF model is cited as justification for this MOS (Section 4.5.2 of the final TMDL document). As noted in the E. coli discussion above, MPCA utilized data from 3 long-term gages and over 10 years of water quality data to develop the BATHTUB model, as well as inputs from the HSPF model. Review of the calibration indicates a generally good agreement with he observed data (Section 4.5.1 of the final TMDL document).

The TP TMDL for the Fairmont Chain of Lakes includes both an implicit and an explicit MOS. The TMDL load reductions are expected to result in TP values below the WQS criteria of 90 µg/L TP in the lakes upstream of Lake George (88 µg/L in Amber Lake, 65 µg/L in Hall Lake, 62 µg/L in Budd Lake, and 72 µg/L in Lake Sisseton), and therefore are cited as providing an implicit MOS for these lakes. The modeling for the Fairmont Chain of Lakes performed by MPCA indicates that Sisseton Lake, directly upstream of Lake George (the downstream-most lake in the chain; Figure 19 of the final TMDL document), is expected to achieve a target of 72 µg/L TP. The TMDL explains that the individual model for Lake George indicates that Lake Sisseton would only need to achieve a target of 75 µg/L TP in order for Lake George to achieve its target of 90 µg/L TP, thereby providing an implicit MOS in the 3 µg/L difference (4%) between the expected concentration in Lake Sisseton and that needed to achieve the targets downstream in Lake George. A further implicit MOS of 7% is provided for Lake George by not allocating for the excess internal loading that is in beyond the normal internal loading rate that is assumed by the model. It is anticipated by MPCA that once the external loading allocations are achieved and the system has reached a new dynamic equilibrium between incoming and outgoing TP loads in Lake George, the new seasonal internal loading rate will match the load that is typically seen in similar lakes and is implicitly incorporated by the BATHTUB model calculations. By allocating loads based on a 100% reduction of the excess internal loading rate (i.e. that over and above natural conditions already incorporated into the BATHTUB model) rather than the 77% reductions that the model shows would be required to meet the WQS in lake George, an implicit MOS of approximately 7% is provided for. The TMDL makes it clear that an internal loading rate allocation of zero for Lake George does not imply that there is no seasonal TP internal loads being recycled from the bottom sediments into the water column, only that the seasonal internal loading rate is expected to match the load already incorporated into the BATHTUB model based on TP sediment to water column recycling rates typical of similar lakes. In other words, zero internal load in excess of that which is typical for such a lake and already accounted for by the model assumptions. Finally, MPCA commits to revisiting the MOS if the prescribed TP load allocations are achieved, a new dynamic equilibrium in Lake George has become established, and despite this Lake George is found to not be meeting WQS. In this event, MPCA may conduct additional watershed studies and possible further load reductions may be prescribed as part of the Adaptive Management Process at that time.

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the sixth criterion.

## Section 7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

### Section 7 Review Comments:

Seasonal variation in loads and/or effects are described and accounted for.

#### *E. coli*

Seasonal variation is represented in the MN *E. coli* WQS themselves by specifying their applicability during the warmer period from April 1 to October 31, when aquatic recreation is more prevalent, and temperatures more favorable to the survival of *E. coli.* Seasonal variation is further accounted for by using the LDC method which automatically accounts for seasonal variation in stream flows by establishing the TMDL loads based directly on stream discharge.

#### TP

Seasonal variation and critical conditions are addressed in the TP TMDLs by the MN WQS which apply during the summer growing season from June 1st through September 30th. The summer growing season is the time when the most frequent and severe nuisance algal blooms are expected to occur in MN lakes.

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the seventh criterion.

## Section 8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a NPDES permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that

nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

EPA's August 1997 TMDL Guidance also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

## Section 8 Review Comments:

### Reasonable Assurance that point source load reductions will occur is provided in the document.

Reasonable assurance that point source loads will be met is provided by the NPDES permitting system. NPDES permit numbers are provided and associated with the WLAs allocated to NPDES permitted sources.

### Reasonable Assurance that NPS load reductions will occur is provided in the document.

#### The parties responsible for implementation are identified:

The local Soil and Water Conservation Districts are identified as the primary source of contact with the landowners. A number of local stakeholder groups have been and are expected to continue to be active in implementing best management practices in the Blue Earth Watershed. Sections 6.3 and 6.4 of the TMDL document provide a discussion of the parties who have been active in past conservation efforts in the watershed and are expected to remain active in the future.

#### Potential measures and resources to achieve load reductions are identified.

Sections 6 and 8 of the TMDL document provide an extensive discussion on the potential planning, funding, and Best Management Practices (BMPs) that may be used to achieve the needed load reductions and the potential resources that may be utilized to fund them. Section 6 of the TMDL document addresses reasonable assurance and is discussed further below in this section of this decision document. Section 8 of the TMDL document provides details on the implementation planning and strategies that may be utilized along with information on the associated costs and is reviewed below in Section 10 of this decision document.

Section 6.2 of the document discusses existing efforts to implement BMPs in the MN portion of the Blue Earth River watershed. The number of BMPs implemented in each subwatershed

within the basin is tracked on the MPCA's Healthier Watersheds[3] website. The website provides both an interactive map and a table demonstrating that extensive BMP implementation is already ongoing within the watershed.

Section 6.2.1 of the final document provides a discussion of MN regulations for SSTS systems and includes a WWW[4] link to programs that assist in the financing of compliance with those regulations.

Section 6.2.2 of the final TMDL document discusses the MN Feedlot Program which addresses the collection, transportation, storage, processing, and disposal of both permitted and nonpermitted feedlots. Feedlots are regulated in the State of MN by Minn. R. ch. 7020.[5]

Section 6.2.3 of the final TMDL document discusses the Minnesota buffer law (Minn. Stat. § 103F.48) which requires 50 foot wide vegetative buffers to be maintained along public waterbodies, and 16.5 foot wide buffers along ditches.

Section 6.2.4 of the final TMDL document discusses the Minnesota Agricultural Water Quality Certification Program which incentivizes farmers and landowners to implement practices protective of water quality in exchange for recognition, priority for technical assistance, and a 10 year period of regulatory certainty.

Section 6.2.5 of the final TMDL document discusses the Section 319 Small Watershed Focus Program. Section 319 funding is already being utilized for projects within the Blue Earth River Watershed and additional funding is anticipated to be pursued.

Section 6.2.6 of the final TMDL document discusses how implementation of other previously completed TMDLs will benefit areas of the Blue Earth River Watershed including the *Greater Blue Earth River Basin Fecal Coliform TMDL Report Implementation Plan* (GBERBA 2007), the *South Metro Mississippi River Total Suspended Solids TMDL* (MPCA 2015a), the *Minnesota River and Greater Blue Earth River Basin Total Suspended Solids TMDL Study* (MPCA 2020b), and the *Lake Pepin and Mississippi River Eutrophication TMDL Report* (MPCA 2021b).[6]

Section 6.2.7 of the final TMDL document discusses the Minnesota Nutrient Reduction Strategy which guides activities aimed at reducing MN nutrient pollutant loads to reduce downstream loads of phosphorus and nitrogen.

Section 6.2.8 of the final TMDL document discusses the use of conservation easements in reducing sediment and nutrient loads from private lands.

[3] https://www.pca.state.mn.us/water/healthier-watersheds
[4] https://www.pca.state.mn.us/water/ssts-financial-assistance.
[5] https://www.revisor.mn.gov/rules/7020/
[6] See Section 10 of the TMDL document for cited references.

Section 6.3 of the final TMDL document provides a summary of local plans within the watershed and their associated goals. Possible future plans for the development of a Board of Water and Soil Resources (BWSR) One Watershed One Plan planning document are discussed.

Section 6.4 of the final TMDL document discusses a number of examples of pollution reduction efforts already underway in the Blue Earth River Watershed.

Section 6.5 of the final TMDL document discusses potential funding sources for both past and future implementation efforts within the Blue Earth River Watershed. Examples of major sources mentioned include BWSR's Watershed-based Implementation Funding (WBIF), Clean Water Fund Competitive Grants, and conservation funds from Natural Resources Conservation Service (NRCS) (e.g., Environmental Quality Incentives Program and Conservation Stewardship Program). MPCA notes that over $88,000,000 has already been spent from a variety of sources on watershed implementation projects in the watershed.

Various funding mechanisms will be utilized to execute the recommendations made in the implementation section of this TMDL. The Clean Water Legacy Act (CWLA) was passed in Minnesota in 2006 for the purposes of protecting, restoring, and preserving Minnesota water. The CWLA provides the protocols and practices to be followed in order to protect, enhance, and restore water quality in Minnesota. The CWLA outlines how MPCA, public agencies and private entities should coordinate in their efforts toward improving land use management practices and water management. The CWLA anticipates that all agencies (i.e., MPCA, public agencies, local authorities and private entities, etc.) will cooperate regarding planning and restoration efforts. Cooperative efforts would likely include informal and formal agreements to jointly use technical, educational, and financial resources. Figure 24of the final TMDL document shows the resources spent within the Blue Earth River Watershed since 2004 (Section 6.5 of the final TMDL document). Over $88 million has been spent by Federal, State, local governments, and landowners.

The CWLA also provides details on public and stakeholder participation, and how the funding will be used. In part to attain these goals, the CWLA requires MPCA to develop Watershed Restoration and Protection Strategy (WRAPS). The WRAPS are required to contain such elements as the identification of impaired waters, watershed modeling outputs, point and nonpoint sources, load reductions, etc. (*Chapter 114D.26*; CWLA). The WRAPS also contain an implementation table of strategies and actions that are capable of achieving the needed load reductions, for both point and nonpoint sources (*Chapter 114D.26*, Subd. 1(8); CWLA). Implementation plans developed for the TMDLs are included in the table, and are considered "priority areas" under the WRAPS process (*Watershed Restoration and Protection Strategy Report Template*, MPCA). This table includes not only needed actions but a timeline for achieving water quality targets, the reductions needed from both point and nonpoint sources, the governmental units responsible, and interim milestones for achieving the actions. MPCA has developed guidance on what is required in the WRAPS (*Watershed*

*Restoration and Protection Strategy Report Template*, MPCA). The WRAPS for the Blue Earth River Watershed was approved in June, 2023.

The Minnesota Board of Soil and Water Resources administers the Clean Water Fund and has developed a detailed grants policy explaining what is required to be eligible to receive Clean Water Fund money (*http://bwsr.state.mn.us/cwf_programs*).

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the eight criterion.

## Section 9. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 document, *Guidance for Water Quality-Based Decisions: The TMDL Process* (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

### Section 9 Review Comments

Section 7 of the final TMDL document addresses future plans for monitoring. The TMDL document discusses the primary goals for future monitoring efforts including evaluating waterbodies to determine if they are meeting WQSs and delisting impaired waters when they eventually meet WQS, tracking trends in water quality, determining and assessing the major sources of pollutants, evaluating the effectiveness of implementation practices in the watershed, and determining when adaptive management requires changes in the implementation approach.

Follow up monitoring will be accomplished through a number of existing water quality monitoring programs. MPCA discusses several monitoring efforts currently underway that may be utilized to provide the data necessary to achieve the aforementioned monitoring goals. These include;

- periodic watershed monitoring conducted at the 8 digit Hydrologic Unit Code (HUC-8) scale by MPCA on a 10 year rotating basin approach to identify impaired waters,
- the Watershed Pollutant Load Monitoring Network (WPLMN) which provides information on pollutant loads to impaired waters and watershed modeling information regarding pollutant sources,
- monitoring conducted by Soil and Water Conservation Districts,

- Secchi Disk transparency data provided by MPCA's Volunteer Water Monitoring Program,
- BMP instillation location tracking provided by the MN Board of Water and Soil Resources and the United States Department of Agriculture, and
- discharge monitoring records available through MPCA's Wastewater Data Browser.

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the ninth criterion.

## Section 10. Implementation

EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

### Section 10 Review Comments

Section 8 of the TMDL document discusses implementation planning.

Section 8.1 of the final TMDL document provides a discussion of the regulatory programs that will be utilized to ensure the NPDES permitted TMDL waste load allocations will be implemented.

Section 8.2 of the final TMDL document discusses the pollutant reduction strategies, examples of BMPs that may be used to implement those strategies, and the relevant pollutant(s) targeted by each BMP. This information is summarized in Table 24 of the final TMDL document. Sources mentioned as likely to be targeted for *E. coli* reduction include livestock, and failing septic systems, particularly those the pose a threat to human health. Specific TP pollutant sources mentioned for priority targeting include cropland runoff, and internal loading from lake bottom sediments. Failing septic systems are also mentioned as a priority source to be mitigated as they are already required by MN state law to be addressed.

Section 8.3 of the final TMDL document provides a brief discussion of how water quality trading might be utilized.

Section 8.4 of the final TMDL document provides a detailed discussion and an estimate of the total cost of achieving the needed load reductions. MPCA estimates that the costs associated with implementing the needed reductions to achieve the TMDL allocated loads will range between $12 million and $15 million dollars. This estimated range is based on current information regarding the loading capacity of the waterbodies and the known loading sources and potential BMPs that may be used to reduce the loads. MPCA commits to using an adaptive management approach to modify the strategy for implementing the load reductions as additional information and experience is gained within the watershed and concedes that the cost estimates may need to be revised in the future.

Section 8.5 of the final TMDL document provides a discussion of an adaptive management approach that will be relied upon to adjust implementation planning as progress is made and additional information is gained. Adaptive management approaches allow for the utilization of information learned from implementation efforts, ongoing monitoring programs, and additional watershed study, to be used for modifying ongoing implementation strategies to meet the TMDL load allocations and water quality goals.

The EPA finds that this criterion has been adequately addressed. The EPA reviews but does not approve implementation plans.

## Section 11. Public Participation

EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. §130.7(d)(2)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

### Section 11 Review Comments

TMDL development provided for adequate public participation.

The Public Participation Process is described.

Section 9 of the TMDL document includes a description of the public participation process used during the development of the TMDL. Public participation during the TMDL development was coordinated with the overall Watershed Restoration and Protection process. A WWW site[7] was created to disseminate draft versions of documents and public information. Particular effort was focused on engaging the farming community and local elected officials.

An opportunity for public comment was provided and a summary of significant comments and the State's responses is included in/with the TMDL submission.

A public review and comment period was conducted from May 8, 2023 through June 7, 2023. A notice was placed in the State Register to inform the public of the opportunity to submit comments on the draft TMDL document, however, no comment letters were received.

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the eleventh criterion.

## Section 12. Submittal Letter

A submittal letter should be included with the TMDL submittal and should specify whether the TMDL is being submitted for a *technical review* or *final review and approval*. Each final TMDL submitted to EPA should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final review and approval, should contain such identifying information as the name and location of the waterbody, and the pollutant(s) of concern.

### Section 12 Review Comments:

Submittal Letter is provided if formal review is desired.

A formal letter dated July 7, 2023 was transmitted via email from MPCA to EPA Region 5 requesting formal review and approval of the "*Total Maximum Daily Load (TMDL) study of nutrients (total phosphorus [TP]) and bacteria for Aquatic Recreation (AQR) and Aquatic Life (AQL) impairments in the Blue Earth River Watershed.*"

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of the twelfth criterion.

[7] https://www.bewatershed.org/

## Section 13: Conclusions

After a full and complete review, EPA finds that the TMDL document satisfies all of the elements of an approvable TMDL. The EPA is approving twelve TMDLs for *E. coli* and eleven TMDLs for Total Phosphorus. EPA's approval of this TMDL extends to the water body/parameter combinations identified in Table DD-1 below, with the exception of any portions of the water body that is within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove TMDLs for those waters at this time. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under the CWA Section 303(d) for those waters. NPDES permitted WLAs approved as part of this TMDL decision are summarized in Tables DD-2 through DD-4 in Appendix DD-A of this document.

Table DD-1 TMDLs approved as part of this Decision Document.

| Assessment Unit ID | Waterbody Name | Waterbody Description | Designated Use[1] | Parameter |
|---|---|---|---|---|
| 07020009-652 | Blue Earth River, East Branch | T102 R25W S23, north line to Unnamed ditch | Aquatic Recreation | *E. coli* |
| 07020009-655 | Brush Creek | Unnamed cr to E Br Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-553 | Blue Earth River, East Branch | Brush Cr to Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-648 | Coon Creek | T102 R27W S33, south line to Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-645 | Blue Earth River, Middle Branch | MN/IA border to -94.104 43.514 | Aquatic Recreation | *E. coli* |
| 07020009-646 | Blue Earth River, Middle Branch | -94.104 43.514 to W Br Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-643 | Blue Earth River, West Branch | MN/IA border to 15th St | Aquatic Recreation | *E. coli* |
| 07020009-658 | Badger Creek | Little Badger Cr to -94.136 43.64 | Aquatic Recreation | *E. coli* |
| 07020009-508 | Blue Earth River | E Br Blue Earth R to South Cr | Aquatic Recreation | *E. coli* |
| 07020009-640 | South Creek | -94.300 43.661 to Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-514 | Blue Earth River | Center Cr to Elm Cr | Aquatic Recreation | *E. coli* |
| 07020009-577 | Willow Creek | Unnamed cr to Blue Earth R | Aquatic Recreation | *E. coli* |
| 22-0007-00 | Rice | Lake or Reservoir | Aquatic Recreation | TP[2] |
| 46-0049-00 | Iowa | Lake or Reservoir | Aquatic Recreation | TP |
| 46-0010-00 | East Chain | Lake or Reservoir | Aquatic Recreation | TP |
| 46-0034-00 | Amber | Lake or Reservoir | Aquatic Recreation<br>Aquatic Life | TP |
| 46-0031-00 | Hall | Lake or Reservoir | Aquatic Recreation<br>Aquatic Life | TP |
| 46-0030-00 | Budd | Lake or Reservoir | Aquatic Recreation<br>Aquatic Life | TP |
| 46-0025-00 | Sisseton | Lake or Reservoir | Aquatic Recreation<br>Aquatic Life | TP |
| 46-0024-00 | George | Lake or Reservoir | Aquatic Recreation | TP |
| 46-0145-00 | Fish | Lake or Reservoir | Aquatic Recreation<br>Aquatic Life | TP |
| 46-0121-00 | Cedar | Lake or Reservoir | Aquatic Recreation<br>Aquatic Life | TP |
| 07-0090-00 | Ida | Lake or Reservoir | Aquatic Recreation | TP |

1. Impairments noted for information purposes. TMDLs are expected to be established to meet all WQS applicable to the pollutant and waterbody combination(s) in question.
2. TP = Total Phophorous

# Appendix DD-A Waste Load Allocations approved as part of this TMDL Decision Document.

Table DD-2 EPA approved TMDL *E.coli* Waste Load Allocations (WLAs)

| Facility name | Permit number (surface discharge station) | *E. coli* WLA[1] (billion of organisms per day) |
|---|---|---|
| Alden WWTP | MNG585118 (SD001, 002) | 11.73 |
| Blue Earth WWTP | MN0020532 (SD001) | 4.67 |
| Bricelyn WWTP | MNG585129 (SD001) | 2.22 |
| Darling Internatio nal– Blue Earth | MN0002313 (SD001, 002) | 3.35 |
| Elmore WWTP | MNG585110 (SD001) | 11.89 |
| Fairmont WWTP | MN0030112 (SD001) | 18.60 |
| Frost WWTP | MNG585120 (SD001) | 1.87 |
| Granada WWTP | MNG585023 (SD001) | 1.72 |
| Kiester WWTP | MNG585097 (SD001) | 2.37 |
| Walters WWTP | MNG585223 (SD001) | 0.68 |
| Welcome WWTP | MN0021296 (SD003) | 1.24 |
| Fairmont MS4 | (MS400239) | Flow Dependent[2] |

1. Under very low flow effluent dominated conditions WQS apply at the end of pipe and the WLA will vary depending upon discharge rate.
2. The WLA for the City of Fairmont MS4 is dependent upon flow. See Table 58 of the TMDL document for further details.

Table DD-3 EPA approved TMDL WWTP TP Waste Load Allocation (WLA)

| Facility name | Permit number (surface discharge station) | TMDL TP WLA (lbs/day) |
|---|---|---|
| Great River Energy – Lakefield Junction Station | MN0067709 (SD001) | 0.016 |

Table DD-4 EPA approved TMDL TP Stormwater Waste Load Allocations (WLAs)

| Waterbody | Construction[1] Stormwater WLA lb/day | Industrial[2] Stormwater WLA lb/day |
|---|---|---|
| Rice Lake (22-0007-00) | 0.0013 | 0.0013 |
| Iowa Lake (46-0049-00) | 0.0093 | 0.0093 |
| East Chain Lake (46-0010-00) | 0.014 | 0.014 |
| Fairmont Chain of Lakes: Amber (46-0034-00), Hall (46-0031-00), Budd, (46-0030-00), Sisseton (46-0025-00), and George (46-0024-00) | 0.1 | 0.1 |
| Fish Lake (46-0145-00) | 0.0018 | 0.0018 |
| Cedar Lake (46-0121-00) | 0.047 | 0.047 |
| Ida Lake (07-0090-00) | 0.00033 | 0.00033 |

1) Construction NPDES permit MNR100001)
2) Industrial NPDES permits (MNR050000 and MNG490000)

Table DD-5 EPA approved MS4 TP Waste Load Allocations WLAs

| MS4 name and permit number | WLA (lb/day) |
|---|---|
| City of Fairmont (MS400239) | 7.7 |

# Appendix DD-B TMDL Summary Tables Excerpted from the TMDL Document

## *E. coli* TMDL Summary Tables Excerpted from the TMDL Document

**Table 28. Blue Earth River, East Branch (07020009-652) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | | *E. coli* load (b org/d) | | | | |
|---|---|---|---|---|---|---|
| **TMDL parameter** | | **Very high** | **High** | **Mid** | **Low** | **Very low** |
| | Alden WWTP (MNG585118, SD001+2) [a] | 11.73 | 11.73 | 11.73 | 11.73 | – [b] |
| | Walters WWTP (MNG585223, SD001) | 0.68 | 0.68 | 0.68 | 0.68 | – |
| WLA | *Total WLA* | *12.41* | *12.41* | *12.41* | *12.41* | – |
| LA | | 1,069 | 298 | 88 | 13 | – |
| MOS | | 120 | 35 | 11 | 2.8 | 0.57 |
| TMDL | | 1,201 | 345 | 111 | 28 | 5.7 |
| Maximum observed monthly geometric mean (org/100 mL) | | 820 | | | | |
| Estimated percent reduction | | 85% | | | | |

a. Alden WWTP effluent is not likely to be a significant *E. coli* source in April, when the facility is not required to disinfect (see Table 14 in Section 3.7.1.1). Future permits will determine whether the permit limit will apply during April.

b. "–"indicates that the permitted wastewater design flows exceed the stream flow in the indicated flow zone. The allocations are expressed as an equation rather than an absolute number: allocation = (flow contribution from a given source) x (126 org per 100 mL) x conversion factors. See Section 4.4.4.1 for more detail.

**Table 31. Brush Creek (07020009-655) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | | *E. coli* load (b org/d) | | | | |
|---|---|---|---|---|---|---|
| **TMDL parameter** | | **Very high** | **High** | **Mid** | **Low** | **Very low** |
| Boundary condition at Iowa state line [a] | | 54 | 14 | 4.2 | 0.57 | – [b] |
| | Kiester WWTP (MNG585097, SD001) | 2.37 | 2.37 | 2.37 | 2.37 | – |
| | Bricelyn WWTP (MNG585129, SD001) | 2.22 | 2.22 | 2.22 | 2.22 | – |
| WLA | *Total WLA* | *4.59* | *4.59* | *4.59* | *4.59* | – |
| LA | | 360 | 96 | 28 | 3.8 | – |
| MOS | | 47 | 13 | 4.1 | 1.0 | 0.26 |
| TMDL | | 466 | 128 | 41 | 10 | 2.6 |
| Maximum observed monthly geometric mean (org/100 mL) | | 814 | | | | |
| Estimated percent reduction | | 85% | | | | |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.4.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the boundary condition is removed represents the Minnesota allocations.

b. "–" indicates that the permitted wastewater design flows exceed the stream flow in the indicated flow zone. The allocations are expressed as an equation rather than an absolute number: allocation = (flow contribution from a given source) x (126 org per 100 mL) x conversion factors. See Section 4.4.4.1 for more detail.

**Table 34. Blue Earth River, East Branch (07020009-553) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | | ***E. coli* load (b org/d)** | | | | |
|---|---|---|---|---|---|---|
| **TMDL parameter** | | **Very high** | **High** | **Mid** | **Low** | **Very low** |
| Boundary condition at Iowa state line [a] | | 52 | 15 | 4.4 | 0.85 | – [b] |
| | Alden WWTP (MNG585118, SD001+2) | 11.73 | 11.73 | 11.73 | 11.73 | – |
| | Walters WWTP (MNG585223, SD001) | 0.68 | 0.68 | 0.68 | 0.68 | – |
| | Kiester WWTP (MNG585097, SD001) | 2.37 | 2.37 | 2.37 | 2.37 | – |
| | Bricelyn WWTP (MNG585129, SD001) | 2.22 | 2.22 | 2.22 | 2.22 | – |
| | Frost WWTP (MNG585120, SD001) | 1.87 | 1.87 | 1.87 | 1.87 | – |
| WLA | *Total WLA* | *18.87* | *18.87* | *18.87* | *18.87* | – |
| LA | | 2,442 | 694 | 206 | 40 | – |
| MOS | | 279 | 81 | 25 | 6.6 | 1.5 |
| TMDL | | 2,792 | 809 | 254 | 66 | 15 |
| Maximum observed monthly geometric mean (org/100 mL) | | 312 | | | | |
| Estimated percent reduction | | 60% | | | | |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.4.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the boundary condition is removed represents the Minnesota allocations.

b. "–"indicates that the permitted wastewater design flows exceed the stream flow in the indicated flow zone. The allocations are expressed as an equation rather than an absolute number: allocation = (flow contribution from a given source) x (126 org per 100 mL) x conversion factors. See Section 4.4.4.1 for more detail.

**Table 37. Coon Creek (07020009-648) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | ***E. coli* Load (b org/d)** | | | | |
|---|---|---|---|---|---|
| **TMDL Parameter** | **Very High** | **High** | **Mid** | **Low** | **Very Low** |
| Boundary condition at Iowa state line [a] | 296 | 85 | 28 | 6.7 | 1.4 |
| LA | 462 | 132 | 44 | 10 | 2.2 |
| MOS | 84 | 24 | 8.0 | 1.9 | 0.40 |
| TMDL | 842 | 241 | 80 | 19 | 4.0 |
| Maximum observed monthly geometric mean (org/100 mL) | 511 | | | | |
| Estimated percent reduction | 75% | | | | |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.4.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the boundary condition is removed represents the Minnesota allocations.

**Table 40. Blue Earth River, Middle Branch (07020009-645) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | ***E. coli* Load (b org/d)** | | | | |
|---|---|---|---|---|---|
| **TMDL Parameter** | **Very High** | **High** | **Mid** | **Low** | **Very Low** |
| Boundary condition at Iowa state line [a] | 654 | 196 | 67 | 15 | 3.1 |
| LA | 7.0 | 2.0 | 0.50 | 0.30 | 0.050 |
| MOS | 74 | 22 | 7.5 | 1.7 | 0.35 |
| TMDL | 735 | 220 | 75 | 17 | 3.5 |
| Maximum observed monthly geometric mean (org/100 mL) | 399 | | | | |
| Estimated percent reduction | 68% | | | | |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.4.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the boundary condition is removed represents the Minnesota allocations.

**Table 43. Blue Earth River, Middle Branch (07020009-646) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | ***E. coli* load (b org/d)** | | | | |
|---|---|---|---|---|---|
| **TMDL parameter** | **Very high** | **High** | **Mid** | **Low** | **Very low** |
| Boundary condition at Iowa state line [a] | 700 | 202 | 62 | 6.2 | – [b] |
| WLA Elmore WWTP (MNG585110, SD001) | 11.89 | 11.89 | 11.89 | 11.89 | – |
| LA | 95 | 28 | 8 | 0.81 | – |
| MOS | 90 | 27 | 9.1 | 2.1 | 0.42 |
| TMDL | 897 | 269 | 91 | 21 | 4.2 |
| Maximum observed monthly geometric mean (org/100 mL) | 320 | | | | |
| Estimated percent reduction | 61% | | | | |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.4.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the boundary condition is removed represents the Minnesota allocations.

b. "–"indicates that the permitted wastewater design flows exceed the stream flow in the indicated flow zone. The allocations are expressed as an equation rather than an absolute number: allocation = (flow contribution from a given source) x (126 org per 100 mL) x conversion factors. See Section 4.4.4.1 for more detail.

**Table 49. Badger Creek (07020009-658) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | ***E. coli* Load (b org/d)** | | | | |
|---|---|---|---|---|---|
| **TMDL Parameter** | **Very High** | **High** | **Mid** | **Low** | **Very Low** |
| LA | 557 | 163 | 50 | 12 | 2.1 |
| MOS | 62 | 18 | 5.5 | 1.3 | 0.23 |
| TMDL | 619 | 181 | 55 | 13 | 2.3 |
| Maximum observed monthly geometric mean (org/100 mL) | 735 | | | | |
| Estimated percent reduction | 83% | | | | |

**Table 52. Blue Earth River (07020009-508) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | | ***E. coli* load (b org/d)** | | | | |
|---|---|---|---|---|---|---|
| **TMDL Parameter** | | **Very high** | **High** | **Mid** | **Low** | **Very low** |
| Boundary condition at Iowa state line [a] | | 2,501 | 735 | 236 | 46 | – [b] |
| | Alden WWTP (MNG585118, SD001+2) | 11.73 | 11.73 | 11.73 | 11.73 | – |
| | Walters WWTP (MNG585223, SD001) | 0.68 | 0.68 | 0.68 | 0.68 | – |
| | Kiester WWTP (MNG585097, SD001) | 2.37 | 2.37 | 2.37 | 2.37 | – |
| | Bricelyn WWTP (MNG585129, SD001) | 2.22 | 2.22 | 2.22 | 2.22 | – |
| | Frost WWTP (MNG585120, SD001) | 1.87 | 1.87 | 1.87 | 1.87 | – |
| | Elmore WWTP (MNG585110, SD001) | 11.89 | 11.89 | 11.89 | 11.89 | – |
| | Blue Earth WWTP (MN0020532, SD001) | 4.67 | 4.67 | 4.67 | 4.67 | – |
| | Darling International–Blue Earth (MN0002313, SD001+2) | 3.35 | 3.35 | 3.35 | 3.35 | – |
| WLA | *Total WLA* | *38.78* | *38.78* | *38.78* | *38.78* | – |
| LA | | 3,911 | 1,149 | 368 | 71 | – |
| MOS | | 717 | 214 | 71 | 17 | 3.8 |
| TMDL | | 7,168 | 2,137 | 714 | 173 | 38 |
| Maximum observed monthly geometric mean (org/100 mL) | | 378 | | | | |
| Estimated percent reduction | | 67% | | | | |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.4.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the boundary condition is removed represents the Minnesota allocations.

b. "–" indicates that the permitted wastewater design flows exceed the stream flow in the indicated flow zone. The allocations are expressed as an equation rather than an absolute number: allocation = (flow contribution from a given source) x (126 org per 100 mL) x conversion factors. See Section 4.4.4.1 for more detail.

**Table 55. South Creek (07020009-640) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | ***E. coli* load (b org/d)** | | | | |
|---|---|---|---|---|---|
| **TMDL parameter** | **Very high** | **High** | **Mid** | **Low** | **Very low** |
| Boundary condition at Iowa state line [a] | 173 | 54 | 17 | 4.1 | 0.41 |
| LA | 580 | 181 | 57 | 14 | 1.4 |
| MOS | 84 | 26 | 8.2 | 2.0 | 0.2 |
| TMDL | 837 | 261 | 82 | 20 | 2.0 |
| Maximum observed monthly geometric mean (org/100 mL) | 677 | | | | |
| Estimated percent reduction | 81% | | | | |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.4.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the boundary condition is removed represents the Minnesota allocations.

**Table 58. Blue Earth River (07020009-514) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | | ***E. coli* load (b org/d)** | | | | |
|---|---|---|---|---|---|---|
| **TMDL Parameter** | | **Very high** | **High** | **Mid** | **Low** | **Very low** |
| Boundary condition at Iowa state line [a] | | 2,546 | 778 | 246 | 47 | – [b] |
| | Alden WWTP (MNG585118, SD001+2) | 11.73 | 11.73 | 11.73 | 11.73 | – |
| | Walters WWTP (MNG585223, SD001) | 0.68 | 0.68 | 0.68 | 0.68 | – |
| | Kiester WWTP (MNG585097, SD001) | 2.37 | 2.37 | 2.37 | 2.37 | – |
| | Bricelyn WWTP (MNG585129, SD001) | 2.22 | 2.22 | 2.22 | 2.22 | – |
| | Frost WWTP (MNG585120, SD001) | 1.87 | 1.87 | 1.87 | 1.87 | – |
| | Elmore WWTP (MNG585110, SD001) | 11.89 | 11.89 | 11.89 | 11.89 | – |
| | Blue Earth WWTP (MN0020532, SD001) | 4.67 | 4.67 | 4.67 | 4.67 | – |
| | Darling International–Blue Earth (MN0002313, SD001+2) | 3.35 | 3.35 | 3.35 | 3.35 | – |
| | Welcome WWTP (MN0021296, SD003) | 1.24 | 1.24 | 1.24 | 1.24 | – |
| | Granada WWTP (MNG585023, SD001) | 1.72 | 1.72 | 1.72 | 1.72 | – |
| | Fairmont WWTP (MN0030112, SD001) | 18.6 | 18.6 | 18.6 | 18.6 | – |
| | Fairmont MS4 (MS400239) | 39 | 12 | 3.8 | 0.72 | – |
| WLA | *Total WLA* | *99* | *72* | *64* | *61* | – |
| LA | | 5373 | 1641 | 519 | 99 | – |
| MOS | | 891 | 277 | 92 | 23 | 5.1 |
| TMDL | | 8909 | 2768 | 921 | 230 | 51 |
| Maximum observed monthly geometric mean (org/100 mL) | | 392 | | | | |
| Estimated percent reduction | | 68% | | | | |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.4.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the boundary condition is removed represents the Minnesota allocations.

b. "–" indicates that the permitted wastewater design flows exceed the stream flow in the indicated flow zone. The allocations are expressed as an equation rather than an absolute number: allocation = (flow contribution from a given source) x (126 org per 100 mL) x conversion factors. See Section 4.4.4.1 for more detail.

**Table 61. Willow Creek (07020009-577) *E. coli* TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

| | ***E. coli* Load (b org/d)** | | | | |
|---|---|---|---|---|---|
| **TMDL Parameter** | **Very High** | **High** | **Mid** | **Low** | **Very Low** |
| LA | 607 | 155 | 44 | 9 | 2.4 |
| MOS | 67 | 17 | 4.9 | 1.0 | 0.27 |
| TMDL | 674 | 172 | 49 | 10 | 2.7 |
| Maximum observed monthly geometric mean (org/100 mL) | 557 | | | | |
| Estimated percent reduction | 77% | | | | |

## Total Phosphorus TMDL Summary Tables Excerpted from the TMDL Document

**Table 65. Rice Lake (22-0007) phosphorus TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 90 µg/L TP
- TMDL and allocations apply Jan–Dec

| | | **Existing TP load** | **TMDL TP load** | | **Estimated load reduction** | |
|---|---|---|---|---|---|---|
| **TMDL parameter** | | **lb/yr** | **lb/yr** | **lb/d** | **lb/yr** | **%** |
| LA | Watershed runoff | 1,247 | 202 [a] | 0.55 | 872 | 70% |
| | Internal recycling | | 173 | 0.47 | | |
| | Atmospheric deposition | 96 | 96 | 0.26 | 0 | 0% |
| WLA | Construction stormwater | 0 | 0.47 | 0.0013 | 0 | 0% |
| | Industrial stormwater | 0 | 0.47 | 0.0013 | 0 | 0% |
| MOS | | – | 53 | 0.15 | – | – |
| Total load | | 1,343 | 525 | 1.4 | 872 [b] | 70% |

a. The watershed runoff allocation equates to 0.26 lb/ac-yr.

b. The total estimated load reduction is greater than the difference between the total existing load and the total TMDL load (i.e., loading capacity) due to the MOS (see Section 4.5.1).

**Table 69. Iowa Lake (46-0049) phosphorus TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 90 µg/L TP
- TMDL and allocations apply Jan–Dec

| TMDL parameter | | Existing TP load | TMDL TP load | | Estimated load reduction | |
|---|---|---|---|---|---|---|
| | | lb/yr | lb/yr | lb/d | lb/yr | % |
| Boundary condition at Iowa state line [a] | | 1,532 | 787 | 2.2 | 745 | 49% |
| Boundary condition at South Silver Lake (46-0020) in MN | | 39 | 39 | 0.11 | 0 | 0% |
| LA | Watershed runoff (MN) | 5,590 | 1,523 [b] | 4.2 | 3,360 | 60% |
| | Internal recycling | | 707 | 1.9 | | |
| | Atmospheric deposition | 253 | 253 | 0.69 | 0 | 0% |
| WLA | Construction stormwater | 0 | 3.4 | 0.0093 | 0 | 0% |
| | Industrial stormwater | 0 | 3.4 | 0.0093 | 0 | 0% |
| MOS | | – | 368 | 1.0 | – | – |
| Total load | | 7,414 | 3,684 | 10 | 4,105 [c] | 60% |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.5.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the Iowa boundary condition is removed represents the Minnesota allocations.

b. The watershed runoff allocation equates to 0.28 lb/ac-yr.

c. The total estimated load reduction is greater than the difference between the total existing load and the total TMDL load (i.e., loading capacity) due to the MOS (see Section 4.5.1).

**Table 73. East Chain Lake (46-0010) phosphorus TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 90 µg/L TP
- TMDL and allocations apply Jan–Dec

| | | Existing TP load | TMDL TP load | | Estimated load reduction | |
|---|---|---|---|---|---|---|
| **TMDL parameter** | | **lb/yr** | **lb/yr** | **lb/d** | **lb/yr** | **%** |
| Boundary condition at Iowa state line [a] | | 6,702 | 3,508 | 9.6 | 3,194 | 48% |
| Boundary condition at Iowa Lake (46-0049) | | 2,616 | 1,580 | 4.3 | 1,036 | 40% |
| LA | Watershed runoff (MN) | 19,318 | 3,822 [b] | 10 | 13,806 | 71% |
| | Internal recycling | | 1,690 | 4.6 | | |
| | Atmospheric deposition | 178 | 178 | 0.49 | 0 | 0% |
| WLA | Construction stormwater | 0 | 5 | 0.014 | 0 | 0% |
| | Industrial stormwater | 0 | 5 | 0.014 | 0 | 0% |
| MOS | | – | 1,199 | 3.2 | – | – |
| Total load | | 28,814 | 11,987 | 32 | 18,036 [c] | 63% |

a. This boundary condition load is assigned to the portion of the watershed in Iowa and is not a TMDL allocation (Section 4.5.3). Minnesota cannot establish allocations for other jurisdictions, and any reductions noted in this TMDL that are needed from the watershed area in Iowa are consistent with Minnesota's water quality standards and not more stringent. The remaining load in this table after the Iowa boundary condition is removed represents the Minnesota allocations.

b. The watershed runoff allocation equates to 0.28 lb/ac-yr.

c. The total estimated load reduction is greater than the difference between the total existing load and the total TMDL load (i.e., loading capacity) due to the MOS (see Section 4.5.1).

**Table 77. Fairmont Chain of Lakes phosphorus TMDL summary: Amber (46-0034-00), Hall (46-0031-00), Budd, (46-0030-00), Sisseton (46-0025-00), and George (46-0024-00).**

Loading goals for the individual impaired lakes are provided in the *Blue Earth River Watershed Lake Water Quality Improvement Study* (MPCA 2023a).

- Listing year: 2006
- Baseline year: 2021
- Numeric standard used to calculate TMDL: 90 µg/L TP
- TMDL and allocations apply Apr–Oct

| | | Existing TP load | TMDL TP load | | Estimated load reduction | |
|---|---|---|---|---|---|---|
| **TMDL parameter** | | **lb/season** [a] | **lb/season** | **lb/d** | **lb/season** | **%** |
| Willmert Lake [b] | | 602 | 579 | 2.4 | 23 | 4% |
| LA | Watershed runoff (unregulated) | 10,432 | 7,631 [c] | 32 | 2,801 | 27% |
| | Internal recycling / unidentified (to George Lake) | 3,381 | 0 | 0.0 | 3,381 | 100% [c] |
| | Atmospheric deposition | 439 | 439 | 1.8 | 0 | 0% |
| WLA | Watershed runoff, city of Fairmont MS4 (MS400239) [d] | 2,390 | 1,855 [e] | 7.7 | 535 | 22% |
| | Construction stormwater (non-MS4 area) | 25 | 25 | 0.10 | 0 | 0% |
| | Industrial stormwater (non-MS4 area) | 25 | 25 | 0.10 | 0 | 0% |
| MOS | | | 776 | 3.2 | | |
| Total load | | 17,294 | 11,330 | 47 | 6,740 [f] | 39% |

a. "Season" in this TMDL represents April through October.

b. Willmert Lake existing loading assumes TP of 93 µg/L and TMDL load assumes TP of 90 µg/L.

c. 100% reduction in internal recycling assumes that the additional internal recycling is removed, and the remaining internal recycling to the lake equals the average rate of internal recycling that is implicit in BATHTUB (see Section 4.5.2).

d. Includes developed and agricultural areas in the city boundary in addition to permitted construction and industrial stormwater.

e. Assumes a TP watershed runoff concentration of 183 µg/L. See Section 4.5.4.2 and Appendix D for more information about the MS4 WLA.

f. The total estimated load reduction is greater than the difference between the total existing load and the total TMDL load (i.e., loading capacity) due to the MOS (see Section 4.5.1).

**Table 81. Fish Lake (46-0145) phosphorus TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 90 µg/L TP
- TMDL and allocations apply Jan–Dec

| | | Existing TP load | TMDL TP load | | Estimated load reduction | |
|---|---|---|---|---|---|---|
| TMDL parameter | | lb/yr | lb/yr | lb/d | lb/yr | % |
| LA | Watershed runoff | 684 | 282 [a] | 0.77 | 283 | 41% |
| | Internal recycling | | 119 | 0.33 | | |
| | Atmospheric deposition | 55 | 55 | 0.15 | 0 | 0% |
| WLA | Construction stormwater | 0 | 0.65 | 0.0018 | 0 | 0% |
| | Industrial stormwater | 0 | 0.65 | 0.0018 | 0 | 0% |
| MOS | | – | 51 | 0.14 | – | – |
| Total load | | 739 | 508 | 1.4 | 283 [b] | 38% |

a. The watershed runoff allocation equates to 0.33 lb/ac-yr.

b. The total estimated load reduction is greater than the difference between the total existing load and the total TMDL load (i.e., loading capacity) due to the MOS (see Section 4.5.1).

**Table 85. Cedar Lake (46-0121) phosphorus TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 90 µg/L TP
- TMDL and allocations apply Jan–Dec

| | | Existing TP load | TMDL TP load | | Estimated load reduction | |
|---|---|---|---|---|---|---|
| TMDL parameter | | lb/yr | lb/yr | lb/d | lb/yr | % |
| Boundary condition at Fish Lake (46-0145) | | 204 | 158 | 0.43 | 46 | 23% |
| LA | Watershed runoff | 19,502 | 7,586 [a] | 21 | 11,113 | 57% |
| | Internal recycling | | 803 | 2.2 | | |
| | Atmospheric deposition | 263 | 263 | 0.72 | 0 | 0% |
| WLA | Great River Energy – Lakefield Junction Station (permit MN0067709, SD001) | 5 | 6 | 0.016 | 0 | 0% |
| | Construction stormwater | 17 [b] | 17 | 0.047 | 0 | 0% |
| | Industrial stormwater | 0 | 17 | 0.047 | 0 | 0% |
| MOS | | – | 983 | 2.7 | – | – |
| Total load | | 19,991 | 9,833 | 27 | 11,158 [c] | 56% |

a. The watershed runoff allocation equates to 0.28 lb/ac-yr.

b. Loading from construction stormwater is assumed to be in compliance with the NPDES permit and therefore equal to the WLA.

c. The total estimated load reduction is greater than the difference between the total existing load and the total TMDL load (i.e., loading capacity) due to the MOS (see Section 4.5.1).

**Table 89. Ida Lake (07-0090) phosphorus TMDL summary.**

- Listing year: 2020
- Baseline year: 2017
- Numeric standard used to calculate TMDL: 90 µg/L TP
- TMDL and allocations apply Jan–Dec

| TMDL parameter | | Existing TP load | TMDL TP load | | Estimated load reduction | |
|---|---|---|---|---|---|---|
| | | lb/yr | lb/yr | lb/d | lb/yr | % |
| LA | Watershed runoff | 389 | 52 [a] | 0.14 | 206 | 53% |
| | Internal recycling | | 131 | 0.36 | | |
| | Atmospheric deposition | 41 | 41 | 0.11 | 0 | 0% |
| WLA | Construction stormwater | 0 | 0.12 | 0.00033 | 0 | 0% |
| | Industrial stormwater | 0 | 0.12 | 0.00033 | 0 | 0% |
| MOS | | – | 25 | 0.068 | – | – |
| Total load | | 430 | 249 | 0.68 | 206 [b] | 53% |

a. The watershed runoff allocation equates to 0.22 lb/ac-yr.

b. The total estimated load reduction is greater than the difference between the total existing load and the total TMDL load (i.e., loading capacity) due to the MOS (see Section 4.5.1).

**From:** Ruppel, James
**To:** Plevan, Andrea (MPCA)
**Cc:** Werbach, David
**Subject:** Revised Table DD-1 of the Blue Earth River Watershed TMDL Decision Document
**Date:** Wednesday, September 6, 2023 8:57:11 AM



Hello Andrea

As discussed, at MPCA's request EPA has revised Table DD-1 of the Blue Earth River Watershed TMDL Decision Document to better reflect MPCA's Impaired Waters and TMDL tracking practices.
Footnote 1 of Table DD-1-Rev below includes the following revised language; *"The E. coli TMDLs address aquatic recreation impairments. The TP TMDLs address aquatic recreation impairments due to high nutrients and aquatic life impairments due to fish bioassessments, where noted in the table."*
Please let me know if you have any further concerns.

Jim Ruppel
EPA Region 5
Water Division

Table DD-1-Rev TMDLs approved as part of this Decision Document (revised).

| Assessment Unit ID | Waterbody Name | Waterbody Description | Designated Use[1] | Parameter |
|---|---|---|---|---|
| 07020009-652 | Blue Earth River, East Branch | T102 R25W S23, north line to Unnamed ditch | Aquatic Recreation | *E. coli* |
| 07020009-655 | Brush Creek | Unnamed cr to E Br Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-553 | Blue Earth River, East Branch | Brush Cr to Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-648 | Coon Creek | T102 R27W S33, south line to Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-645 | Blue Earth River, Middle Branch | MN/IA border to -94.104 43.514 | Aquatic Recreation | *E. coli* |
| 07020009-646 | Blue Earth River, Middle Branch | -94.104 43.514 to W Br Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-643 | Blue Earth River, West Branch | MN/IA border to 15th St | Aquatic Recreation | *E. coli* |
| 07020009-658 | Badger Creek | Little Badger Cr to -94.136 43.64 | Aquatic Recreation | *E. coli* |
| 07020009-508 | Blue Earth River | E Br Blue Earth R to South Cr | Aquatic Recreation | *E. coli* |
| 07020009-640 | South Creek | -94.300 43.661 to Blue Earth R | Aquatic Recreation | *E. coli* |
| 07020009-514 | Blue Earth River | Center Cr to Elm Cr | Aquatic Recreation | *E. coli* |
| 07020009-577 | Willow Creek | Unnamed cr to Blue Earth R | Aquatic Recreation | *E. coli* |
| 22-0007-00 | Rice | Lake or Reservoir | Aquatic Recreation | TP[2] |

| | | | | |
|---|---|---|---|---|
| 46-0049-00 | Iowa | Lake or Reservoir | Aquatic Recreation | TP |
| 46-0010-00 | East Chain | Lake or Reservoir | Aquatic Recreation | TP |
| 46-0034-00 | Amber | Lake or Reservoir | Aquatic Recreation | TP |
| | | | Aquatic Life | |
| 46-0031-00 | Hall | Lake or Reservoir | Aquatic Recreation | TP |
| | | | Aquatic Life | |
| 46-0030-00 | Budd | Lake or Reservoir | Aquatic Recreation | TP |
| | | | Aquatic Life | |
| 46-0025-00 | Sisseton | Lake or Reservoir | Aquatic Recreation | TP |
| | | | Aquatic Life | |
| 46-0024-00 | George | Lake or Reservoir | Aquatic Recreation | TP |
| 46-0145-00 | Fish | Lake or Reservoir | Aquatic Recreation | TP |
| | | | Aquatic Life | |
| 46-0121-00 | Cedar | Lake or Reservoir | Aquatic Recreation | TP |
| | | | Aquatic Life | |
| 07-0090-00 | Ida | Lake or Reservoir | Aquatic Recreation | TP |

1. TMDLs are expected to be established to meet all WQS applicable to the pollutant and waterbody combination(s) in question. The E. coli TMDLs address aquatic recreation impairments. The TP TMDLs address aquatic recreation impairments due to high nutrients and aquatic life impairments due to fish bioassessments, where noted in the table.
2. TP = Total Phophorous