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

REPLY TO THE ATTENTION OF
WW-16J

SEP 26 2017

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

Dear Mr. Skuta:

The U.S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Loads (TMDLs) for the Sauk River Bacteria and Nutrients TMDL Report in west central Minnesota, including supporting documentation and follow up information submitted by the Minnesota Pollution Control Agency (MPCA). The Sauk River Watershed is located in portions of Stearns, Pope, Todd, Douglas and Meeker Counties, Minnesota, and flows generally southeastward toward the Mississippi River. The waterbodies include four streams impaired by excess bacteria and nine lakes impaired by excess nutrients. Thirteen TMDLs are being approved from the MPCA submittal:

Ashley Creek #07010202-503, Sauk River -508, Adley Creek -527, and Stoney Creek -541; and the lakes are Maple #77-0181, Little Sauk 77-0164, Guernsey 77-0182, Juergens 77-0163, Westport 61-0029, Sand 73-0199, Henry 73-0237, Uhlenkolts 73-0208, and McCormic 73-0273.

These TMDLs meet the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, EPA hereby approves Minnesota's TMDLs. This approval addresses four streams for *E. coli*, and nine lakes for phosphorus for a total of thirteen TMDLs. The statutory and regulatory requirements, and EPA's review of Minnesota's compliance with each requirement, are described in the enclosed decision document.

wq-iw8-47g

We wish to acknowledge Minnesota's effort in submitting these TMDLs, and look forward to future TMDL submissions by the State of Minnesota. If you have any questions, please contact Mr. Peter Swenson, Chief of the Watersheds and Wetlands Branch, at 312-886-0236.

Sincerely,

Christopher Korleski
Director, Water Division

Enclosure

cc: Celine Lyman, MPCA
Anna Bosch, MPCA

TMDL: Sauk River, Minnesota TMDL
Date: September 2017

DECISION DOCUMENT FOR THE APPROVAL OF THE SAUK RIVER MINNESOTA TMDL

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 Total Maximum Daily Loads (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.

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 below).

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 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.

Comment:
Location Description/Spatial Extent: The Sauk River Bacteria and Nutrients TMDL document was submitted by the Minnesota Pollution Control Agency (MPCA). The project is located in west-central Minnesota, in Douglas, Meeker, Pope, Stearns, and Todd Counties. The entire watershed covers 666,899 acres, and includes nine lakes, the Sauk River, and three tributaries (creeks) which flow into the River, which then flows downstream to the south and east to its confluence with the Mississippi River near St. Cloud, Minnesota. This project is for four bacteria (*E. coli*) TMDLs in the streams and nine phosphorus TMDLs in the lakes. Below are partial Tables, 1.2 for the streams and 1.3 for the lakes found in the TMDL, including assessment unit identification numbers (AUIDs).

Table 1.2. Stream impairments in the Sauk River watershed addressed in this TMDL.

Reach Name	Description	Year Listed	AUID
Ashley Creek	Headwaters to Sauk Lake	2010	07010202-503
Sauk River	Getchell Creek to State Highway 23	2010	07010202-508
Adley Creek	Sylvia Lake to Sauk River	2010	07010202-527
Stoney Creek	Headwaters to Sauk River	2008	07010202-541

[1] Reaches on 2010 303(d) impaired waters list

Table 1.3. Lake impairments in the Sauk watershed addressed in this TMDL.

Lake ID	Name	Year Listed
77-0181	Maple	2010
77-0164	Little Sauk	2012
77-0182	Guernsey	2012
77-0163	Juergens	2012
61-0029	Westport	2010
73-0199	Sand	2010
73-0237	Henry	2012
73-0208	Uhlenkolts	2012
73-0273	McCormic	2010

Of the nine lakes, the first four in the table above are a chain of lakes (Juergens chain of lakes) that include Maple, Guernsey, Little Sauk, and Juergens; they are in the headwaters of the Sauk River. Maple Lake is upstream of Lake Osakis; Lake Osakis had a TMDL completed in 2013 and is used as a boundary condition for Guernsey Lake downstream.

Land Use: Section 1.3 of the TMDL states that the land use of the entire Sauk River watershed is primarily crops at 42%, grains and other crops 16%, wetlands and open water 15%, forest and shrubland 11%, grassland 9%, and urban/roads 7%. The lakes are located within the North Central Hardwood Forest ecoregion.

Problem Identification in Streams: Section 2.3.3 of the TMDL states that each of the four stream reaches exceeded the chronic *E. coli* standards from July to September. Section 2.6 states that the problems may be caused not only by runoff from varied sources due to direct drainage, but also as a result of influence of upstream lakes.

Problem Identification in Lakes: Section 3.2.3 of the TMDL indicates that the nutrient source for the four lakes in the Lake Chain is primarily agriculture. Section 3.3.2 of the TMDL states that three of the lakes are connected and receive 80% of their water from upstream Lake Osakis, which has a summer average Total Phosphorus (TP) value of 60µg/L, which indicates poor water quality. Lake Osakis is considered to be a major source of phosphorus for the chain of lakes, because internal loading and failing Subsurface Sewage Treatment System (SSTS) loading have been found to contribute less than 1% of the total phosphorus budget of the downstream lakes. The other lakes' primary nutrient source is a mix of agriculture and sediment release, without influences of upstream lakes.

Pollutant of Concern: The pollutant of concern for the streams is *E. coli*. The pollutant of concern for the lakes is phosphorus. Excess nutrients, which are the causal factor, along with chlorophyll-a and Secchi depth criteria, which are the response variables, are included in the standards applicable at the lakes. Minnesota standards therefore state that both chlorophyll-a and Secchi depth criteria must be met, as well as phosphorus criteria, in order to achieve standards.

<u>Source Identification of Bacteria in Streams</u>

Point sources

- NPDES - Section 2.6.7.2 of the TMDL states that there are eight wastewater dischargers in the Sauk River watershed (Table 2.4 of the TMDL) and none in the other three creeks; the dischargers rarely exceed their fecal coliform effluent limit. Therefore, they contribute less than 1% of bacterial contamination.
- Concentrated Animal Feeding Operations (CAFOs) – CAFOs are defined as having over 1000 animal units, in the four watersheds of the impaired reaches. Details in the TMDL include animal units and types of animals such as dairy, beef, swine, and poultry. Table 2.10 of the TMDL shows a total of 17 CAFOs, a portion of the total CAFOs located in each of the watersheds.

Nonpoint sources

- Natural background - Section 2.6.1 of the TMDL states that there have been studies regarding natural or indigenous *E. coli*, which indicate that such sources could account for as much as 36% of the overall amount, but also states that this study was from another area and may not be an appropriate conclusion regarding previously existing sources. Further, the origin of the background bacteria in the study could not be determined, and it was suggested that studies from other watersheds should not be extrapolated to this watershed.
- Livestock – Section 2.6.5 states that livestock is considered to be the largest contributing source in each of the four stream watersheds, with pastures near streams or waterways being the predominant source (78%) in the Adley Creek watershed. Runoff from upland pastures is 62-79% of the source contribution in the other three streams' watersheds. Feedlots, manure storage and pastures related to livestock contribute to the *E. coli* impairment. Table 2.10 in the TMDL indicates an inventory of 66, 116, 287, and 56 feedlots in the Adley, Ashley, Sauk, and Stoney Creek watersheds, respectively. Section 2.6.5 states that much cropland in the area has manure application in both solid and liquid form, and some is spread year-round where crops are not being grown. All the reaches in this TMDL have multiple feedlots within 500 feet of waters. Surface applied manure is 17-21% of the source contribution (Figures 2.16 – 2.19 in the TMDL).
- Septic systems – MPCA collected and reviewed data to determine failing septic systems and those systems that are an imminent threat to public health and safety (ITPHS), found in Section 2.6.7.1 of the TMDL. Failing systems do not provide adequate treatment and may affect groundwater. ITPHS are severely failing or not designed to provide adequate treatment, and may discharge directly to surface water bodies such as ditches, streams or lakes. To determine the impacts of failing septic systems, MPCA used data estimating people per household, total number of SSTSs in the watershed, population data from 2010, and county failure rates from 2012. Results showed that Adley Creek, Sauk River, and Stoney Creek had 10% failing SSTSs, and Ashley Creek had 10-20% failing; for ITPHS, Adley, Sauk and Stoney Counties each had 2%, respectively, and Ashley Creek had 0-4% systems rated as an ITPHS. MPCA determined that septic systems account for less than 1% of the bacterial contribution.
- Wildlife – Section 2.6.7.3 of the TMDL states that deer and geese were modeled separately as sources of bacteria, and all other wildlife contribution was aggregated. Wildlife accounts for less than 1% of the bacterial contribution.
- Urban stormwater runoff – Section 2.6.8 of the TMDL states that urban runoff is assumed to be more related to pets, using estimates from dogs and cats; wildlife was assumed to be the same as the wildlife in other settings as calculated previously. Pets account for less than 1% of the bacterial contamination. There are no MS4s in these watersheds.

<u>*Source Identification of Phosphorus in Lakes*</u>

Point Sources

- NPDES - Section 3.1.1 of the TMDL summarizes the potential permitted sources contributing nutrients to the lakes: construction stormwater general permit sites, and industrial stormwater general permit sites, at less than 1% and less than 0.5% of the watershed, respectively. There are no MS4s in these watersheds, although there are some upstream of Lake Osakis which have been previously accounted for in that TMDL, which was approved in 2013.

Nonpoint Sources

- Watershed loading – Table 3.4 in the TMDL shows agriculture to be the primary nutrient source in six of the nine lakes, and a secondary source in the remaining three lakes. Sediment release is a primary contributor in four of the nine lakes, and a secondary contributor in five of the lakes; although septics are a small percentage of the total source of nutrients, septic failures are a secondary contributor in six of the nine lakes.
- Septic systems – Section 3.2.1.2 of the TMDL states that data were collected and reviewed to determine failing septic systems from state reports and county annual reports regarding performance of SSTSs. The impacts of failing septic systems were assessed using county data estimating people per household, total number of SSTSs in the watershed, population data from 2010, and estimated flows and loadings of nitrogen, phosphorus and carbonaceous biochemical oxygen demand (CBOD). Results showed that Stearns County had a 2% failure rate, Pope County 15%, and Todd County 4%.
- Upstream lakes – Section 3.2.1.3 of the TMDL states that some upstream lakes contribute nutrients as sources to the downstream lakes within this TMDL watershed. In some calculations, the upstream lakes were routed directly to the downstream lakes using monitored lake water quality values. Some calculations included phosphorus concentration inputs that met WQS, rather than monitored values, if a TMDL had been completed in upstream lakes.
- Atmospheric deposition – rates of phosphorus deposition were calculated based on precipitation using data from 2005-2011, and were found to be within the average range. Atmospheric deposition was a very small part of the total loading, and the existing load was also the allocated load, with a maximum allocation of 0.254 lbs/day P in Maple Lake, and required no reduction in any of the lakes.
- Internal loading – Section 3.2.1.5 of the TMDL states that after agricultural loading, internal loading is the next most significant portion of the current existing load in several of the lakes. Internal loading often occurs when anoxic conditions are present, but can also occur in the oxygenated water column.

Priority Ranking: Section 1.4 of the TMDL states that priority ranking is based on the impacts on public health and aquatic life and the public value of the impaired water resource; likelihood of completing the TMDL which includes a strong base of existing data; restorability of the waterbody; local technical capability and local willingness to assist with the TMDL; and appropriate sequencing of TMDLs within a watershed or basin.

Future growth: Section 3.2.6.1 of the TMDL states that MPCA set aside 0.5% of the total watershed load for industrial stormwater and 1.0% for construction stormwater. MPCA noted this is a slow-growth rural area, and the industrial and construction stormwater adequately quantifies changes that may occur in the watershed in the future.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this first element.

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.

Comment:
Designated Use: Sections 1.4 and 1.5 of the TMDL states the streams and lakes are all classified as 2B and 3C; 2B is intended to protect cool and warm water fisheries, and 3C protects water for industrial use and cooling. Minnesota Rules Chapter 7050.0140, Water Use Classification for Waters of the State for Class 2 waters, aquatic life and recreation, states: "Aquatic life and recreation includes all waters of the state that support or may support fish, other aquatic life, bathing, boating, or other recreational purposes and for which quality control is or may be necessary to protect aquatic or terrestrial life or their habitats or the public health, safety, or welfare."

Standards for bacteria: Each bacteria impaired reach listing was based on *Escherichia coli (E. coli)* measurements. *E. coli* concentrations are: **Not to exceed 126 organisms per 100 milliliters as a geometric mean** of not less than five samples within any calendar month, **nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms/100 mL**. The standard applies only between April 1 and October 31.

Standards for nutrients: Standards for the lakes are found under Minn. R. chs. 7050.0150 and 7050.0222 subp. 4. Minnesota uses both the size of the waterbody (shallow or deep) and its ecoregional location (i.e., the North Central Hardwood Forest ecoregion), to determine standards for a waterbody. Three criteria are included in the nutrient standards: total phosphorus (TP), chlorophyll-a, and Secchi disc depth to account for both the causal factor (TP) and response variables. The numeric criteria are shown below in Table 1.5. Maple and Little Sauk lakes are identified as deep lakes, while Guernsey, Juergens, Henry, McCormic, Sand, Uhlenkolts and Westport lakes are identified as shallow lakes. MPCA evaluated a large cross-section of lakes within this ecoregion to establish the relationship of the causal factor and responses, and all three values are included in the numeric standards.

Table 1.5. Numeric standards for lakes in the North Central Hardwood Forest Ecoregion.

Parameters	Shallow[1] Lake Standard	Deep Lake Standard
Total Phosphorus (µg/L)	≤60	≤40
Chl-*a* (µg/L)	≤20	≤14
Secchi disk transparency (meters)	≥1.0	≥1.4

[1] Shallow lakes are defined as lakes with a maximum depth of 15 feet or less, or with 80% or more of the lake area shallow enough to support emergent and submerged rooted aquatic plants (littoral zone).

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this second element.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a waterbody 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.

Comment:

Stream Allocations - TMDL = Loading Capacity (LC) = WLA + LA + MOS (Tables 2.5 – 2.8 from the TMDL). The loading capacities calculated for *E. coli* WLAs are from wastewater treatment plants for the Sauk River watershed, which are specifically referenced in Table 2.4 in Section 5 of this Decision Document. The other creeks do not have point sources. The LAs are primarily attributable to livestock, followed by small contributions by wildlife and urban runoff of pet waste, as described in the previous section of this document.

Table 2.5 Adley Creek E. coli impaired reach TMDL for each flow zone.

Adley Creek 07010202-527		Flow Zones				
		Very High	High	Mid-Range	Low	Dry
		E. Coli Load (billions of organisms/day)				
Total Daily Loading Capacity		499.0	279.0	143.4	66.4	14.8
MOS		25.0	13.9	7.2	3.3	0.7
WLAs	Permitted Point Source Dischargers	--	--	--	--	--
LA	Nonpoint Sources	474.0	265.1	136.2	63.1	14.1

Table 2.6 Ashley Creek *E. coli* impaired reach TMDL for each flow zone.

Ashley Creek 07010202-503 2		Flow Zones				
		Very High	High	Mid-Range	Low	Dry
		E. Coli Load (billions of organisms/day)				
Total Daily Loading Capacity		697.1	339.8	218.8	116.3	32.2
MOS		34.9	17.0	10.9	5.8	1.6
WLAs	Permitted Point Source Dischargers	--	--	--	--	--
LA	Nonpoint Sources	662.2	322.8	207.9	110.5	30.6

Table 2.7 Sauk River *E. coli* impaired reach TMDL for each flow zone.

Sauk River 07010202-508		Flow Zones				
		Very High	High	Mid-Range	Low	Dry
		E. Coli Load (billions of organisms/day)				
Total Daily Loading Capacity		4,875.6	2,186.7	1,398.7	1,126.7	374.9
MOS		243.8	109.3	69.9	56.3	18.7
WLAs	Permitted Point Source Dischargers	57.8	57.8	57.8	57.8	57.8
LA	Nonpoint Sources	4,574.1	2,019.7	1,271.0	1,012.6	298.4

Table 2.8 Stoney Creek *E. coli* impaired reach TMDL for each flow zone.

Stoney Creek 07010202-541		Flow Zones				
		Very High	High	Mid-Range	Low	Dry
		E. Coli Load (billions of organisms/day)				
Total Daily Loading Capacity		694.2	71.6	27.7	15.3	1.3
MOS		34.7	3.6	1.4	0.8	0.1
WLAs	Permitted Point Source Dischargers	--	--	--	--	--
LA	Nonpoint Sources	659.5	68.0	26.3	14.5	1.2

Methodology for *E. coli* in streams – The Load Duration Curve (LDC) methodology was used in determination of the TMDLs. The example below in Figure 2.7 from the TMDL is for the Sauk River, and the other creeks also used this methodology. Note the midpoint (square) of each flow regime on the curve corresponds with the TMDL in Table 2.7 (from very high flow to dry, respectively: 4,875.6; 2,186.7; 1,398.7; 1,126.7; and 374.9 billions of organisms/day).

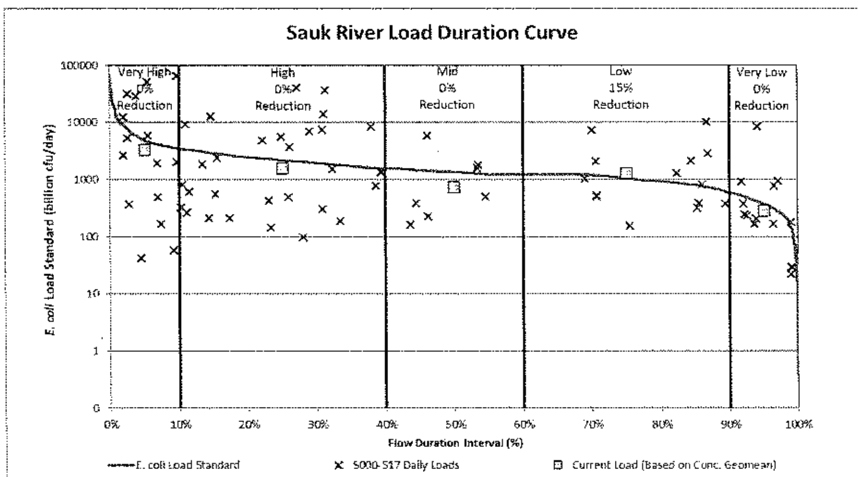

Figure 2.7. Sauk River *E. coli* load duration curve and required load reductions by flow category. Note the red line represents the maximum allowable daily *E. coli* load.

Load duration curves were developed using the full range of hydrological conditions at each monitoring site. This method includes ranking daily flow values from highest to lowest, computing the percentage of days in the period of record with flows that exceed each daily value, and then plotting daily flow versus the exceedance percentage (or flow duration interval). The resultant load curves show flow regimes and the frequency that the standard is exceeded. Both flood conditions and low flow are represented, as well as conditions in the middle range. Data for the four watersheds draining to the streams varied in their collection dates, but overall ranged from 1974-2005 for fecal coliform and 2005-2012 for *E. coli*.

Each plot was divided into five flow duration intervals (very low, low, mid-range, moist, and high flow conditions). Note exceedences occur under all flow conditions. High flow exceedences more often occur from precipitation-related sources and more often under spring conditions (run-off from upland pastures, cropland with surface manure application) represented on the left portion of the plot, and non-precipitation related events occur more in the fall when there are large amounts of cattle access from pastures near streams. Exceedences occurring under low flow conditions are shown on the right side of the plot. Summer *E. coli* inputs exceeding standards occurred during the entire range of flows for the four streams, except during very high flow regimes in Adley Creek and Stoney Creek (Figures 2.8 – 2.11 in the TMDL). The TMDL for each flow regime was established by using the midpoint flow condition within that flow regime, shown by the squares in Table 2.7. The square representing the geomean is only above the standard curve under low flow conditions. As a result, reduction (15%) is only needed under the low flow regime to meet the geometric mean. EPA notes that while the TMDL will focus on the geometric mean portion of the water quality standard, both parts of the water quality standard must be met.

Lake Allocations - TMDL = Loading Capacity (LC) = WLA + LA + MOS (Tables 3.11 – 3.14 from the TMDL). The first four TMDLs below are distinctive because they are located in the chain of lakes area, with three of the four lakes needing considerable TP LA reduction from upstream lake sources. Maple Lake has significant internal loading reduction needed. The loading capacities calculated for TP WLAs are from construction and industrial stormwater. The load reductions from NPS are primarily from agricultural runoff (Table 3.4 in the TMDL), as well as small amounts from wildlife and pet waste runoff as described in the previous section of this document. *Note the TMDL tables have some values shaded below, modified from the TMDL document because of calculation errors detected by EPA. Although the percentage change was small, the Tables below show the altered values and are acceptable to MPCA and EPA. No point source values changed.*

Table 3.11 TMDL allocations for Maple Lake.

Allocation	Source	Existing TP Load		TP Allocations (WLA & LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/day)	(lbs/year)	%
Wasteload	Construction and Industrial Stormwater	8	0.022	8	0.022	0	0%
Load	SSTS	9	0.024	0	0.000	9	100%
	Non-Point Source Runoff	803	2.198	384	1.053	418	52%
	Upstream Lakes	0	0	0	0	0	0%
	Atmosphere	93	0.254	93	0.254	0	0%
	Internal Load	1,017	2.785	183	0.501	834	82%
	MOS	--	--	35	0.096	--	5%
	TOTAL	1,930	5.283	703	1.926	1,261	64%

Table 3.12 TMDL allocations for Guernsey Lake.

Allocation	Source	Existing TP Load		TP Allocations (WLA & LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/day)	(lbs/year)	%
Wasteload	Construction & Industrial Stormwater	54	0.147	54	0.147	0	0%
Load	SSTS	34	0.092	0	0.000	0	100%
	Non-Point Source Runoff	960	2.628	960	2.628	0	0%
	Upstream Lakes	5,378	14.725	3,286	8.998	2,092	39%
	Atmosphere	29	0.079	29	0.079	0	0%
	Internal Load	260	0.712	260	0.712	0	0%
	MOS	--	--	243	0.666	--	5%
	TOTAL	6,715	18.383	4,832	13.230	2,126	28%

Table 3.13 TMDL allocations for Little Sauk Lake.

Allocation	Source	Existing TP Load		TP Allocations (WLA & LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/day)	(lbs/year)	%
Wasteload	Industrial & Construction Stormwater	70	0.192	70	0.192	0	0%
Load	SSTS	23	0.064	0	0.000	0	100%
	Non-Point Source Runoff	862	2.359	362	0.991	500	58%
	Upstream Lakes	7,015	19.205	4,760	13.033	2,255	32%
	Atmosphere	68	0.187	68	0.187	0	0%
	Internal Load	131	0.359	131	0.359	0	0%
	MOS	----	--	285	0.780	--	5%
	TOTAL	8,169	22.366	5,676	15.542	2,778	31%

Table 3.14 TMDL allocations for Juergens Lake.

Allocation	Source	Existing TP Load		TP Allocations (WLA & LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/day)	(lbs/ year)	%
Wasteload	Construction & Industrial Stormwater	75	0.206	75	0.206	0	0%
Load	SSTS	9	0.024	0	0	9	100%
	Non-Point Source Runoff	470	1.286	470	1.286	0	0%
	Upstream Lakes	7,515	20.576	4,562	12.490	2,953	39%
	Atmosphere	28	0.076	28	0.076	0	0%
	Internal Load	777	2.126	777	2.126	0	0%
	MOS	--	--	311	0.852	--	5%
	TOTAL	8,874	24.294	6,223	17.036	2,962	30%

TP LA reduction for the five remaining individual lakes is primarily from direct watershed NPS runoff, ranging from 39-95% reduction, and three of the lakes (Henry, Sand, and Uhlenkolts) have significant internal loading reduction needed, ranging from 82-99%. Those three lakes are very shallow and have drainage only from small watersheds, and have a large amount of internal loading. The load reductions from NPS runoff include a small amount of wildlife and pet waste runoff as described in the previous section of this document. The loading capacities calculated for TP WLAs are from construction and industrial stormwater. Tables 3.20 - 3.24 below show the TMDL summary for the remaining lakes (Section 3.4.6 in the TMDL).

Table 3.20 TMDL allocations for Henry Lake.

Allocation	Source	Existing TP Load		TP Allocations(WLA&LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/day)	(lbs/year)	%
Wasteload	Industrial & Construction Stormwater	0.4	0.001	0.4	0.001	0.0	0%
Load	SSTS	0.3	0.001	0.0	0.000	0.3	100%
	Non-Point Source Runoff	41.5	0.113	1.9	0.005	39.6	95%
	Upstream Lakes	0.0	0.000	0.0	0.000	0.0	0%
	Atmosphere	16.9	0.046	16.9	0.046	0.0	0%
	Internal Load	1064.5	2.914	4.5	0.012	1059.9	99%
	MOS	--	--	1.2	0.001	--	**5%**
	TOTAL	**1,123.6**	**3.1**	**24.9**	**0.065**	**1,099.8**	**98%**

Table 3.21 TMDL allocations for McCormic Lake.

Allocation	Source	Existing TP Load		TP Allocations(WLA&LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/day)	(lbs/year)	%
Wasteload	Industrial & Construction Stormwater	7	0.021	7	0.021	0	**0%**
Load	SSTS	0	0.002	0	0.000	0	**100%**
	Non-Point Source Runoff	773	2.116	427	1.171	345	**45%**
	Upstream Lakes	0	0.000	0	0.000	0	**0%**
	Atmosphere	49	0.134	49	0.134	0	**0%**
	Internal Load	34	0.095	34	0.095	0	**0%**
	MOS			27	0.074		**5%**
	TOTAL	**864**	**2.368**	**544**	**1.495**	**346**	**37%**

Table 3.22 TMDL allocations for Sand Lake.

Allocation	Source	Existing TP Load		TP Allocations(WLA&LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/day)	(lbs/year)	%
Wasteload	Industrial & Construction Stormwater	2	0.007	2	0.007	0	0%
Load Allocation	SSTS	1	0.004	0	0.000	1	100%
	Non-Point Source Runoff	246	0.673	28	0.077	218	89%
	Upstream Lakes	0	0	0	0	0	0%
	Atmosphere	50	0.137	50	0.137	0	0%
	Internal Load	1,071	2.932	193	0.530	878	82%
	MOS	--	--	10	0.029	--	5%
	TOTAL	**1,370**	**3.753**	**288**	**0.793**	**1,097**	**79%**

Table 3.23 TMDL allocations for Uhlenkolts Lake.

Allocation	Source	Existing TP Load		TP Allocations(WLA&LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/day)	(lbs/year)	%
Wasteload	Industrial & Construction Stormwater	8	0.021	8	0.021	0	**0%**
Load Allocation	SSTS	8	0.023	0	0	8	**100%**
	Non-Point Source Runoff	746	2.043	199	0.544	547	**73%**
	Upstream Lakes	0	0.000	0	0.000	0	**0%**
	Atmosphere	57	0.156	57	0.156	0	**0%**
	Internal Load	1,764	4.829	113	0.309	1,651	**94%**
	MOS			19	0.000		**5%**
	TOTAL	**2,583**	**7.072**	**396**	**1.030**	**2,206**	**85%**

Table 3.24 TMDL allocations for Westport Lake.

Allocation	Source	Existing TP Load		TP Allocations (WLA & LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/day)	(lbs/year)	%
Wasteload	Industrial & Construction Stormwater	16	0.040	16	0.040	0	0%
Load Allocation	SSTS	0	0	0	0	0	0%
	Non-Point Source Runoff	1,627	4.450	978	2.680	649	40%
	Upstream Lakes	0	0.000	0	0.000	0	0%
	Atmosphere	49	0.130	49	0.130	0	0%
	Internal Load	164	0.450	164	0.450	0	0%
	MOS	--	--	63	0.170	--	5%
	TOTAL	**1,856**	**5.070**	**1,270**	**4.479**	**649**	**36%**

Methodology for Nutrients (phosphorus) in Lakes:

Section 3.2.1.1 of the TMDL explains the methods that were used to develop the TMDLs.

- The Hydrologic Simulation Program FORTRAN (HSPF) model was used to develop watershed loads, in locations where there were not enough water quality data available. The results of the HSPF model were then input into the BATHTUB model for determining the nutrient (phosphorus) lake loads. Data were used where available, rather than simulated model data.
- BATHTUB is a steady state model that uses a mass balance approach to estimate lake responses to nutrient inputs from external sources. The HSPF model used loading rates based on hydrozones, rather than individual lake loading, for all of the lakes in the Juergens chain of lakes. The watershed loads were then input into BATHTUB. In locations where more data were available, these data were used rather than model outputs. BATHTUB includes several subroutines, including Canfield Bachman equations for estimates of the lake phosphorus sedimentation rate, which are needed to predict in-lake phosphorus and external lake inputs calculations. The in-lake estimation uses phosphorus loss from the water column to the lake bottom, and utilizes other lake characteristics such as lake-specific phosphorus loading, mean depth and hydraulic flushing rate.
- No atmospheric loading reduction was assumed.
- The TMDLs included 100% reductions for SSTS since discharge from SSTSs to the lakes is not allowed, occurring when failures occur.
- Upstream lakes met WQS as an initial assumption.
- Amounts of possible internal and external loading reductions were evaluated. For internal loading capacity, the approach was to review modeled sediment release rates and lake morphometry, then apply estimated release rates and compare to literature values of healthy lakes. In some cases, internal loading was reduced greatly only after all feasible external watershed load reductions were included.

In summary, for nonpoint sources, upstream lakes, watershed loading and internal loading were considered in the modeling scenarios. Section 3.2.6.1 of the TMDL states that the wasteload methodology considered construction and industrial stormwater in small proportions (1% and 0.5% respectively) in general permits, as well as individual wastewater permits, general permits for Construction Sand & Gravel, Rock Quarrying, and Hot Mix Asphalt Production facilities.

Lake response variables are also considered in the methodology, i.e., Minnesota's lake nutrient standards include the chlorophyll-a and Secchi depth response variables, as well as phosphorus. The relationship of the causal factor, phosphorus, and the response variables is well-established and MPCA expects the latter to be met if the phosphorus reductions are achieved.

Critical Conditions: Section 2.4.1 of the TMDL states that the critical condition is accounted for in the bacteria modeling effort because all seasonal conditions were incorporated into the process using 8-10 years in the development of the flow duration curve for the streams. Section 3.2.9 of the TMDL states that the critical condition for lakes is the summer; however, lakes are not as sensitive to short term (seasonal) changes in loading.

EPA finds MPCA's approach for calculating the loading capacity to be reasonable and consistent with EPA guidance. EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this third element.

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.

Comment:
The Load Allocations are presented in the Tables in Section 3 above. The existing loadings for the streams are predominantly nonpoint source. The lake loading includes nonpoint sources via SSTS, upstream lakes, atmospheric deposition, and internal lake loading.

EPA finds MPCA's approach for calculating the LA to be reasonable and consistent with EPA guidance. EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this fourth element.

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 permitees 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.

Comment:
Individual WLAs for bacteria were calculated for the facilities listed below in Table 2.4. MPCA determined individual WLAs only for the Sauk River *E. coli* impaired segments. The WLAs were calculated by multiplying the facility's design flow by the *E. coli* standard (126 cfu/100 mL). MPCA noted that NPDES point source permit limits for bacteria are currently expressed in fecal coliform concentrations, not *E. coli*. However, the fecal coliform permit limit for each WWTP (200 organisms/100 mL) is equivalent to this TMDLs 126 organism/100 mL *E. coli* target. The fecal coliform - *E. coli* relationship is documented extensively in the Statement of Need and Reasonableness (SONAR) for the 2007 to 2008 revisions of Minn. R. ch. 7050.

For the impaired TP lakes, the only WLAs are for construction and industrial stormwater. As noted above in Section 3, MPCA set aside 1% and 0.5% of the total WLA to account for TP loading from construction stormwater and from industrial stormwater, respectively (Section 3.2.6.1 of the TMDL). MPCA reviewed the areal coverage of construction permits issued in the counties, and calculated coverage to be approximately 1%. For industrial stormwater, MPCA reviewed the state-wide industrial stormwater permit data, and calculated that 0.50% of the watersheds have coverage under the permit.

MPCA explained that BMPs and other stormwater control measures should be implemented at active construction sites to limit the discharge of pollutants of concern. BMPs and other stormwater control measures which should be implemented at construction sites are defined in the State's NPDES/State Disposal System (SDS) General Stormwater Permit for Construction Activity (MNR100001). If a construction site owner/operator obtains coverage under the NPDES/SDS General Stormwater Permit and properly selects, installs and maintains all BMPs required under the permit, including those related to impaired waters discharges and any applicable additional requirements found in Appendix A of the Construction General Permit, the stormwater discharges would be expected to be consistent with the WLA in this TMDL.

The WLA for stormwater discharges from sites where there is industrial activity reflects the number of sites in the watershed for which NPDES industrial stormwater permit coverage is required, and the BMPs and other stormwater control measures that should be implemented at the sites to limit the discharge of pollutants of concern. BMPs and other stormwater control measures which should be implemented at the industrial sites are defined in the State's NPDES/SDS Industrial Stormwater Multi-Sector General Permit (MNR050000) or NPDES/SDS General Permit for Construction Sand & Gravel, Rock Quarrying and Hot Mix Asphalt Production facilities (MNG490000). If a facility owner/operator obtains coverage under the appropriate NPDES/SDS General Stormwater Permit and properly selects, installs and maintains all BMPs required under the permit, the stormwater discharges would be expected to be consistent with the WLA in this TMDL.

Table 2.4. Description of NPDES point source dischargers and E. coli allocations in impaired reaches all in the Sauk River.

Impaired Reach	Facility Name	NPDES ID#	Discharge Type	Effluent Design Flow (MGD)	Allocated Wasteload (billions org/day)
07010202-508	Freeport WWTP	MNG580019	Controlled	0.98	4.66
07010202-508	GEM Sanitary District	MNG580205	Controlled	0.61	2.92
07010202-508	Lake Henry WWTP	MN0020885	Continuous	0.04	0.19
07010202-508	Melrose WWTP	MN0020290	Continuous	3.00	14.31
07010202-508	Osakis WWTP	MN0020028	Controlled	4.46	21.29
07010202-508	Richmond WWTP	MN0024597	Continuous	0.31	1.48
07010202-508	Sauk Center WWTP	MN0024821	Continuous	0.89	4.24
07010202-508	St. Martin WWTP	MN0024783	Controlled	1.82	8.69

EPA finds MPCA's approach for calculating the WLA to be reasonable and consistent with EPA guidance. EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this fifth element.

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.

Comment:
An explicit 5% was used for *E. coli* in the streams. Section 2.4.2 of the TMDL states that this percentage of the loading capacity is appropriate since the LDC methodology minimizes uncertainty by calculating the loading capacity based on flow at different flow regimes multiplied by the target value.

An explicit 5% MOS was used in the modeling effort for phosphorus in the lakes as described in Section 3.2.7. MPCA stated this is a reasonable MOS because there was a good quantity of in-lake monitoring to support the model. *Note in the Summary Section, MOS Section, and TMDL tables, both the narrative and calculated values are modified to correct calculation errors in the lake TMDLs. These modified values have been discussed and approved by MPCA and EPA. An error page is included at the end of this document.*

The MOS for the phosphorus TMDLs is reasonable due to the generally good calibration of the HSPF and BATHTUB models for hydrology and pollutant loading (Appendix C of the TMDL). The calibration results indicate the model adequately characterizes the lakes, and therefore additional MOS is not needed.

EPA finds MPCA's approach for calculating the MOS to be reasonable and consistent with EPA guidance. EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this sixth element.

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)).

Comment:
E. coli - Section 2.6.2 of the TMDL states that the month of April has the lowest bacteria concentrations in the streams, though it would appear that spring manure spreading would yield a greater concentration. Further, concentrations are high into the summer months as stream temperatures are similar to the original bacteria environment. More exceedences of *E. coli* occur in summer and fall because failing septic systems, cattle access to streams, and application of manure contribute to fall loading. Low flow exceedance may be driven by wastewater treatment plants, SSTS, and cattle in the streams, whereas high flow exceedences would be from runoff due to storm events. Figures 2.8 – 2.11 in the TMDL show flow duration curves with samples identified from spring, summer and fall, so all the seasons but winter are taken into account.

Phosphorus - Seasonal variation was considered in the lakes as described in Section 3.2.9 of the TMDL. Six years of data were used, representing a wide range of hydrological conditions, and load reductions are to achieve standards over a wide range of climatic conditions. The greatest potential for algal blooms is in the summer months when nutrient levels are high, and these conditions are accounted for in the calculations. Further, lakes respond more to long-term changes in annual loading, and are not as sensitive to smaller scale fluctuations, thus the seasonal variation is included in the approach.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this seventh element.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a National Pollutant Discharge Elimination System (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.

Comment:
MPCA states in the Reasonable Assurance Section of the TMDL that many of the goals of the TMDL are consistent with other entities in the area. The funding comes from these entities, and the Conservation Reserve Program, the Section 319 program, local government cost share funds, and ear-marked funds from the Clean Water Legacy Act (CWLA) further described below.

Several Agencies are active and prepared to continue with the funding for water resources management. The Sauk River Watershed District (SRWD) roles include: collection of monitoring data, permit programs (for redevelopment of property, land disturbance, work in the Right of Way of any legal drainage system, work on water control structures, and diversion of water to a different drainage system), technical assistance, implementation of capital improvements, and public education. The SRWD is also planning to update its rules to better integrate policies on stormwater runoff management, erosion control, drainage and water use.

The Stearns County Comprehensive Water Management Plan (WMP) goal is for waters to achieve standards and remove them from the impaired waters list. This TMDL was one of the top three priorities in the plan, applicable to the 2008-2017 timeframe. The important areas highlighted in the plan are: cooperation of watershed districts with the MPCA, education of feedlot owners regarding manure storage and application, providing information and assistance on soil erosion, stream bank protection and improvement of water resources, active promotion of funding programs, promotion of conservation programs, proper use and abandonment of manure pits, inspection and compliance of feedlots, establishment of buffers on ditches, and establishment and maintenance of buffers in accordance with existing ordinances.

The Stearns County Soil and Water Conservation District is involved in implementation to reduce or prevent erosion, sedimentation, siltation and agricultural-related pollution; practices include grassed waterways, on-farm terracing, erosion control structures, and flow control structures. The SWCD also works closely with other agencies to promote and fund projects using cash incentives.

The Clean Water Legacy Act (CWLA) was passed in Minnesota 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.

The CWLA also provided 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 action. MPCA has developed guidance on what is required in the WRAPS (*Watershed Restoration and Protection Strategy Report Template,* MPCA); a WRAPS was completed for the Sauk River in 2015.

In an update described in this TMDL, Minnesota voters approved the CWLA amendment in 2008, which increased the state sales and use tax rate by three-eighths of 1% on all taxable sales, starting July 1, 2009, and continuing through 2034. Approximately one third have been dedicated to a Clean Water Fund to, "protect, enhance, and restore water quality in lakes, rivers, streams, and groundwater, with at least 5% of the fund targeted to protect drinking water sources." (MPCA 2014). Funding for implementation is also available through other nonpoint source programs and the 319 funding mechanism.

EPA finds that this criterion has been adequately addressed.

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.

Comment:
Section 5.4 of the TMDL states that actions will occur to both monitor the more traditional physical and chemical properties of the waterbodies, as well as track the progress of implementation via BMPs and capital projects. Section 5.5 of the TMDL states that the strategic efforts and BMPs that the SRWD and other partners pursue will be closely monitored and targeted. The monitoring will be the less traditional methods related to finding potential funding from state and federal agencies, targeting different areas for more effective management units using land use, terrain and drainage patterns, HSPF modeling to better understand the watershed for prioritization and targeting, and sharing results with several local partners. All of these monitoring steps have the objective of strengthening the implementation, planning, prioritizing, and will include listing responsible parties, timelines, and estimated cost.

EPA finds that this criterion has been adequately addressed.

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.

Comment:
Section 5.5 of the TMDL states that the modeling and prioritizing stated above will be used for a detailed implementation plan. The plan will include action items, responsible parties, timelines and estimated costs, all focusing on the load reductions required from this TMDL.

Section 5.2 of the TMDL gives details regarding the SRWD actions over the past few decades, since its formation in 1986. Its comprehensive watershed plan includes collection of data, development of regulatory programs/permit where landowners seek to create larger amounts (over one acre) of impervious lands, land disturbance within 500 feet of water bodies or wetlands, work in the right-of-way of drainage systems, construction of water control structures, or diversion of water into a different watershed or county drainage system. Other roles of the SRWD include providing technical assistance related to planning and installing BMPs, implementation of capital improvements, and public education.

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

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.

Comment:
The TMDL was public noticed from January 9, 2017 to February 8, 2017. Copies of the draft TMDL were made available upon request and on the Internet web site: https://www.pca.state.mn.us/water/watersheds/sauk-river. MPCA received a public comment letter from the Minnesota Department of Agriculture (MDA) during the public comment period. Comments included: adding a reference citation, and requests for clarification as to whether manure application, goose density estimates, and manure runoff information was actually gathered or were based on assumptions. MPCA adequately addressed the comments, as well as EPA's comments provided prior to public notice of the draft TMDL.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this eleventh element.

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.

Comment:

The EPA received the final Sauk River Watershed TMDL on August 15, 2017, accompanied by a submittal letter dated August 9, 2017. In the submittal letter, MPCA states that the submission includes the final TMDL for *E. coli* for four streams and phosphorus for nine lakes. The streams are impaired for recreational use by *E. coli.* The lakes are impaired by excess nutrients, impairing a healthy community of cool or warm water sport or commercial fish, aquatic life, and their habitat, and for recreational use and bathing.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this twelfth element.

13. Conclusion

After a full and complete review, EPA finds that the Sauk River TMDLs satisfies all of the elements of an approvable TMDL. This approval addresses four waterbodies for *E. coli* and nine waterbodies for phosphorus contributing to excess nutrient impairment for a total of thirteen (13) TMDLs.

EPA's approval of this TMDL does not extend to those waters that are 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.

ERRATA SHEET (Revision March 2018)

This errata sheet lists errors and their correction for the Sauk River Bacteria and Nutrients Total Maximum Daily Load – May 2017 from the Minnesota Pollution Control Agency wq-iw8-47e

Location	Error	Correction
Page 10, Margin of Safety, line 1	"An explicit 10% MOS"	"An explicit 5% MOS"
Page 14, Table 1.3, column	"aquatic life"	"aquatic recreation"
Page 25, line 1	"equal to 10% ..whereby 10%.."	"equal to 5%...whereby 5%.."
Page 25, line 2	"Ten percent....."	" Five percent..."
Page 55, Table 3.11	"Nonpoint Source Runoff 398, 1.090, 405, 50%" "MOS 21, 0.059" "Total Load Reduction 1,248"	"Nonpoint Source Runoff 384, 1.053, 418, 52%" "MOS 35, 0.096" "Total Load Reduction 1,261"
Page 56, Table 3.12	"upstream lakes 3,351, 9.173, 2,028, 38%" "MOS 179, 0.491" "TP 4,833" "Total Load Reduction 2,028"	"upstream lakes 3,286, 8.998, 2,092, 39%" "MOS 243, 0.666" "TP 4,832" "Total Load Reduction 2,126"
Page 56, Table 3.13	"upstream lakes 4,994, 13.673, 2,021, 29%" "MOS 51, 0.140" "Total Load Reduction 2,544"	"upstream lakes 4,760, 13.033, 2,255, 32%" "MOS 285, 0.780" "Total Load Reduction 2,778"
Page 57, Table 3.14	"upstream lakes 4,626, 12.665, 2,890, 38%" "MOS 247, 0.677" "Total Load Reduction 2,889"	"upstream lakes 4,562, 12.490, 2,953, 39%" "MOS 311, 0.852" "Total Load Reduction 2,962"
Page 68, Table 3.20	"internal load 5.5, 0.015, 1059.0" "MOS 0.2" "TP 0.068" "Total Load Reduction 1,098.9"	"internal load 4.5, 0.012, 1059.9" "MOS 1.2" "TP 0.065" "Total Load Reduction 1,099.8"
Page 69, Table 3.21	"SSTS #DIV/0!" "nonpoint source runoff 432, 1.183, 341, 44%" "MOS 23, 0.063 " "Existing TP 863" "TP 545, 1.496" "Total Load Reduction 341"	"SSTS 100%" "nonpoint source runoff 427, 1.171, 345, 45%" "MOS 27, 0.074" "Existing TP 864" "TP 544, 1.495" "Total Load Reduction 346"
Page 69, Table 3.22	"nonpoint source runoff 33, 0.090, 213, 87%" "internal load 198, 0.543, 873" "TP 293, 0.806" "Total load reduction 1,087"	"nonpoint source runoff 28, 0.077, 218, 89%" "internal load 193, 0.530, 878" "TP 283, 0.78" "Total load reduction 1,097"
Page 70, Table 3.23	"nonpoint source runoff 207, 0.567, 539, 72%"	"nonpoint source runoff 199, 0.544, 547, 73%"

	"MOS 11" "TP 1.053" "load reduction 2,198"	"MOS 19" "TP 1.030" "load reduction 2,206"
Page 70, Table 3.24	"nonpoint source runoff 988, 2.710, 639, 39%" "MOS 53, 0.140" "existing TP 5.030" "TP 1,201, 3.290" "Total load reduction 639, 35%"	"nonpoint source runoff 978, 2.680, 649, 40%" "MOS 63, 0.170" "Existing TP 5.070" "TP 1,270, 3.470 " "Total load reduction 649, 36%"