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

August 31, 2021

REPLY TO THE ATTENTION OF:
W-16J

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 completed its review of the final Total Maximum Daily Loads (TMDLs) for segments within the Lac qui Parle River Watershed (LQPRW), including supporting documentation. The LQPRW is located in southwestern Minnesota. The LQPRW TMDLs were calculated for bacteria and total suspended solids to address the impaired aquatic recreation and aquatic life uses.

The LQPRW 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 eight (8) bacteria TMDLs and one (1) total suspended solids TMDL. 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 submissions by the State of Minnesota. If you have any questions, please contact Mr. Stephen Feely of the Watersheds and Wetlands Branch at feely.stephen@epa.gov or 312-886-5867.

Sincerely,

Digitally signed by
Fong, Tera
Date: 2021.08.31
11:43:48 -05'00'

Tera L. Fong
Division Director, Water Division

Cc: Danielle Kvasager, MPCA

wq-iw7-55g

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REPLY TO THE ATTENTION OF:
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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 reviewed the approval (dated August 31, 2021) of the final Total Maximum Daily Loads (TMDL) for segments within the Lac qui Parle River Watershed and has determined that there were errors made in the Decision Document, specifically in certain values reported in Table 5. EPA has corrected these values in a revised Lac qui Parle TMDL Decision Document.

I am enclosing a copy of the revised Decision Document for your records. If you have any questions, please contact Mr. Stephen Feely of the Watersheds and Wetlands Branch at feely.stephen@epa.gov or 312-886-5867.

Sincerely,

DAVID PFEIFER
Digitally signed by DAVID PFEIFER
Date: 2021.09.23 17:12:58 -05'00'

David Pfeifer
Chief, Watershed and Wetlands Branch

TMDL: Lac qui Parle River Watershed bacteria and sediment TMDLs in portions of Lac qui Parle, Yellow Medicine and Lincoln Counties in southwestern Minnesota
Date: 09/23/2021

DECISION DOCUMENT
FOR THE LAC QUI PARLE RIVER WATERSHED TMDLS FOR SEDIMENT and BACTERIA, IN SOUTHWESTERN MINNESOTA

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.

1. Identification of Water body, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the water body as it appears on the State's/Tribe's 303(d) list. The water body 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 water body 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 water body. 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 water body 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 Lac qui Parle River Watershed (LQPRW) is located in portions of Lac qui Parle, Yellow Medicine, and Lincoln counties in southwestern Minnesota. The river originates in South Dakota and flows northeast into Minnesota (Figure 1 of the final TMDL document). MPCA did not assign any TMDL allocations to South Dakota. The LQPRW is approximately 1,100 square miles (approximately 704,000 acres) in size and is part of the Western Corn Belt Plains (WCBP) and the Northern Glaciated Plains (NGP) ecoregions. Surface waters in the LQPRW generally flow in a southwest to northeast direction, roughly 120 miles from Lake Hendricks on the border of South Dakota, to its convergence with the Minnesota River just west of Montevideo (Section 3 of the final TMDL document).

As stated within Section 1.1 of the final TMDL document, two TMDL reports were previously completed by MPCA for water segments within the LQPRW. In 2013, the "Lac qui Parle Yellow Bank Bacteria, Turbidity, and Low Dissolved Oxygen TMDL Assessment Report" was completed, containing 19 TMDLs addressing 15 impairments across 8 stream reaches within the LQPRW. In May of 2013, the Environmental Protection Agency (EPA) approved the TMDL report, and MPCA approved an implementation plan in June of 2013. Additionally, South Dakota Department of Environment and Natural Resources developed a total phosphorus and accumulated sediment TMDL for Lake Hendricks in 1999. This document was approved by EPA Region 8 in April of 1999. MPCA also reviewed this document (Section 1.1 of the final TMDL document).

The LQPRW TMDLs that are the subject of this Decision address eight (8) segments impaired due to excessive bacteria and one (1) segment impaired due to excessive sediment inputs (Table 1 of this Decision Document).

Table 1: Lac qui Parle River Watershed impaired waters addressed by this TMDL

Water body name	Assessment Unit ID	Affected Use	Pollutant or stressor	TMDL
Lac qui Parle River, Tenmile Cr to Minnesota R	07020003-502	Aquatic Recreation	Bacteria (*E. coli*)	*E. coli* TMDL
Lac qui Parle River, West Branch, Unnamed ditch to Lac Qui Parle R	07020003-513	Aquatic Recreation	Bacteria (*E. coli*)	*E. coli* TMDL
Lost Creek, Crow Timber Cr to W Br Lac Qui Parle R	07020003-517	Aquatic Recreation	Bacteria (*E. coli*)	*E. coli* TMDL
Lac qui Parle River, West Branch, MN/SD border to Lost Cr	07020003-519	Aquatic Recreation	Bacteria (*E. coli*)	*E. coli* TMDL
County Ditch 5, T118 R46W S23, north line to W Br Lac Qui Parle R	07020003-523	Limited Resource Value (LRV)	Bacteria (*E. coli*)	*E. coli* TMDL
Unnamed creek, Unnamed cr to Lac Qui Parle R	07020003-530	Aquatic Recreation	Bacteria (*E. coli*)	*E. coli* TMDL

Unnamed creek, -96.1517, 44.9533 to W Br Lac Qui Parle R	07020003-580	Aquatic Recreation	Bacteria (*E. coli*)	*E. coli* TMDL
Unnamed ditch (County Ditch 4), Unnamed ditch to CSAH 20	07020003-581	Aquatic Recreation	Bacteria (*E. coli*)	*E. coli* TMDL
			TOTAL bacteria TMDLs	**8**
Unnamed creek, Unnamed cr to Lac Qui Parle R	07020003-530	Aquatic Life	Sediment/TSS	TSS TMDL
			TOTAL TSS TMDLs	**1**

MPCA noted that no Tribal lands are located within the watershed and the TMDL document does not allocate any pollutant loads to federally recognized Tribes (Section 3 of the final TMDL document).

Land Use:
Land use in the LQPRW is cropland (65.7%), rangeland (20.1%), wetlands (7.0%), developed (4.6%), open water (1.6%), forest and shrubs (0.9%) and barren (0.06%) (Section 3.3 of the final TMDL document and Table 2 of this Decision Document).

Table 2: Land cover in the Lac qui Parle River Watershed

Drainage Area (Sq. Miles)	Cropland (%)	Rangeland (%)	Developed (%)	Wetlands (%)	Water (%)	Forest and Shrubs (%)	Barren (%)
1100	65.7	20.1	4.6	7.0	1.6	0.9	0.06

Problem Identification:
Bacteria TMDLs: Bacteria impaired segments identified in Table 1 of this Decision Document were included on the final 2020 Minnesota 303(d) list due to excessive bacteria. Water quality monitoring within the LQPRW indicated that these segments were not attaining their designated aquatic recreation uses due to exceedances of the bacteria criteria. Excessive bacteria can negatively impact recreational uses (e.g., swimming, wading, boating, fishing etc.) and public health. At elevated levels, bacteria may cause illness within humans who have contact with or ingest bacteria laden water. Recreation-based contact can lead to ear, nose, and throat infections, and stomach illness.

Total Suspended Solids TMDL: The Unnamed Creek, Unnamed Creek to La Qui Parle River (07020003-530) was included on the final 2020 Minnesota 303(d) list due to excessive sediment within the water column. Water quality monitoring within the LQPRW indicated that these segments were not attaining their designated aquatic life uses due to high sediment measurements and the negative impact of those conditions on aquatic life (i.e., fish and macroinvertebrate communities).

Total suspended solids (TSS) is a measurement of the sediment and organic material that inhibits natural light from penetrating the surface water column. Excessive sediment and organic material within the water column can negatively impact fish and macroinvertebrates within the ecosystem. Excess sediment and organic material may create turbid conditions within the water column and may increase the costs of treating surface waters used for drinking water or other industrial purposes (e.g., food processing).

Excessive amounts of fine sediment in stream environments can degrade aquatic communities. Sediment can reduce spawning and rearing areas for certain fish species. Excess suspended sediment can clog the gills of fish, stress certain sensitive species by abrading their tissue, and thus reduce fish health. When in suspension, sediment can limit visibility and light penetration which may impair foraging and predation activities by certain species.

Excessive fine sediment also may degrade aquatic habitats, alter natural flow conditions in stream environments and add organic materials to the water column. The potential addition of fine organic materials may lead to nuisance algal blooms which can negatively impact aquatic life and recreation (e.g., swimming, boating, fishing, etc.). Algal decomposition depletes oxygen levels which stresses benthic macroinvertebrates and fish. Excess algae can shade the water column and limit the distribution of aquatic vegetation. Established aquatic vegetation stabilizes bottom sediments and provides important habitat areas for healthy macroinvertebrates and fish communities.

Priority Ranking:
MPCA's schedule for TMDL completions, as indicated on the 303(d) impaired waters list, reflects Minnesota's priority ranking of this TMDL. MPCA has aligned TMDL priorities with the watershed approach and Watershed Restoration and Protection Strategy (WRAPS) cycle. The schedule for TMDL completion corresponds to the WRAPS report completion on the 10-year cycle. Mainstem river TMDLs, which are not contained in major watersheds and thus not addressed in WRAPS, must also be completed. The MPCA developed a state plan, Minnesota's TMDL Priority Framework Report, to meet the needs of EPA's national measure (WQ-27) under EPA's Long-Term Vision for Assessment, Restoration and Protection under the CWA section 303(d) program. As part of these efforts, the MPCA identified water quality-impaired segments that will be addressed by TMDLs by 2022. The waters of the LQPRW addressed by this TMDL are part of the MPCA prioritization plan to meet EPA's national measure.

Pollutants of Concern:
The pollutants of concern are bacteria and TSS (sediment).

Source Identification (point and nonpoint sources):

Point Source Identification: The potential point sources to the LQPRW are:

<u>LQPRW bacteria TMDLs:</u>
National Pollutant Discharge Elimination Systems (NPDES) permitted facilities: NPDES permitted facilities may contribute bacteria loads to surface waters through discharges of treated wastewater. Permitted facilities must discharge wastewater according to their NPDES permit. MPCA determined that there are six Wastewater Treatment Plants (WWTPs) in the LQPRW which contribute bacteria from treated wastewater releases (Table 3 of this Decision Document). Five of these WWTPs have domestic wastewater permits and one has an industrial wastewater permit. MPCA assigned each of these facilities a portion of the bacteria wasteload allocation (WLA) (Table 3 of this Decision Document).

Table 3: NPDES facilities which contribute bacteria to impaired segments in the Lac qui Parle River Watershed

Facility Name	Permit #	Impaired Reach	WLA
Facilities assigned bacteria (*E. coli*) WLA (billions bacteria/day)			
Canby WWTP	MNG580154	-502	12.432
Dawson WWTP	MN0021881	-502, -513	2.246
Hendricks WWTP	MN0021121	-502	11.678
Madison WWTP	MN0051764	-502	2.289
Marietta WWTP	MNG580160	-502, -513, -523	1.593
PURIS Proteins LLC	MN0048968	-502	11.655

Municipal Separate Storm Sewer System (MS4) communities: MPCA noted that there are no permitted Municipal Separate Storm Sewer System (MS4) communities in the LQPRW (Section 3.5.1.1 of the final TMDL document).

Concentrated Animal Feedlot Operations (CAFOs): MPCA recognized the presence of CAFOs in the LQPRW (Section 3.5.1.1 and Figure 7 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, and even in the event of a discharge, the discharge cannot cause or contribute to a violation of a WQS. For the LQPRW TMDL, MPCA assigned all NPDES permitted CAFOs a WLA equivalent to zero (WLA = 0). 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) section of the TMDL.

Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs): MPCA determined that the LQPRW does not have CSOs nor SSOs which contribute bacteria to waters of the LQPRW.

<u>LQPRW TSS TMDL:</u>
Stormwater runoff from permitted construction and industrial areas: Construction and industrial sites may contribute sediment via stormwater runoff during precipitation events. These areas within the LQPRW must comply with the requirements of the MPCA's NPDES Stormwater Program and create a SWPPP that summarizes how stormwater will be minimized from the site. Runoff from construction is not considered by MPCA to be a significant source of TSS in the watershed (Section 3.5.2.1 of the final TMDL document).

Nonpoint Source Identification: The potential nonpoint sources to the LQPRW are:

<u>LQPRW bacteria TMDLs:</u>
Non-regulated urban runoff: Runoff from urban areas (i.e., urban, residential, commercial, or industrial land uses) can contribute bacteria to local water bodies. Stormwater from urban areas, which drain impervious surfaces, may introduce bacteria (e.g., derived from wildlife or pet droppings) to surface waters.

Stormwater from agricultural land use practices and feedlots near surface waters: Animal Feeding Operations (AFOs) in close proximity to surface waters can be a source of bacteria to water bodies in the LQPRW. These areas may contribute bacteria via the mobilization and transportation of pollutant laden waters from feeding, holding and manure storage sites. Runoff from agricultural lands may contain significant amounts of bacteria which may lead to impairments in the LQPRW. Feedlots generate manure which may be spread onto fields. Runoff from fields with spread manure can be exacerbated by tile drainage lines, which channelize the stormwater flows and reduce the time available for bacteria to die-off.

Unrestricted livestock access to streams: Livestock with access to stream environments may add bacteria directly to the surfaces waters or resuspend particles that had settled on the stream bottom. Direct deposition of animal wastes can result in very high localized bacteria counts and may contribute to downstream impairments. Smaller animal facilities may add bacteria to surface waters via wastewater from these facilities or stormwater runoff from near-stream pastures.

Discharges from Subsurface Sewage Treatment Systems (SSTS) or unsewered communities: Failing septic systems are a potential source of bacteria within the LQPRW. Septic systems generally do not discharge directly into a water body, but effluents from SSTS may leach into groundwater or pond at the surface where they can be washed into surface waters via stormwater runoff events. Age, construction and use of SSTS can vary throughout a watershed and influence the bacteria contribution from these systems.

Failing SSTS are specifically defined as systems that are failing to protect groundwater from contamination, while those systems which discharge partially treated sewage to the ground surface, road ditches, tile lines, and directly into streams, rivers and lakes are considered an imminent threat to public health and safety (ITPHS). ITPHS systems also include illicit discharges from unsewered communities.

Wildlife: Wildlife is a known source of bacteria in water bodies as many animals spend time in or around water bodies. Deer, geese, ducks, raccoons, and other animals all create potential sources of bacteria via contaminated runoff from animal habitats, such as urban park areas, forest, and rural areas.

LQPRW TSS TMDL:

Stream channelization and streambank erosion: Eroding streambanks and channelization efforts may add sediment to local surface waters. Eroding riparian areas may be linked to soil inputs within the water column and potentially to changes in flow patterns. Changes in flow patterns may also encourage downcutting of the streambed and streambanks. Stream channelization efforts can increase the velocity of flow (via the removal of the sinuosity of a natural channel) and disturb the natural sedimentation processes of the streambed. Unrestricted livestock access to streams and streambank areas may lead to streambank degradation and sediment additions to stream environments.

Stormwater runoff from agricultural land use practices: Runoff from agricultural lands may contain significant amounts of sediment which may lead to impairments in the LQPRW. Sediment inputs to surface waters can be exacerbated by tile drainage lines, which channelize the stormwater flows. Tile lined fields and channelized ditches enable particles to move more efficiently into surface waters.

Wetland and Forest Sources: Sediment may be added to surface waters by stormwater flows through wetland or forested areas in the LQPRW. Storm events may mobilize decomposing vegetation, organic soil particles through the transport of suspended solids and other organic debris.

Atmospheric deposition: Sediment may be added via particulate deposition. Particles from the atmosphere may fall onto surface waters within the LQPRW.

Future Growth:
MPCA referenced population trend projects from the Minnesota State Demographic Center for 2015-2035 and shared that the population in the LQPRW is expected to decrease in all counties of the LQPRW (Section 5 of the final TMDL document). Potential population loss within the watershed is likely to occur in rural areas and small towns, resulting in minimal land use changes. MPCA acknowledged that load transfer methodologies are in place in the event that future growth occurs regarding MS4s.

The WLA and load allocations (LA) for the LQPRW TMDLs were calculated for all current and future sources. Any expansion of point or nonpoint sources will need to comply with the respective WLA and LA values calculated in the LQPRW TMDLs.

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

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 water body, 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 Uses:
Water quality standards (WQS) are the fundamental benchmarks by which the quality of surface waters is measured. Within the State of Minnesota, WQS are developed pursuant to the Minnesota Statutes Chapter 115, Sections 03 and 44. Authority to adopt rules, regulations, and standards as are necessary and feasible to protect the environment and health of the citizens of the State is vested with the MPCA. Through adoption of WQS into Minnesota's administrative rules (principally Chapters 7050 and 7052),

MPCA has identified designated uses to be protected in each of its drainage basins and the criteria necessary to protect these uses.

Minnesota Rule Chapter 7050 designates uses for waters of the state. The segments addressed by the LQPRW TMDLs are designated as Class 2B waters for aquatic recreation use (fishing, swimming, boating, etc.) and aquatic life use (TSS), and Class 7 for limited resource value (County Ditch 5(-523)). The Class 2 designated use is described in Minnesota Rule 7050.0140 (3):

> *"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."*

The Class 7 designated use is described in Minnesota Rule 7050.0140 (8):

> *"Limited resource value waters include surface waters of the state that have been subject to a use attainability analysis and have been found to have limited value as a water resource. Water quantities in these waters are intermittent or less than one cubic foot per second at the $7Q_{10}$ flow as defined in part 7050.0130, subpart 3. These waters shall be protected so as to allow secondary body contact use, to preserve the groundwater for use as a potable water supply, and to protect aesthetic qualities of the water. It is the intent of the agency that very few waters be classified as limited resource value waters. The use attainability analysis must take into consideration those factors listed in Minnesota Statutes, section 115.44, subdivisions 2 and 3. The agency, in cooperation and agreement with the Department of Natural Resources with respect to determination of fisheries values and potential, shall use this information to determine the extent to which the waters of the state demonstrate that:*
>
> *A. the existing and potential faunal and floral communities are severely limited by natural conditions as exhibited by poor water quality characteristics, lack of habitat, or lack of water;*
> *B. the quality of the resource has been significantly altered by human activity and the effect is essentially irreversible; or*
> *C. there are limited recreational opportunities, such as fishing, swimming, wading, or boating, in and on the water resource.*
>
> *The conditions in items A and C or B and C must be established by the use attainability analysis before the waters can be classified as limited resource value waters."*

Water use classifications for individual water bodies are provided in Minnesota Rules 7050.0470, 7050.0425, and 7050.0430. This TMDL report addresses the water bodies that do not meet the standards for Class 2B and 7 waters. The impaired streams in this report are classified as Class 2Bg or 7 waters (Table 1 of the final TMDL document).

Standards:
Narrative Criteria:
Minnesota Rule 7050.0150 (3) set forth narrative criteria for Class 2 waters of the State:

> *"For all Class 2 waters, the aquatic habitat, which includes the waters of the state and stream bed, shall not be degraded in any material manner, there shall be no material increase in undesirable slime growths or aquatic plants, including algae, nor shall there be any significant increase in harmful pesticide or other residues in the waters,*

sediments, and aquatic flora and fauna; the normal fishery and lower aquatic biota upon which it is dependent and the use thereof shall not be seriously impaired or endangered, the species composition shall not be altered materially, and the propagation or migration of the fish and other biota normally present shall not be prevented or hindered by the discharge of any sewage, industrial waste, or other wastes to the waters."

Minnesota Rule 7050.227 sets forth the narrative criteria for Class 7 waters of the State:

"The quality of Class 7 waters of the state shall be such as to protect aesthetic qualities, secondary body contact use, and groundwater for use as a potable water supply."

Numeric criteria:

Bacteria TMDLs: The bacteria water quality standards which apply to LQPRW TMDLs are:

Table 4: Bacteria Water Quality Standards Applicable to the LQPRW TMDLs

Parameter	Class	Units	Water Quality Standard
E. coli [1]	2B	# of organisms / 100 mL	The geometric mean of a minimum of 5 samples taken within any calendar month may not exceed **126** organisms. No more than 10% of all samples collected during any calendar month may individually exceed **1,260** organisms[1]
	7		The geometric mean of a minimum of 5 samples taken within any calendar month may not exceed **630** organisms. No more than 10% of all samples collected during any calendar month may individually exceed **1,260** organisms.[2]

[1] = Standards apply only between April 1 and October 31
[2] = Standards apply only between May 1 and October 31

Bacteria TMDL Targets: The bacteria TMDL targets employed for the LQPRW bacteria TMDLs are the *E. coli* standards as stated in Table 4 of this Decision Document. The focus of this TMDL is on the **126** organisms (orgs) per 100 mL (126 orgs/100 mL) geometric mean portion of the standard for Class 2B and on the **630** orgs per 100 mL (630 orgs/100 mL) geometric mean portion for Class 7. MPCA believes that using the 126 orgs/100 mL and 630 orgs/100 mL portions of the standard for TMDL calculations will result in the greatest bacteria reductions within the LQPRW and will result in the attainment of the 1,260 orgs/100 mL portion of the standard. While the bacteria TMDLs will focus on the geometric mean portion of the water quality standard, attainment of both parts of the water quality standard is required.

TSS TMDL: In January 2015, EPA approved MPCA's regionally based TSS criteria for rivers and streams. The TSS criteria replaced Minnesota's statewide turbidity criterion (measured in Nephelometric Turbidity Units (NTU)). The TSS criteria provide water clarity targets for measuring suspended particles in rivers and streams.

Sediment (TSS) TMDL Targets: In developing the statewide eutrophication and TSS criteria, MPCA aggregated several ecoregions that have similar responses to phosphorus and sediment loads. The WBP and the NGP ecoregions were combined into the "Southern River Nutrient Region" by MPCA (*Regionalization of Minnesota's Rivers for Application of River Nutrient Criteria*, MPCA, 2019).

MPCA employed the regional TSS criterion for the Southern River Nutrient Region (SRNR), **<u>65 mg/L</u>**, for the LQPRW TSS TMDL.

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

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 steam 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.

<u>Comment:</u>
<u>LQPRW bacteria TMDLs:</u> MPCA used the geometric mean (**126 orgs/100 mL or 630 orgs/100 mL**) of the *E. coli* water quality standard to calculate loading capacity values for the bacteria TMDLs. MPCA believes the geometric mean of the WQS provides the best overall characterization of the status of the watershed. EPA agrees with this assertion, as stated in the preamble of, *"The Water Quality Standards for Coastal and Great Lakes Recreation Waters Final Rule"* (69 FR 67218-67243, November 16, 2004) on page 67224, "…the geometric mean is the more relevant value for ensuring that appropriate actions are taken to protect and improve water quality because it is a more reliable measure, being less subject to random variation, and more directly linked to the underlying studies on which the 1986 bacteria criteria were based." MPCA stated that the bacteria TMDLs will focus on the geometric mean portion of the water quality standard (126 orgs/100 mL or 630 orgs/100 mL) and that it expects that by attaining the 126 orgs/100 mL (Class 2) and 630 orgs/100 mL (Class 7) portion of the *E. coli* WQS the 1,260 orgs/100 mL portion of the *E. coli* WQS will also be attained. EPA finds these assumptions to be reasonable.

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 CFR §130.2). To establish the loading capacities for the LQPRW bacteria TMDLs, MPCA used Minnesota's WQS for *E. coli* (126 orgs/100 mL or 630 orgs/100 mL). A loading capacity is, "the greatest amount of loading that a water can receive without violating water quality standards." (40 CFR §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.

Separate flow duration curves (FDCs) were created for the each of the bacteria TMDLs in the LQPRW. The LQPRW FDCs were developed using flow data generated from Hydrologic Simulation Program-Fortran (HSPF) modeling efforts at the outlet/pour point of each impaired reach (Section 4.2.1 of the final TMDL document). MPCA focused on HSPF modeled flows from approximately 1996 to 2017 and bacteria (*E. coli*) water quality data from the same time period. HSPF hydrologic models were developed to simulate flow characteristics within the LQPRW, and flow data focused on dates within the recreation season (April 1 to October 31). Daily stream flows were necessary to implement the load duration curve approach.

HSPF is a comprehensive modeling package used to simulate watershed hydrology and water quality on a basin scale. The package includes both an Agricultural Runoff Model and a more general nonpoint source model. HSPF parametrizes numerous hydrologic and hydrodynamic processes to determine flow rate, sediment, and nutrient loads. HSPF uses continuous meteorological records to create hydrographs and to estimate time series pollution concentrations.[1,] The output of the HSPF process is a model of multiple hydrologic response units (HRUs), or subwatersheds of the overall LQPRW.

FDCs graphs have flow duration interval (percentage of time flow exceeded) on the X-axis and discharge (flow per unit time) on the Y-axis. The FDC were transformed into LDC by multiplying individual flow values by the WQS (126 orgs or 630 orgs/100 mL) and then multiplying that value by a conversion factor. The resulting points are plotted onto a load duration curve graph. LDC graphs, for the LQPRW bacteria TMDLs, have flow duration interval (percentage of time flow exceeded) on the X-axis and *E. coli* loads (number of bacteria per unit time) on the Y-axis. The LQPRW LDC used *E. coli* measurements in billions of bacteria per day. The curved line on a LDC graph represents the TMDL of the respective flow conditions observed at that location.

Water quality monitoring was completed in the LQPRW and measured *E. coli* concentrations were converted to individual sampling loads by multiplying the sample concentration by the instantaneous flow measurement observed/estimated at the time of sample collection and then by a conversion factor which allows the individual samples to be plotted on the same figure as the LDCs (e.g., Figure 10 of the final TMDL document). Individual LDCs are found in Section 4.3.6 of the final TMDL document.

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[1] HSPF User's Manual - https://water.usgs.gov/software/HSPF/code/doc/hspfhelp.zip; also see EPA TMDL Models Webpage - https://www.epa.gov/exposure-assessment-models/tmdl-models-and-tools

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 strengths of using the LDC method are that critical conditions and seasonal variation are considered in the creation of the FDC by plotting hydrologic conditions over the flows measured during the recreation season. Additionally, the LDC methodology is relatively easy to use and cost-effective. The weaknesses of the LDC method are that nonpoint source allocations cannot be assigned to specific sources, and specific source reductions are not quantified. Overall, MPCA believes and EPA concurs that the strengths outweigh the weaknesses for the LDC method.

Implementing the results shown by the LDC requires watershed managers to understand the sources contributing to the water quality impairment and which Best Management Practices (BMPs) may be the most effective for reducing bacteria loads based on flow magnitudes. Different sources will contribute bacteria loads under varying flow conditions. For example, if exceedances are significant during high flow events this would suggest storm events are the cause and implementation efforts can target BMPs that will reduce stormwater runoff and consequently bacteria loading into surface waters. This allows for a more efficient implementation effort.

Bacteria TMDLs for the LQPRW were calculated and those results are found in Table 5 of this Decision Document. The load allocations were calculated after the determination of the WLA, and the Margin of Safety (MOS) (10% of the loading capacity). Load allocations (e.g., stormwater runoff from agricultural land use practices and feedlots, SSTS, wildlife inputs etc.) were not split among individual nonpoint contributors. Instead, load allocations were combined together into a categorical LA (‘Watershed Load’) to cover all nonpoint source contributions.

Table 5 of this Decision Document reports five points (the midpoints of the designated flow regime) on the loading capacity curve. However, it should be understood that the components of the TMDL equation could be illustrated for any point on the entire loading capacity curve. The LDC method can be used to display collected bacteria monitoring data and allows for the estimation of load reductions necessary for attainment of the bacteria water quality standard. Using this method, daily loads were developed based upon the flow in the water body. Loading capacities were determined for the segment for multiple flow regimes. This allows the TMDL to be represented by an allowable daily load across all flow conditions. Table 5 of this Decision Document identifies the loading capacity for the water body at each flow regime. Although there are numeric loads for each flow regime, the LDC is what is being approved for this TMDL.

Table 5: Bacteria (*E. coli*) TMDLs for the Lac qui Parle Watershed are located at the end of this Decision Document.

Table 5 of this Decision Document communicates MPCA's estimates of reductions required for streams impaired due to excessive bacteria. Attaining these reduction percentage estimates under the flow conditions which the reductions are prescribed to will allow the impaired segment to meet their water quality targets. These loading reductions (i.e., the percentage value) were estimated from existing and TMDL load calculations. MPCA expects that these reductions will result in the attainment of the water quality targets and the stream segment's water quality will return to a level where the designated uses are no longer considered impaired.

EPA concurs with the data analysis and LDC approach utilized by MPCA in its calculation of loading capacities, wasteload allocations, load allocations and the margin of safety for the LQPRW bacteria TMDLs. The methods used for determining the TMDL are consistent with EPA technical memos.[2]

LQPRW TSS TMDL: MPCA used the same LDC development strategies as it did for the LQPRW bacteria TMDLs to calculate the loading capacities for the sediment TMDL in the LQPRW. These strategies included incorporating HSPF model simulated flows to develop FDCs and water quality monitoring information collected within the LQPRW informing the LDC. The FDC were transformed into LDC by multiplying individual flow values by the TSS target (65 mg/L) and then multiplying that value by a conversion factor.

A TSS TMDL was calculated (Table 6 of this Decision Document). The load allocation was calculated after the determination of the WLA, and the MOS. Load allocations (e.g., stormwater runoff from agricultural land use practices) was not split among individual nonpoint contributors. Instead, load allocations were combined together into one value to cover all nonpoint source contributions. Table 6 of this Decision Document reports five points (i.e., the midpoints of the designated flow regime) on the loading capacity curve. However, it should be understood that the components of the TMDL equation could be illustrated for any point on the entire loading capacity curve.

The LDC method can be used to display collected sediment monitoring data and allows for the estimation of load reductions necessary for attainment of the TSS water quality standard. Using this method, daily loads were developed based upon the flow in the water body. Loading capacities were determined for each segment for multiple flow regimes. This allows the TMDL to be represented by an allowable daily load across all flow conditions. Table 6 of this Decision Document identifies the loading capacity for each segment at each flow regime. Although there are numeric loads for each flow regime, the LDC is what is being approved for this TMDL.

Table 6: *TSS* TMDL for the Lac qui Parle Watershed is located at the end of this Decision Document.

MPCA estimated load reductions needed for the TSS TMDL to attain the sediment water quality target of 65 mg/L. These loading reductions (i.e., the percentage column) were estimated from existing and TMDL load calculations. MPCA expects that these reductions will result in the attainment of the water quality targets and that water quality will return to a level where the designated uses are no longer considered impaired.

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[2] U.S. Environmental Protection Agency. August 2007. *An Approach for Using Load Duration Curves in the Development of TMDLs*. Office of Water. EPA-841-B-07-006. Washington, D.C.

EPA supports the data analysis and modeling approach utilized by MPCA in its calculation of wasteload allocations, load allocations and the margin of safety for the TSS TMDL. Additionally, EPA concurs with the loading capacities calculated by the MPCA in the TSS TMDL. EPA finds MPCA's approach for calculating the loading capacity for the TSS TMDL to be reasonable and consistent with EPA guidance.

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

4. Load Allocations

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:
MPCA determined the LA calculations for each of the TMDLs based on the applicable WQS. MPCA recognized that LAs for each of the individual TMDLs addressed by the LQPRW TMDLs can be attributed to different nonpoint sources.

LQPRW bacteria TMDLs: The calculated LA values for the bacteria TMDLs are applicable across all flow conditions in the LQPRW (Table 5 of this Decision Document). MPCA identified several nonpoint sources which contribute bacteria loads to the surface waters of the LQPRW, including non-regulated urban stormwater runoff, stormwater from agricultural and feedlot areas, failing septic systems, wildlife (e.g., deer, geese, ducks, raccoons, turkeys, and other animals) and bacteria contributions from upstream subwatersheds. MPCA did not determine individual load allocation values for each of these potential nonpoint source considerations but aggregated the nonpoint sources into one 'watershed load' LA calculation (Table 5 of this Decision Document).

LQPRW TSS TMDL: The calculated LA values for the TSS TMDL are applicable across all flow conditions. MPCA identified several nonpoint sources which contribute sediment loads to the Unnamed Creek (-530) (Table 6 of this Decision Document). Load allocations were recognized as originating from many diverse nonpoint sources including; stormwater contributions from agricultural lands, stream channelization and streambank erosion, wetland and forest sources, and atmospheric deposition. MPCA did not determine individual load allocation values for each of these potential nonpoint source considerations but aggregated the nonpoint sources into one "watershed load" LA calculation (Table 6 of this Decision Document).

EPA finds MPCA's approach for calculating the LA for bacteria and TSS to be reasonable.

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

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.

Comment:
LQPRW bacteria TMDLs: MPCA identified NPDES permitted facilities (Table 3 of this Decision Document) within the LQPRW and assigned those facilities a portion of the WLA (Table 5 of this Decision Document). WLAs for continuous flow facilities (Table 11 of the final TMDL document) were calculated based on the facility's maximum allowable discharge and permitted concentration limits. For those NPDES permitted facilities which are recognized as controlled systems (Tables 10 and 11 of the final TMDL document), the maximum daily flow was based on a six-inch per day discharge from the facility's secondary pond (Section 4.3.3 of the final TMDL document).

MPCA explained that the WLA for each individual WWTP was calculated based on the *E. coli* WQS but WWTF permits are regulated for the fecal coliform WQS (200 orgs /100 mL) 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 from the LQPRW TMDLs. 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 acknowledged the presence of CAFOs in the LQPRW in Section 3.5.1.1 of the final TMDL document. CAFOs and other feedlots are generally not allowed to discharge to waters of the State (Minnesota Rule 7020.2003). 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. Even in the event of a discharge, the discharge cannot cause or contribute to a violation of a WQS. For the LQPRW TMDL, MPCA assigned all NPDES permitted CAFOs a WLA equivalent to zero (WLA = 0). 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.

EPA finds the MPCA's approach for calculating the WLAs for the LQPRW bacteria TMDLs to be reasonable and consistent with EPA guidance.

LQPRW sediment (TSS) TMDL: For the (TSS) TMDL, MPCA calculated a portion of the WLA for construction and industrial stormwater. This WLA was represented as a categorical WLA for construction and industrial stormwater. The WLA for construction stormwater was calculated based on the average percent area (0.1%) of the LQPRW which was covered under a NPDES/SDS Construction Stormwater General Permit during the previous five years (Section 4.4.3 of the final TMDL document). The construction/industrial stormwater WLA was calculated as the percent area (0.1%) multiplied by the loading capacity.

Attaining the construction stormwater and industrial stormwater loads described in the LQPRW (TSS) TMDL is the responsibility of construction and industrial site managers. For example, for the Unnamed creek, (-530) (TSS) TMDL, local permittees are responsible for overseeing that construction and/or industrial stormwater loads which impact water quality in Unnamed Creek do not exceed the WLA assigned to those areas. Local MS4 permittees are required to have a construction stormwater ordinance at least as stringent as the State's NPDES/SDS General Stormwater Permit for Construction Activity (MNR100001). In the final TMDL document MPCA explained that if a construction site owner/operator obtains coverage under the NPDES/SDS General Stormwater Permit (MNR100001) and properly selects, installs and maintains all BMPs required under MNR100001 and applicable local construction stormwater ordinances, 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. BMPs and other stormwater control measures which act to limit the discharge of the pollutant of concern (phosphorus) are defined in MNR100001.

Construction and industrial sites are expected to create SWPPPs which summarize how stormwater pollutant discharges will be minimized from construction and industrial sites. Under the MPCA's Stormwater General Permit (MNR100001) and applicable local construction stormwater ordinances, managers of sites under construction or industrial stormwater permits must review the adequacy of local SWPPPs to ensure that each plan complies with the applicable requirements in the State permits and local ordinances. As noted above, MPCA has explained that meeting the terms of the applicable permits will be consistent with the WLAs set in the TSS TMDL for LQPRW. In the event that the SWPPP does not meet the WLA, the SWPPP will need to be modified within 18-months of the approval of the TMDL by the. EPA. This applies to sites under permits for MNR100001, MNR050000 and MNG490000.

EPA finds the MPCA's approach for calculating the WLA for the LQPRW sediment (TSS) TMDLs to be reasonable and consistent with EPA guidance.

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

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:
The final TMDL submittal outlines the determination of the Margin of Safety for the bacteria and TSS TMDLs.

LQPRW bacteria and sediment TMDLs: The LQPRW bacteria and TSS TMDLs incorporated a 10% explicit MOS applied to the total loading capacity calculation for each flow regime of the LDC. Ten percent of the total loading capacity was reserved for MOS with the remaining load allocated to point and nonpoint sources (Tables 6 and 7 of this Decision Document). MPCA explained that the explicit MOS was set at 10% due to the following factors discovered during TMDL development for these pollutants:

- Uncertainty in simulated flow data from the HSPF model;
- Uncertainty in the observed water quality data;
- Uncertainty with the regrowth, die-off, and natural background levels of *E Coli.*; and
- Uncertainty that water quality data accurately represents conditions in the reach.

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 LQPRW 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 stated 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 or 630 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.

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:

LQPRW bacteria TMDLs: Bacterial loads vary by season, typically reaching higher numbers in the dry summer months when low flows and bacterial growth rates contribute to their abundance and reaching relatively lower values in colder months when bacterial growth rates attenuate and loading events, driven by stormwater runoff events aren't as frequent. Bacterial WQS need to be met between April 1st to October 31st (Class 2) or May 1st to October 31st (Class 7), regardless of the flow condition. The development of the LDCs utilized simulated flow data which were validated and calibrated with local flow gage data. Modeled flow measurements represented a variety of flow conditions from the recreation season. LDCs developed from these modeled flow conditions represented a range of flow conditions within the LQPRW and thereby accounted for seasonal variability over the recreation season.

Critical conditions for *E. coli* loading occur in the dry summer months. This is typically when stream flows are lowest, and bacterial growth rates can be high. It can reasonably be assumed that the loading capacity values will be protective of water quality during the remainder of the calendar year (November through March) if the water quality targets are met during the summer months.

LQPRW (TSS) TMDL: The TSS WQS applies from April to September which is also the time period when high concentrations of sediment are expected in the surface waters of the LQPRW. Sediment loading in the LQPRW varies depending on surface water flow, land cover and climate/season. Spring is typically associated with large flows from snowmelt, the summer is associated with the growing season as well as periodic storm events and receding streamflows, and the fall brings increasing precipitation and rapidly changing agricultural landscapes. In all seasons, sediment inputs to surface waters typically occur primarily through wet weather events. Critical conditions that impact the response of LQPRW water bodies to sediment inputs may typically occur during periods of low flow. During low flow periods, sediment can accumulate within the impacted water bodies, there is less assimilative capacity within the water body, and generally sediment is not transported through the water body at the same rate it is under normal flow conditions.

Critical conditions that impact loading, or the rate that sediment is delivered to the water body, were identified as those periods where large precipitation events coincide with periods of minimal vegetative cover on fields. Large precipitation events and minimally covered land surfaces can lead to large runoff volumes, especially to those areas which drain agricultural fields. The conditions generally occur in the spring and early summer seasons.

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

8. Reasonable Assurance

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.

Comment:
The LQPRW bacteria and TSS TMDLs provide reasonable assurance that actions identified in the implementation section of the final TMDL (i.e., Sections 6 and 8 of the final TMDL document), will be applied to attain the loading capacities and allocations calculated for the impaired reaches within the LQPRW. The recommendations made by MPCA will be successful at improving water quality if the appropriate local groups work to implement these recommendations. Those mitigation suggestions, which fall outside of regulatory authority, will require commitment from state agencies and local stakeholders to carry out the suggested actions.

MPCA has identified several local partners which have expressed interest in working to improve water quality within the LQPRW. Implementation practices will be implemented over the next several years. It is anticipated that staff from Soil and Water Conservation District (SWCDs) (e.g., the Lac qui Parle SWCD) staff, local Minnesota Board of Soil and Water Resources (BWSR) offices, local governments, and other local watershed groups, will work together to reduce pollutant inputs to the LQPRW. MPCA has authored a Lac qui Parle River WRAPS document (July 2021) which provides information on the development of scientifically supported restoration and protection strategies for implementation planning and action. MPCA sees the WRAPS document as a starting point for which MPCA and local partners can develop tools that will help local governments, landowners, and special interest groups determine (1) the best strategies for making improvements and protecting resources that are already in good condition, and (2) focus those strategies in the best locations for work.

County SWCDs, such as the Lac qui Parle SWCD and the Yellow Medicine SWCD, have a history of implementation efforts in the LQPRW. The Lac qui Parle SWCD has been applying conservation practices in areas in the LQPW and providing conservation opportunities to local landowners in order to achieve sound management of natural resources since the 1950s (https://www.lacquiparleswcd.org/). The SWCD employs various programs, such as native grass and tree seed planting programming, costshare opportunities, equipment rentals and other technical services to ensure that efforts are made to improve water quality and conserve water resources in the LQPRW. Other county SWCDs in the LQPRW have similar programming efforts for local citizens and groups to utilize.

In 2020, LQPRW was selected to receive funding to develop the One Watershed, One Plan (1W1P). Drawing upon the data and goals set forth from the WRAPS and TMDL reports, 1W1P will provide a comprehensive watershed management plan to address surface water restoration. A planning team from eight partner agencies began work on the 1W1P in early 2021, and this document will eventually replace the Local Water Management Plan for the Lac qui Parle SWCD (*Lac qui Parle SWCD 2020 Annual Report*, 2020).

The Lac qui Parle- Yellow Bank Watershed district is implementing a variety of projects designed to reduce the impact of various pollutants on surface waters within the LQPRW. Projects range from installing turbidity focused BMPs, bank planting and enhancement, implementing a subsurface sewage treatment system loan program, and enhancing overall water quality. One specific project, aimed at protecting Del Clark Lake and restoring Canby Creek, will work to reduce TSS and runoff that may contribute to bacteria loading. The implementation of three grade control structures will regulate flow to reduce sediment transport beyond Del Clark Lake (*Protecting Del Clark Lake and Canby Creek Grant Workplan*, 2019).

In 2013, the "Lac qui Parle Yellow Bank Bacteria, Turbidity, and Low Dissolved Oxygen TMDL Assessment Report" was completed, containing 19 TMDLs addressing 15 impairments across 8 stream reaches within the LQPRW. In May of 2013, the Environmental Protection Agency (EPA) approved the TMDL report, and MPCA approved an implementation plan in June of 2013. The WRAPS report for Lac qui Parle incorporates both the existing 2013 Lac qui Parle Yellow Bank TMDL as well as the 2021 Lac qui Parle River Watershed TMDL.

Continued water quality monitoring within the basin is supported by MPCA. Additional water quality monitoring results could provide insight into the success or failure of BMP systems designed to reduce bacteria, nutrient and sediment loading into the surface waters of the watershed. Local watershed managers would be able to reflect on the progress of the various pollutant removal strategies and would have the opportunity to change course if observed progress is unsatisfactory.

The MPCA regulates the collection, transportation, storage, processing and disposal of animal manure and other livestock operation wastes at State registered animal feeding operation (AFO) facilities. The MPCA Feedlot Program implements rules governing these activities and provides assistance to counties and the livestock industry. The feedlot rules apply to most aspects of livestock waste management including the location, design, construction, operation and management of feedlots and manure handling facilities.

Reasonable assurance that the WLA set forth will be implemented is provided by regulatory actions. According to 40 CFR 122.44(d)(1)(vii)(B), NPDES permit effluent limits must be consistent with assumptions and requirements of all WLAs in an approved TMDL. MPCA's stormwater program and the NPDES permit program are the implementing programs for ensuring WLA are consistent with the TMDL. The NPDES program requires construction and industrial sites to create SWPPPs which summarize how stormwater will be minimized from construction and industrial sites. Under the

MPCA's Stormwater General Permit, managers of sites under construction or industrial stormwater permits must review the adequacy of local SWPPPs to ensure that each plan meets WLA set in the LQPRW TMDLs. In the event that the SWPPP does not meet the WLA, the SWPPP will need to be modified. This applies to sites under the MPCA's General Stormwater Permit for Construction Activity (MNR100001) and its 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).

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.

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 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 Minnesota Board of Soil and Water Resources also 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 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:
The final TMDL document outlines the water monitoring efforts in the LQPRW (Section 7 of the final TMDL document). Progress of TMDL implementation will be measured through regular monitoring efforts of water quality and total BMPs completed. MPCA anticipates that monitoring will be completed by local groups (e.g., the Lac qui Parle SWCD, Yellow Medicine SWCD, Yellow Bank Watershed District) and volunteers, as long as there is sufficient funding to support the efforts of these local entities. At a minimum, the LQPRW will be monitored once every 10 years as part of the MPCA's Intensive Watershed Monitoring cycle.

Water quality monitoring is a critical component of the adaptive management strategy employed as part of the implementation efforts utilized in the LQPRW. Water quality information will aid watershed managers in understanding how BMP pollutant removal efforts are impacting water quality. Water quality monitoring combined with an annual review of BMP efficiency will provide information on the success or failure of BMP systems designed to reduce pollutant loading into water bodies of the LQPRW. Watershed managers will have the opportunity to reflect on the progress or lack of progress and will have the opportunity to change course if progress is unsatisfactory. Review of BMP efficiency is expected to be completed by the local and county partners.

Stream monitoring:
River and stream monitoring in the LQPRW has been completed by a variety of organizations (i.e., SWCDs) and funded by Clean Water Partnership Grants, and other available local funds. MPCA anticipates that stream monitoring in the LQPRW should continue in order to build on the current water quality dataset and track changes based on implementation progress. Continuing to monitor water quality and biota scores in the listed segments will determine whether or not stream habitat restoration measures are required to bring the watershed into attainment with water quality standards. At a minimum, fish and macroinvertebrate sampling should be conducted by the MPCA, Minnesota Department of Natural Resources (MDNR), or other agencies every five to ten years during the summer season.

The 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:
The findings from the LQPRW TMDLs will be used to inform the selection of implementation activities as part of the Lac qui Parle River WRAPS process. The purpose of the WRAPS report is to support local working groups and jointly develop scientifically supported restoration and protection strategies to be used for subsequent implementation planning.

The TMDL outlined some implementation strategies in Section 8 of the final TMDL document. MPCA outlined the importance of prioritizing areas within the LQPRW, education and outreach efforts with local partners, and partnering with local stakeholders to improve water quality within the watershed. The LQPRW WRAPS document (July 2021) includes additional detail regarding specific recommendations from MPCA to aid in the reduction of bacteria and TSS to surface waters of the LQPRW. The reduction goals for the bacteria and TSS TMDLs may be met via components of the following strategies:

LQPRW bacteria TMDLs:
Pasture management/livestock exclusion plans: Reducing livestock access to stream environments will lower the opportunity for direct transport of bacteria to surface waters. The installation of exclusion fencing near stream and river environments to prevent direct access for livestock, installing alternative water supplies, and installing stream crossings between pastures, would work to reduce the influxes of bacteria and improve water quality within the watershed. Additionally, introducing rotational grazing to increase grass coverage in pastures, and maintaining appropriate numbers of livestock per acre for grazing, can also aid in the reduction of bacteria inputs.

Manure Collection and Storage Practices: Manure has been identified as a source of bacteria. Bacteria can be transported to surface water bodies via stormwater runoff. Bacteria laden water can also leach into groundwater resources. Improved strategies for the collection, storage and management of manure can minimize impacts of bacteria entering the surface and groundwater system. Repairing manure storage facilities or building roofs over manure storage areas may decrease the bacteria count in stormwater runoff.

Manure management plans: Developing manure management plans can ensure that the storage and application rates of manure are appropriate for land conditions. Determining application rates that take into account the crop to be grown on that particular field and soil type will ensure that the correct amount of manure is spread on a field given the conditions. Spreading the correct amount of manure will reduce the availability of bacteria to migrate to surface waters.

Feedlot runoff controls: Treatment of feedlot runoff via diversion structures, holding/storage areas, and stream buffering areas can all reduce the transmission of bacteria to surface water environments. Additionally, cleaner stormwater runoff can be diverted away from feedlots so as to not liberate bacteria.

Subsurface septic treatment systems: Improvements to septic management programs and educational opportunities can reduce the occurrence of septic pollution. Educating the public on proper septic maintenance, finding and eliminating illicit discharges, and repairing failing systems could lessen the impacts of septic derived bacteria inputs into the LQPRW.

Riparian Area Management Practices: Protection of streambanks within the watershed through planting of vegetated/buffer areas with grasses, legumes, shrubs, or trees will mitigate bacteria inputs into surface waters. These areas will filter stormwater runoff before the runoff enters the main stem or tributaries of the LQPRW.

Bioinfiltration of stormwater: Biofiltration practices rely on the transport of stormwater and watershed runoff through a medium such as sand, compost, or soil. This process allows the medium to filter out sediment and therefore sediment-associated bacteria. Biofiltration/bioretention systems, are vegetated and are expected to be most effective when sized to limit overflows and designed to provide the longest flow path from inlet to outlet.

<u>LQPRW TSS TMDL:</u>
Improved Agricultural Drainage Practices: A review of local agricultural drainage networks should be completed to examine how improving drainage ditches and drainage channels could be reorganized to reduce the influx of sediment to the surface waters in the LQPRW. The reorganization of the drainage network could include the installation of drainage ditches or sediment traps to encourage particle settling during high flow events. Additionally, cover cropping, and residue management is recommended to reduce erosion and thus siltation and runoff into streams.

Reducing Livestock Access to Stream Environments: Livestock managers should be encouraged to implement measures to protect riparian areas. Managers should install exclusion fencing near stream environments to prevent direct access to these areas by livestock. Additionally, installing alternative watering locations and stream crossings between pastures may aid in reducing sediments to surface waters.

Identification of Stream, River, and Lakeshore Erosional Areas: An assessment of stream channel, river channel, and lakeshore erosional areas should be completed to evaluate areas where erosion control strategies could be implemented in the LQPRW. Implementation actions (e.g., planting deep-rooted vegetation near water bodies to stabilize streambanks) could be prioritized to target areas which are actively eroding. This strategy could prevent additional sediment inputs into surface waters of the LQPRW and minimize or eliminate degradation of habitat.

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

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 public participation section of the TMDL submittal is found in Section 9 of the final TMDL document. Throughout the development of the LQPRW TMDLs the public was given various opportunities to participate. As part of the strategy to communicate the goals of the TMDL project and to engage with members of the public, MPCA worked with county and SWCD staff from three counties in the LQPRW to promote water quality, to gain input from landowners via surveys and interviews and to better understand the social dynamics of stakeholders in the LQPRW. MPCA's goal was to create civic engagement and discussion which would enhance the content of the TMDL and WRAPS documents. A full description of civic engagement activities associated with the TMDL process is available within Section 3.2 of the LQPRW WRAPS report (MPCA, July 2021).

MPCA posted the draft TMDL online at (http://www.pca.state.mn.us/water/tmdl) for a public comment period. The public comment period started on June 7, 2021 and ended on July 7, 2021. MPCA received no comments during the public notice period.

The EPA finds that the TMDL document submitted by MPCA satisfies the requirements of 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 water body, and the pollutant(s) of concern.

Comment:
The EPA received the final Lac qui Parle River Watershed TMDL document, submittal letter and accompanying documentation from MPCA on August 3rd, 2021. The transmittal letter explicitly stated that the final TMDLs referenced in Table 1 of this Decision Document were being submitted to EPA pursuant to Section 303(d) of the Clean Water Act for EPA review and approval.

The letter clearly stated that this was a final TMDL submittal under Section 303(d) of CWA. The letter also contained the name of the watershed as it appears on Minnesota's 303(d) list, and the causes/pollutants of concern. This TMDL was submitted per the requirements under Section 303(d) of the Clean Water Act and 40 CFR 130.

The EPA finds that the TMDL transmittal letter submitted for the Lac qui Parle River Watershed TMDLs by MPCA satisfies the requirements of this twelfth element.

13. Conclusion

After a full and complete review, the EPA finds that the 8 bacteria TMDLs and the 1 TSS TMDL satisfy all elements for approvable TMDLs. This TMDL approval is for **9 TMDLs**, addressing segments for aquatic recreational, aquatic life, and limite resource value use impairments (Table 1 of this Decision Document).

The EPA's approval of these TMDLs extends to the water bodies which are identified above with the exception of any portions of the water bodies that are within Indian Country, as defined in 18 U.S.C. Section 1151. The EPA is taking no action to approve or disapprove TMDLs for those waters at this time. The EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under the CWA Section 303(d) for those waters.

Table 5: Bacteria (*E. coli*) TMDLs for the Lac qui Parle River Watershed

Allocation	Source	Very High	High	Mid	Low	Very Low
		E. Coli (billions of organisms of bacteria/day)				
TMDL for Lac qui Parle River, Tenmile Cr to Minnesota R (07020003-502)						
Wasteload Allocation	*Canby WWTP*	12	12	12	12	###[1]
	Dawson WWTP	2.2	2.2	2.2	2.2	###[1]
	Hendricks WWTP	12	12	12	12	###[1]
	Madison WWTP	2.3	2.3	2.3	2.3	###[1]
	Marietta WWTP	1.6	1.6	1.6	1.6	###[1]
	PURIS Proteins LLC	12	12	12	12	###[1]
	WLA Totals	42	42	42	42	###[1]
Load Allocation	***LA Totals***	2,842	1,037	253	18	###[2]
Margin of Safety (10%)		321	120	33	6.7	2.7
MN Loading Capacity (TMDL)		3205	1199	328	67	27
Overall Estimated Load reduction for MN lands (%)		**39%**				

Allocation	Source	Very High	High	Mid	Low	Very Low
		E. Coli (billions of organisms of bacteria/day)				
TMDL for Lac qui Parle River, West Branch, Unnamed ditch to Lac qui Parle R (07020003-513)						
Wasteload Allocation	*Dawson WWTP*	2.2	2.2	2.2	2.2	2.2
	Marietta WWTP	1.6	1.6	1.6	1.6	1.6
	WLA Totals	3.8	3.8	3.8	3.8	3.8
Load Allocation	***LA Totals***	876	309	101	26	11
Margin of Safety (10%)		98	35	12	3.3	1.7
MN Loading Capacity (TMDL)		978	348	117	33	17
Estimated Load Reduction for MN lands (%)		**64%**				

Allocation	Source	Very High	High	Mid	Low	Very Low
		E. Coli (billions of organisms of bacteria/day)				
TMDL for Lost Creek, Crow Timber Cr to W Br Lac qui Parle R (07020003-517)						
Wasteload Allocation	***WLA Totals***	0	0	0	0	0
Load Allocation	***LA Totals***	59	15	5.6	1.3	0.44
Margin of Safety (10%)		6.6	1.7	0.62	0.15	0.049
MN Loading Capacity (TMDL)		66	17	6.2	1.5	0.49
Estimated Load reduction for MN lands (%)		**21%**				

Allocation	Source	Very High	High	Mid	Low	Very Low
		E. Coli (billions of organisms of bacteria/day)				
TMDL for Lac qui Parle River, West Branch, MN/SD border to Lost Cr (07020003-519)						
Wasteload Allocation	***WLA Totals***	0	0	0	0	0
Load Allocation	***LA Totals***	39	12	3.6	0.9	0.32
Margin of Safety (10%)		4.3	1.3	0.40	0.10	0.036
MN Loading Capacity (TMDL)		43	13	4	1	0.36
Estimated Load reduction for MN lands (%)		**86%**				

Allocation	Source	Very High	High	Mid	Low	Very Low
		E. Coli (billions of organisms of bacteria/day)				
TMDL for County Ditch 5, T118 R46W S23, north line to W Br Lac qui Parle R (07020003-523)						
Wasteload Allocation	*Marietta WWTP*	1.6	1.6	1.6	1.6	1.6
	WLA Totals	1.6	1.6	1.6	1.6	1.6
Load Allocation	***LA Totals***	497	154	53	13	3.4
Margin of Safety (10%)		55	17	6.1	1.6	0.56
MN Loading Capacity (TMDL)		554	173	61	16	5.6
Estimated Load reduction for MN lands (%)		**44%**				

Allocation	Source	Very High	High	Mid	Low	Very Low
		E. Coli (billions of organisms of bacteria/day)				
TMDL for Unnamed creek, Unnamed cr to Lac qui Parle R (07020003-530)						
Wasteload Allocation	***WLA Totals***	0	0	0	0	0
Load Allocation	***LA Totals***	117	33	8.9	1.3	0.5
Margin of Safety (10%)		13	3.7	0.99	0.15	0.056

MN Loading Capacity (TMDL)		130	37	9.9	1.5	0.56
Estimated Load reduction for MN lands (%)		**85%**				
Allocation	Source	Very High	High	Mid	Low	Very Low
		E. Coli (billions of organisms of bacteria/day)				
TMDL for Unnamed Creek, -96.1517, 44.9533 to W Br Lac qui Parle R (07020003-580)						
Wasteload Allocation	***WLA Totals***	0	0	0	0	0
Load Allocation	***LA Totals***	215	48	13	2.3	1.3
Margin of Safety (10%)		24	5.3	1.40	0.20	0.1
MN Loading Capacity (TMDL)		239	53	14	2.5	1.40
Estimated Load reduction for MN lands (%)		**38%**				
Allocation	Source	Very High	High	Mid	Low	Very Low
		E. Coli (billions of organisms of bacteria/day)				
TMDL for Unnamed ditch (County Ditch 4), Unnamed ditch to CSAH 20 (07020003-581)						
Wasteload Allocation	***WLA Totals***	0	0	0	0	0
Load Allocation	***LA Totals***	247	53	14	2.9	0.85
Margin of Safety (10%)		27	5.9	1.60	0.32	0.09
MN Loading Capacity (TMDL)		274	59	16	3.2	0.94
Estimated Load reduction for MN lands (%)		**61%**				

###1 = The permitted wastewater design flows exceed the streamflow in the indicated flow zone. The allocations are expressed as an equation rather than an absolute number: (flow contribution from source) X (126 org/100 mg/L) X conversion factors. See Section 4.3.3 for details.
###2 = WLA exceeded load capacity for this zone, therefore LA is determined by the formula: Allocation = (flow from a given source) X (126 org/100 mg/L).

Table 6: Total Suspended Solids (TSS) TMDL for the Lac qui Parle River Watershed

Allocation	Source	Very High	High	Mid	Low	Very Low
		Total Suspended Solids (tons/day)				
TMDL for Unnamed Creek, Unnamed cr to Lac qui Parle R (07020003-530)						
Wasteload Allocation	*Constructions/Industrial Stormwater*	0.012	0.004	0.001	0.0002	0.0001
	WLA Totals	0.01	0.004	0.001	0.0002	0.0001
Load Allocation	***LA Totals***	11	3.3	0.90	0.15	0.052
Margin of Safety (10%)		1.2	0.37	0.10	0.017	0.006
MN Loading Capacity (TMDL)		12	3.7	1.0	0.17	0.058
Estimated Load reduction for MN lands (%)		**55%**				