



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

REPLY TO THE ATTENTION OF

August 31, 2020

WW-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 has conducted a complete review of the two final Total Maximum Daily Loads (TMDLs) for the Mississippi River – La Crescent Watershed, located in Houston County, Minnesota. The TMDLs are calculated for Total Suspended Solids and *E. coli* and address impairments to Aquatic Life and Aquatic Recreation designated uses.

EPA has determined that 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 two TMDLs for the Mississippi River – La Crescent Watershed. The statutory and regulatory requirements, and EPA's review of Minnesota's compliance with each requirement, are described in the enclosed decision document.

We wish to acknowledge Minnesota's effort in submitting these TMDLs, and look forward to future submissions by the State of Minnesota. If you have any questions, please contact James Ruppel of the Watersheds and Wetlands Branch at ruppel.james@epa.gov or 312-886-1823.

Sincerely,

Tera L. Fong

Digitally signed by Tera L.
Fong
Date: 2020.08.31
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Tera L. Fong
Division Director, Water Division

Enclosure

cc: Celine Lyman, MPCA

Mississippi River – La Crescent Watershed

Total Maximum Daily Load

EPA Final Review and Decision

August 2020

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.

Language referring to “the TMDL document” in this Decision Document is understood to mean the;

**Mississippi River – La Crescent Area Watershed Total Maximum Daily Load
August 2020**

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

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

Discharge Elimination System (NPDES) permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA’s review of the load and wasteload allocations, which are required by regulation.

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

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

Section 1 Review Comments:

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

Table 1-2 of the TMDL document identifies Pine Creek Assessment Unit ID (AUID) number 07040006-576 as the impaired reach. The Aquatic Recreation designated use is impaired by *E. coli* and the Aquatic Life designated use is identified as having an impairment to the Biological Integrity of the Fish (F-IBI) community related to high concentrations of Total Suspended Solids (TSS).

Table 1-2. Impairments and pollutant/stressors in the Mississippi River - La Crescent Watershed.

Waterbody Name	Reach Description	Stream AUID	Use Class	Year Added to List	Proposed EPA Category	Affected Use	Impaired Waters Listing	Pollutant or Stressor	TMDL Developed in this Report
Pine Creek	T104 RSW S4, north line to Highway 16	(07040006-576)	2Bg, 3C*	2018	4A	Aquatic Recreation	<i>E. coli</i>	<i>E. coli</i>	Yes: <i>E. coli</i>
				2022**	4A	Aquatic Life	Total Suspended Solids (TSS)	Total Suspended Solids (TSS)	Yes: TSS
							Fish Index of Biological Integrity (F-IBI)	Total Suspended Solids (TSS)	
							Habitat	No: non-pollutant stressor	

*Pine Creek is being proposed for a use class change to 2Ag.

**The aquatic life impairment for this reach is expected to be added to the impaired waters list following the 2021/2022 assessment cycle.

Table 1-2 indicates that additional stressors related to temperature and habitat are also contributing to the F-IBI aquatic life use impairment. The Table also notes that Pine Creek is being proposed for a use class change to 2Ag (cold water aquatic biota community), and that the aquatic life impairment for this reach is expected to be added to the impaired waters list following the 2022 assessment cycle. These additional stressors are not addressed as part of this TMDL study. EPA notes that the scope of this decision document is limited to the TMDLs in question and does not constitute a review and approval of a 303(d) listing decision in regards to the temperature or habitat stressors and aquatic life designated use, nor to any future use class changes.

Review Table 1 shows the waterbody and associated impairments as they appear on the draft 2020 Minnesota Inventory of Impaired Waters. The aquatic recreation impairment due to *E. coli* appears on the draft list, however the aquatic life impairment due to TSS does not. Section 1.1 of the TMDL document explains why the aquatic life use impairment is being addressed through this TMDL study at this time.

The aquatic life use assessment for Pine Creek in Houston County proactively used 2A (cold water aquatic biota community) standards due to a proposed use class change of this waterbody from 2B (cool or warm water aquatic biota community). It is expected that the TSS and F-IBI listings will be added to Minnesota’s Section 303(d) impaired waters list no sooner than 2022. Given this pending change in use class designation, this report proactively includes a TMDL for the TSS impacting the fish community in Pine Creek.

[Excerpted from the TMDL document.]

Review Table 1: Water Body on MN Draft 2020 303(d) list.					
AUID	Water body name	Water body description	Use Class	Affected designated use	Pollutant or stressor
07040006-576	Pine Creek	T104 R5W S4, north line to Hwy 16	2Bg, 3C	Aquatic Recreation	Escherichia coli (E.coli)

[The TMDL identifies the priority ranking of the waterbody.](#)

TMDL development prioritization is discussed in Section 1.3 of the TMDL document.

The MPCA’s schedule for TMDL completions, as indicated on Minnesota’s Section 303(d) impaired waters list, reflects Minnesota’s priority ranking of this TMDL. The MPCA has aligned our TMDL priorities with the watershed approach and our WRAPS schedule. The MPCA developed 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 Clean Water Act 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 Mississippi River – La Crescent Area Watershed waters addressed by this TMDL are part of the MPCA prioritization plan to meet EPA’s national measure.
 [Excerpted from the TMDL document.]*

The TMDL clearly identifies the pollutant(s) for which the TMDL is being established.

Section 1 and Table 1-2 of the TMDL document identify the pollutants for which the TMDL is being established as *E. coli* for the Aquatic Recreation impaired use, and TSS for the Aquatic Life / F-IBI impaired use.

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

E. coli concentrations have been monitored and found to be exceeding the established water quality criterion for the Aquatic Recreation Use leading to an impaired Aquatic Recreation designated use.

Table 14 of the [Mississippi River-LaCrescent Stressor Identification Report](#)¹ identifies TSS as a probable stressor contributing to the biological impairment of the fish community in Pine Creek.

Table 14. Summary of probable stressors to impaired biological communities in the Mississippi River LaCrescent Watershed.

Stream Name	AUID	Biological Impairment	Stressors					
			Temperature	Nitrate	TSS	Dissolved Oxygen/Eutrophication	Lack of Habitat	Connectivity/Fish Passage
Pine Creek	576	Fish	●		●		●	

● = probable stressor; ○ = inconclusive stressor; blank = not a stressor

Excerpted from the Mississippi River – LaCrescent Stressor Identification Report, October 2018

EPA notes that in addition to TSS, temperature and lack of habitat are also identified as contributing stressors to the biological impairment of the Pine Creek fish community. This

¹ <https://www.pca.state.mn.us/sites/default/files/wq-ws5-07040006a.pdf>

TSS TMDL addresses the causes of the aquatic life use impairment based upon the available data, and the TMDL can be revised if further information regarding additional pollutants is gathered.

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

Section 3 of the TMDL document mentions a parcel of land within the watershed owned by the Ho-Chunk Nation.

Within the watershed there are 77 undeveloped acres of Tribal Land owned by the Ho-Chunk Nation; this land is adjacent to the impaired section of Pine Creek (Figure 1-1). Because this land is not developed, reductions through BMP implementation on Tribal property are not expected. The MPCA staff contacted the Ho Chunk Nation Division Manager on October 2019, with a briefing of watershed status and an invitation to participate in development activities for the La Crescent WRAPS Report. The MPCA did not receive communication from Tribal staff indicating an intention to participate. [Excerpted from the TMDL document.]

As noted at the end of this Document, this TMDL approval does not apply to Tribal lands.

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

Permitted Sources

Regulated stormwater pollutant sources including MS4s, construction site erosion, and industrial site erosion are discussed in Section 3.5.1.1 of the TMDL document.

MS4s

There are three regulated MS4s in the drainage area to the impaired Pine Creek: La Crescent City (MS400097), Houston County (MS400139), and MnDOT Outstate District (MS400180). All three regulated entities discharge stormwater from a small proportion of the total drainage area of Pine Creek near the confluence with the Mississippi River, and therefore contribute a small fraction of the total TSS and E. coli load to Pine Creek. [Excerpted from the TMDL document.]

Construction stormwater

Construction stormwater is regulated by NPDES permits (MNR100001) for any construction activity disturbing: (a) one acre or more of soil, (b) less than one acre of soil if that activity is part of a "larger common plan of development or sale" that is greater than one acre, or (c) less than one acre of soil, but the MPCA determines that the activity poses a risk to water resources. The WLA for stormwater discharges, from sites where there are construction activities, reflects the number of construction sites greater

*than one acre in size that are expected to be active in the impaired stream subwatershed at any one time.
[Excerpted from the TMDL document.]*

Industrial stormwater

*In October 2019, there were nine industrial stormwater sites in the Mississippi River – La Crescent Area Watershed. Three of these facilities have claimed a no exposure exclusion; meaning that their facility is not exposed to precipitation. Industrial stormwater is regulated by NPDES Permits (MNR050000) if the industrial activity has the potential for significant materials and activities to be exposed to stormwater discharges. The WLA for stormwater discharges from sites where there is industrial activity reflects the number of sites in an impaired stream subwatershed for which NPDES industrial stormwater permit coverage is required.
[Excerpted from the TMDL document.]*

WWTP – Municipal Wastewater Treatment Plants

Section 3.5.1.2 of the TMDL document states that no WWTP discharges to impaired waterbodies in the Mississippi River – La Crescent Watershed.

Non-Point Sources

TSS Non-Point Sources

Section 3.5.2.1 of the TMDL document discusses non-permitted sources of TSS in the watershed.

*Starting in the 1850s, land use changed from forest to predominantly agriculture. Then a shift in agriculture has converted cropped fields to pasture and reforested the uplands (MPCA 2018a, See Section 3.3). A recent geomorphic survey conducted by the DNR indicated that Pine Creek is in a state of accelerated change, where 68% of the stream is unstable (MPCA 2018a). Evaluation of two reaches along Pine Creek resulted in estimated erosion rates of 0.054 tons per year per foot (unstable) and 0.084 tons per year per foot (highly unstable). This instability is resulting in a loss of sinuosity and historic aerial photos show the change overtime (Figure 3-9). These changes to the streambanks are exacerbated by heavy livestock grazing in riparian areas and changes in stream flow (more frequent high flow events). During large rain events, streams carry larger peak flows which destabilize the soil and erode stream banks
[Excerpted from the TMDL document.]*

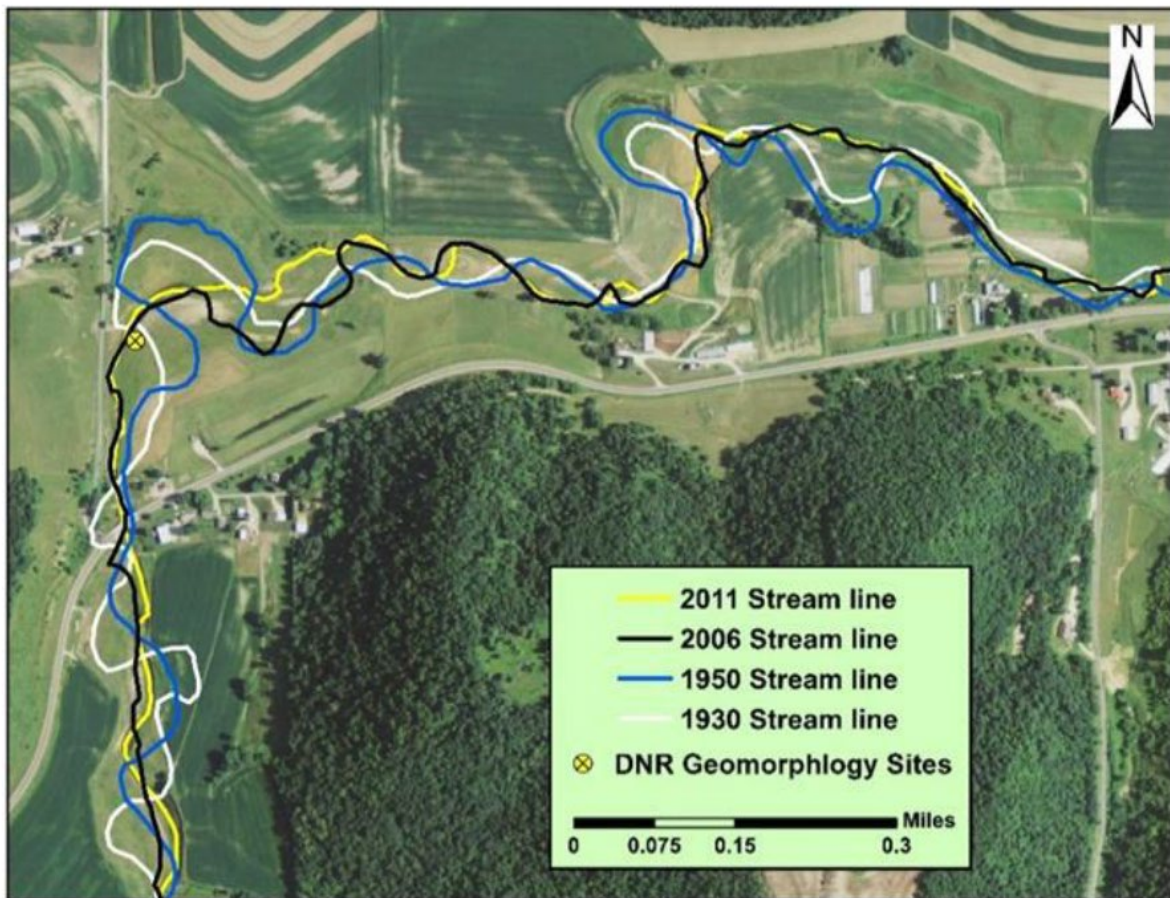


Figure 3-9. Stream centerlines from 1937, 1952, 2006, and 2011 illustrating the lateral movement of the stream overtime and the loss of stream sinuosity (Figure 8 in MPCA 2018b).

Excerpted from the TMDL document

The pattern of land use changes in the watershed has occurred in similar watersheds in the area and has been studied in greater detail.

A more detailed study of the sediment budget in the Root River basin, located south and west of the Mississippi River – La Crescent Area Watershed, and of similar characteristics, identified similar trends in stream channel widening and migration rates (Dogwiler and Kumarasamy 2016). Furthermore, fingerprinting of the sediment load in the Root River indicated that nearly half of the sediment that reaches the mouth of the river was derived from agricultural fields within the past two to four decades. The next largest portion of the sediment load (also nearly half) was derived from stream banks. About 90% of this portion was originally derived from agricultural fields in the past 150 years. Therefore, a large portion of sediment in the stream has moved from its origin to the floodplain and then is further displaced during flood events.

[Excerpted from the TMDL document.]

E. coli Non-Point Sources

Section 3.5.2.2 of the TMDL document discusses non-permitted sources of *E. coli*.

Humans, pets, livestock, and wildlife all contribute bacteria to the environment. These bacteria are dispersed throughout the environment by an array of natural and human-made mechanisms. Bacteria fate and transport is affected by disposal and treatment mechanisms, methods of manure reuse, imperviousness of land surfaces, and natural decay and die-off due to environmental factors such as ultraviolet (UV) exposure and detention time in the landscape.

[Excerpted from the TMDL document.]

The sources and fates of pathogens in the watershed are assumed to be similar to the overall pattern in the Lower Mississippi River Basin. The *Revised Regional TMDL Evaluation of Fecal Coliform Bacteria Impairments in the Lower Mississippi River Basin in Minnesota (MPCA 2006)*² is cited as well as a number of other studies on the relationships between agriculture and stream flow, erosion, and bacteria concentrations.

Several studies have found a strong correlation between livestock grazing and fecal coliform levels in streams running through pastures. Several samples taken in the Grindstone River in the St. Croix River Basin, downstream of cattle observed to be in the stream, were found to contain a geometric mean of 11,000 org/100 ml, with individual samples ranging as high as 110,000 org/100ml. A study of southeastern Minnesota streams by Sovell et al. 2000, found that fecal coliform, as well as turbidity, were consistently higher at continuously grazed sites than at rotationally grazed sites, where cattle exposure to the stream corridor was greatly reduced. This study and several others indicate that sediment-embeddedness, turbidity, and fecal coliform concentrations are positively correlated. Fine sediment particles in the streambed can serve as a substrate harboring fecal coliform bacteria. "Extended survival of fecal bacteria in sediment can obscure the source and extent of fecal contamination in agricultural settings," (Howell et al. 1996).

[Excerpted from the TMDL document.]

Failing Subsurface Septic Treatment Systems (SSTS) were evaluated and determined not to be significant source of fecal pollution to the surface waters because they do not discharge partially treated sewage to the ground surface.

"Failing" SSTSs are specifically defined as systems that are failing to protect groundwater from contamination. Based on County SSTS compliance reports, failing SSTS were not considered a significant source of fecal pollution to surface water

² <https://www.pca.state.mn.us/sites/default/files/wq-iw9-03b.pdf>

because these systems do not discharge partially treated sewage to the ground surface. [Excerpted from the TMDL document.]

A number of other discharge systems that do discharge partially treated sewage to the ground surface are examined for their potential to contribute bacteria. “Straight Pipe” style SSTS are identified as one potential source of *E. coli*, as well as an imminent public health threat, from partially treated sewage.

However, systems which discharge partially treated sewage to the ground surface, road ditches, tile lines, and directly into streams, rivers, and lakes are considered imminent public health threats (IPHT). IPHT systems also include illicit discharges from unsewered communities (sometimes called “straight-pipes”). Straight pipes are illegal and pose an imminent threat to public health as they convey raw sewage from homes and businesses directly to surface water. Community straight pipes are more commonly found in small rural communities.

IPHT data are derived from surveys of county staff and county level SSTS status inventories. Table 3-7 provides the estimated percentage of IPHT septic systems reported by each county in 2016. The number of IPHT within the impaired stream subwatershed was estimated based on county reported IPHT percentages, and the county population estimates from 2010 US Census data area weighted to the portion of the county within the impaired stream drainage area. The percent of IPHT in southeastern Minnesota tend to be higher compared to other areas of Minnesota due to the high porosity of local soils, small lot sizes, and restrictive setbacks which make upgrades unfeasible or cost prohibitive. Many systems in Houston and Winona counties are advanced, mound systems. The City of La Crescent expects to expand its city sanitary sewer system within the near future to accommodate city growth. This expansion may tie in existing private SSTS, resulting in the potential correction of non-compliant systems.

[Excerpted from the TMDL document.]

Table 3-7. Estimate of %IPHT septic systems as reported by each County to MPCA in 2016

County	IPHT (as % of all septics)
Winona	8%
Houston	20%

Excerpted from the TMDL document

Runoff from livestock feedlots, pastures, and manure land application areas are also examined as potential sources of *E. coli*. An analysis of the number of various Animal Units (AUs) in the watershed is shown in Table 3-8 of the TMDL document. The number and distribution of AUs in feedlots in the watershed is shown in Figure 3-10.

*There are 3,398.8 beef cattle, 3,647.0 dairy cattle, 136.1 pigs, 22.5 sheep, and 24 horse AUs registered in the MPCA feedlot database (July 2016) for the Mississippi River - La Crescent Area Watershed (Table 3-8). Very small numbers of chickens, turkeys, and goats are also registered in the watershed. Within the bacteria impaired stream subwatershed, there are an estimated 6,298.83 AUs.
 [Excerpted from the TMDL document.]*

Table 3-8. MPCA registered feedlot animals in the Mississippi River – La Crescent Watershed (July 2016 MPCA Feedlot Database).

Primary Stock	AU	Animals
Beef Cattle - Calf	143.8	719
Beef Cattle - Feeder/heifer	1,078	1,540
Veal calf	6	30
Beef Cattle - Cow & calf pair	420	350
Beef Cattle - Slaughter/Stock	1,751	1751
Total Beef Cattle	3,398.8	4,390
Dairy Cattle - Calf	190.6	953
Dairy Cattle - Heifer	774.2	1,106
Dairy Cattle <1000 lb	88	88
Dairy Cattle >1000 lb	2,594.2	1,853
Total Dairy Cattle	3,647.0	4,000
Swine < 55 lbs	1.5	30
Swine 55-300 lbs	129	430
Swine > 300 lbs	5.6	14
Total Swine	136.1	474
Sheep or lambs	22.5	225
Total Sheep	22.5	225
Horses	24	24
Total Horses	24	24
Chicken (over 5 lbs)	0.6	115
Chicken (under 5 lbs)	0.5	150
Chicken with liquid manure system	0.8	24
Turkey (over 5 lbs)	0.2	10
Total	7230.4	9,412

Excerpted from the TMDL document

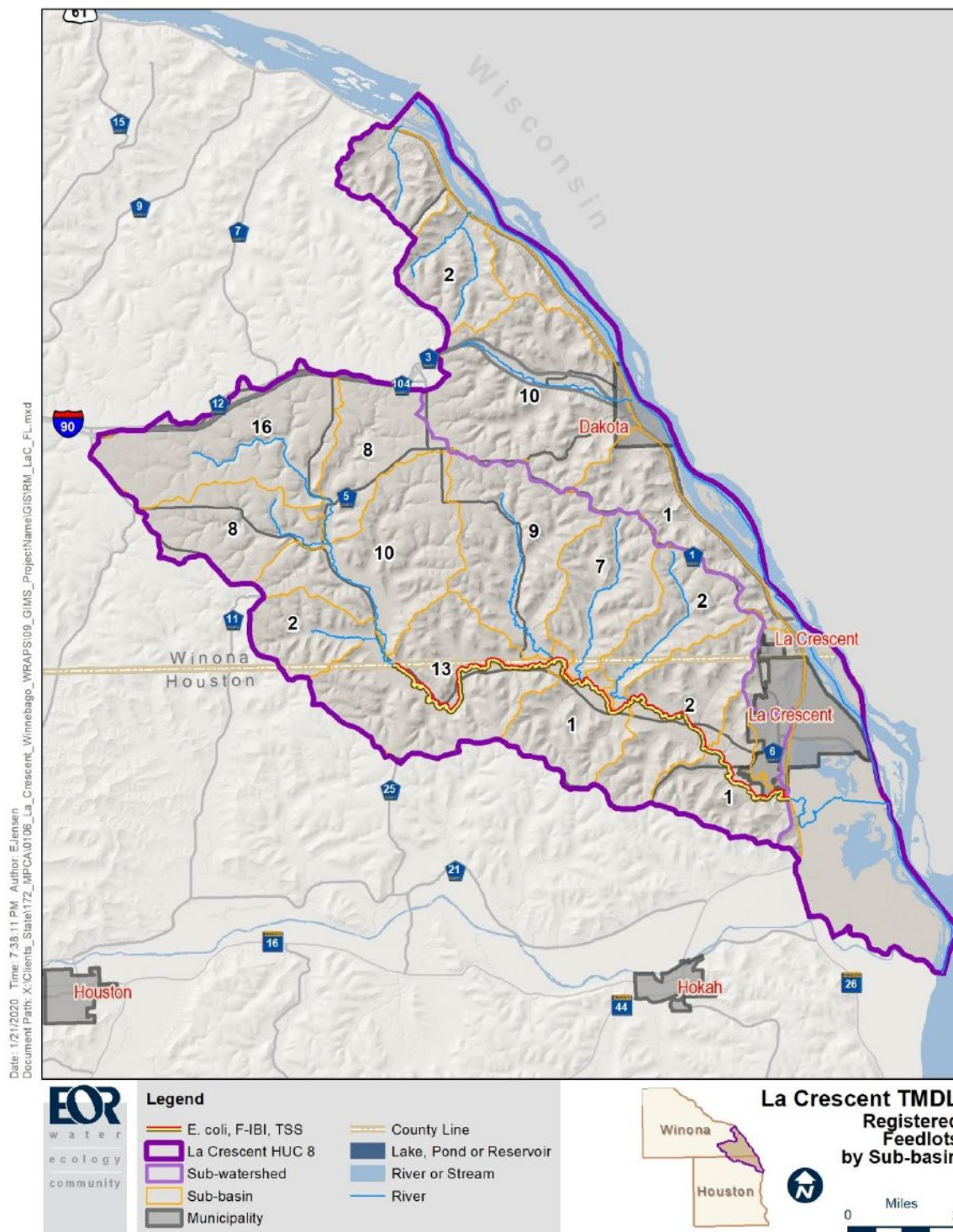


Figure 3-10. Number of registered feedlots by subwatershed.

Excerpted from the TMDL document

Natural growth of *E. coli* in soil and sediment, pet waste, and wildlife are also considered as

potential bacterial contributors. The document notes that although pets and wildlife are considered to be contributors of bacteria, subsequent natural growth of *E. coli* in sediments and soils make it difficult to clearly identify the relative contribution of these and other sources.

Human pets (dogs and cats) can contribute bacteria to a watershed when their waste is not properly managed. When this occurs, bacteria can be introduced to waterways from:

- *Dog parks*
- *Residential yard runoff (spring runoff after winter accumulation)*
- *Rural areas where there are no pet cleanup ordinances*
- *Animal elimination of excrement directly into waterbodies*

[Excerpted from the TMDL document]

Wildlife (e.g., waterfowl and large-game species) also contribute bacteria loads directly by defecating while wading or swimming in the stream, and indirectly by defecating on lands that produce stormwater runoff during precipitation events. Bacteria loads that are contributed by wildlife are generally considered to be natural background. Some BMPs that reduce loads from livestock and other sources can also reduce loads from wildlife. Nearly half of the drainage area to Pine Creek is forested and could provide wildlife habitat encouraging congregation, and could be potential sources of higher fecal coliform due to the high densities of animals. Deer densities in the deer permit area within the Mississippi River - La Crescent River Area Watershed were estimated at 29 deer per square mile in 2017 (DNR 2017). This compares to registered livestock animal densities in watershed of approximately 125 animals per square mile. Waterfowl populations are difficult to obtain for this watershed because it is outside the DNR monitored breeding areas. Because of the watershed's proximity to the Mississippi River and floodplain backwaters, it is likely that large waterfowl congregations occur outside of this watershed. Smaller congregations of ducks and geese are potential sources of fecal coliform within the watershed, particularly in public parks and open spaces.

[Excerpted from the TMDL document.]

After reviewing a number of potential sources of *E. coli* in the watershed, the TMDL document identifies livestock manure as the largest contributor with the other sources playing a lessor role.

The most likely contributor of fecal contamination to Pine Creek is livestock manure, due to the large numbers of AUs in the drainage area and the presence of facilities with livestock access directly to or near Pine Creek. Imminent threat to public health septic systems may also contribute fecal contamination to Pine Creek based on the high percentage of imminent threat to public health systems reported by Houston (20%) and Winona (8%) counties. Pets may contribute fecal contamination to Pine Creek within the city of La Crescent if pet waste is not management properly, but are likely minor contributors of fecal contamination on a watershed scale. The contribution of fecal contamination from wildlife sources and natural growth of E. coli within Pine Creek are unknown, but are likely minor contributors. [Excerpted from the TMDL document.]

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of Section 1.

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

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

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as Dissolved Oxygen (DO) criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

Section 2 Review Comments:

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

The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. If the target is not the

pollutant of concern, the linkage between the surrogate and POC is described.

Applicable water quality standards are discussed in Section 2 of the TMDL document.

All waterbodies have a Designated Use Classification, defined by the MPCA, which defines the optimal purpose for that waterbody (see Table 1-1). The stream addressed by this TMDL study has the current designation use classifications:

2B, 2Bg, 3C – a healthy warm water aquatic community; a warm water aquatic community that can be used for general use; industrial consumption with a high level of treatment

Class 2 waters are protected for aquatic life and aquatic recreation, and Class 3 waters are protected for industrial consumption as defined by Minn. R. ch. 7050.0140. The most protective of these classes is 2B, for which water quality standards are provided below. The Minnesota narrative water quality standard for all Class 2 waters (Minn. R. 7050.0150, subp. 3) states, “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”.

[Excerpted from the TMDL document.]

TSS Water Quality Target

The State notes in Section 2 of the TMDL document that Pine Creek is expected to be reclassified from a warmwater stream to a coldwater stream resulting in a more stringent criterion for TSS.

Pine Creek reach -576 currently has a warmwater (2Bg) designation. Fish, macroinvertebrate and water temperature data support a coldwater (2Ag) designation. The Minnesota Department of Natural Resources (DNR) have recognized that the stream supports coldwater species, but the reach was never changed to coldwater (MPCA 2018a). The MPCA will be proposing a change in use class designation for Pine Creek (07040006-576). This change would reclassify 07040006-576 as a Class 2Ag stream.

[Excerpted from the TMDL document.]

Additional discussion of the applicable TSS water quality criteria is found in Section 2.1.2

of the TMDL document.

The TSS standard for cool or warm water streams (2B) in the Central River Nutrient Region (RNR) is 30 milligrams per liter (mg/L), and the TSS standard for cold water streams (2A) in the Central RNR is 10 mg/L. For assessment, the standard concentration is not to be exceeded in more than 10% of samples within a 10-year data window. TSS results are available for the watershed from state-certified laboratories, and the existing data covers a much larger spatial and temporal scale in the watershed. The TSS LDC and TMDL was developed for Pine Creek (07040006-576) based on the TSS standard for its proposed use class of 2Ag (10 mg/L). There is a proposed use class change from 2B (cool or warm water aquatic biota community) to 2A (cold water aquatic biota community) for Pine Creek (07040006-576). Because this change in use class designation has not been approved, this TMDL proactively addresses TSS.
[Excerpted from the TMDL document.]

The TMDL document is developed by MPCA using a more stringent 10mg/l TSS target to ensure that once the anticipated use classification change occurs, the TMDL developed will be protective of the new use classification. EPA understands that the State intends to be proactive in developing the TMDL for the anticipated use change for Pine Creek reach (07040006-576). A TMDL must meet or exceed the minimum requirements of the States EPA approved WQS, which at present would require only a 30 mg/l TSS target. EPA will review the TMDL at the more stringent 10mg/l TSS target as the State requests. However, EPA notes that once a TMDL for this value is submitted by the State and approved by EPA, the TMDL will apply to the waterbody unless and until it is subsequently revised and resubmitted for EPA review and approval.

E. Coli Water Quality Target

The water quality standards and TMDL targets for *E. coli* are discussed in Section 2.1.1 of the TMDL document.

E. coli concentrations are not to exceed 126 organisms per 100 milliliters as a geometric mean of not less than five samples representative of conditions within any calendar month, nor shall more than 10% of all samples taken during any calendar month individually exceed 1,260 organisms per 100 milliliters. The standard applies only between April 1 and October 31. Most analytical laboratories report E. coli concentrations in units of colony forming units (cfu) per 100 milliliter (mL), which is equivalent to organisms per 100 mL.
[Excerpted from the TMDL document.]

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of Section 2.

Section 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 additionally expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

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

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

Section 3 Review Comments:

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

TSS Load Capacity

The load capacity for TSS is presented in the form of a load duration curve in Figure 4.2 of the TMDL document in units of pounds of TSS per day. Table 4-1 of the TMDL document provides the same information in tabular form with the loading capacity, waste load allocations, load allocations, and margin of safety, shown for each of five flow regimes.

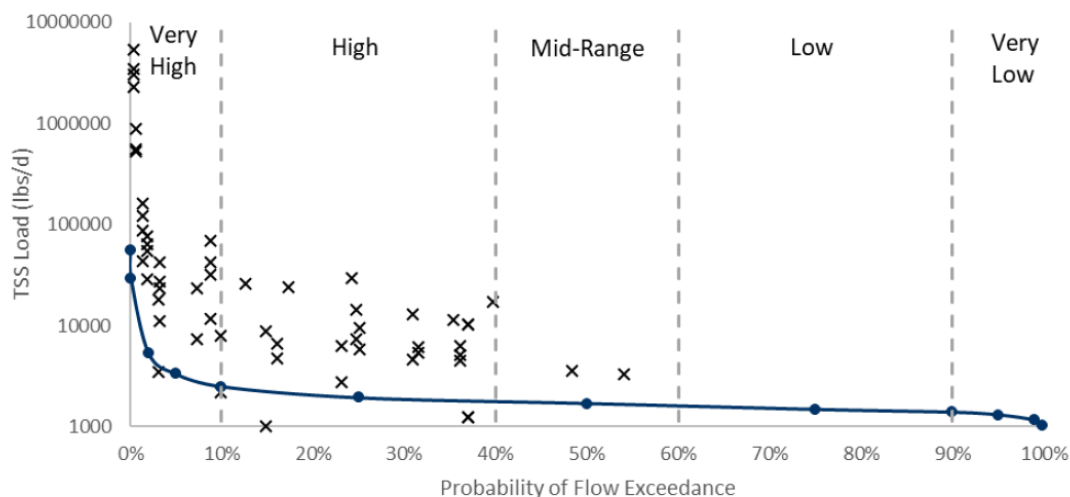


Figure 4-2. TSS load duration curve for Pine Creek (07040006-576) based on a 10 mg/L TSS standard.

Table 4-1. Pine Creek (07040006-576) TSS TMDL and Allocations.

Pine Creek 07040006-576		Flow Regime				
		Very High (cfs)	High (cfs)	Mid (cfs)	Low (cfs)	Very Low (cfs)
		61.3	35.7	31.3	27.4	24.2
Load Component		lbs/day				
Existing Load		41,762.3	8,253.2	5,608.6	4,130.8	NA
	Houston County (MS400139)	4.2	2.5	2.2	1.9	1.7
	MnDOT Outstate District (MS400180)	0.3	0.2	0.15	0.13	0.11
	La Crescent City (MS40097)	42.0	24.5	21.4	18.8	16.6
	Construction stormwater (MNR100001)	9.2	5.3	4.7	4.1	3.6
	Industrial Stormwater (MNG490000)	5.4	3.1	2.7	2.4	2.1
	Total WLA	61.1	35.6	31.15	27.33	24.11
Load Allocations	Watershed runoff	2,253.4	1,312.3	1150.6	1007.2	889.6
	Total LA	2,253.4	1312.3	1150.6	1007.2	889.6
30% MOS		991.9	577.7	506.5	443.4	391.6
Total Loading Capacity		3,306.4	1,925.6	1,688.25	1,477.93	1,305.31

* Based on the median concentration of all monitoring data available for each flow regime from 2008-2017 multiplied by the mid-point flow of each flow regime. See Section 3.4 for a summary of available monitoring data. NA – no water quality grab samples were collected during very low flow conditions.
 Excerpted from the TMDL document

E. coli Load Capacity

The load capacity for *E. coli* is presented in the form of a load duration curve in Figure 4-3 of the TMDL document in units of billions of organisms per day. Table 4-3 of the TMDL document provides the same information in tabular form with the loading capacity, waste load allocations, load allocations, and margin of safety, shown for each of five flow regimes.

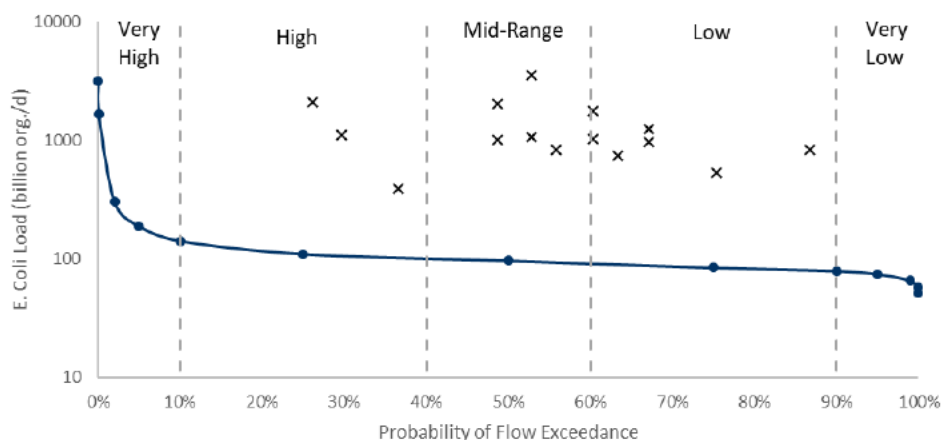


Figure 4-3. *E. coli* load duration curve for Pine Creek (07040006-576).

Table 4-3. Pine Creek (07040006-576) *E. coli* TMDL and Allocations.

Pine Creek 07040006-576		Flow Regime				
		Very High (cfs)	High (cfs)	Mid (cfs)	Low (cfs)	Very Low (cfs)
		61.3	35.7	31.3	27.4	24.2
Load Component		billion org./day				
Existing Load		NA	955	1,448	975	NA
	Houston County MS4 (MS400139)	0.148	0.086	0.075	0.066	0.059
	MnDOT Outstate District (MS400180)	0.010	0.006	0.005	0.004	0.004
	La Crescent City MS4 (MS400097)	1.473	0.857	0.748	0.655	0.585
	Total WLA	1.631	0.949	0.828	0.725	0.648
Load Allocations	Watershed runoff	130.7	76.1	66.4	58.1	51.9
30% MOS		56.7	33.0	28.8	25.2	22.5
Total Loading Capacity		189.031	110.049	96.028	84.025	75.048
Estimated Load Reduction		NA	845	1,352	891	NA
		NA	88%	93%	91%	NA

* Based on the geometric average of all monitoring data available for each flow regime from 2008-2017 multiplied by the mid-point flow of each flow regime. See Section 3.4 for a summary of available monitoring data.

NA – no water quality grab samples were collected during very high or very low flow conditions.

Excerpted from the TMDL document

The TMDL load duration curve is created based on the 126 org/100ml geometric mean chronic *E. coli* WQS standard it is assumed that meeting that value will also address the acute WQS. The EPA notes that both portions of the WQS for *E. coli* are applicable and must be met to demonstrate attainment of WQS.

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

The loading capacities for both the TSS and the *E. coli* TMDLs are established through the development of load duration curves and is discussed in Section 4.2.1 of the TMDL document.

The loading capacities for the impaired reach of Pine Creek were determined using LDCs. Flow and LDCs are used to determine the flow conditions (flow regimes) under which exceedances occur. Flow duration curves provide a visual display of the variation in flow rate for the stream. The x-axis of the plot indicates the percentage of time that a flow in cubic feet per second (cfs) that exceeds the corresponding flow rate as expressed by the y-axis. LDCs take the flow distribution information and factor in pollutant loading to the analysis. A standard curve is developed by applying a particular pollutant standard or criteria to the stream flow duration curve, and is expressed as a load of pollutant per day. The standard curve represents the upper limit of the allowable in-stream pollutant load (LC) at a particular flow. Monitored loads of a pollutant are plotted against this curve to display how they compare to the standard. Monitored values that fall above the curve represent an exceedance of the standard.
[Excerpted from the TMDL document.]

Flow data was estimated for Pine Creek through the use of regression equations developed for the State of Minnesota by the United States Geological survey.

*For the stream TMDL derivation, there were no monitored or modeled flow data available. Instead, regression equations developed for the state of Minnesota by the United States Geological Survey (USGS) were used to develop flow duration curves ranging from 0.01% to 99.99% probability of exceedance in the Mississippi River – La Crescent Area Watershed (Figure 4-1)
[Excerpted from the TMDL document.]*

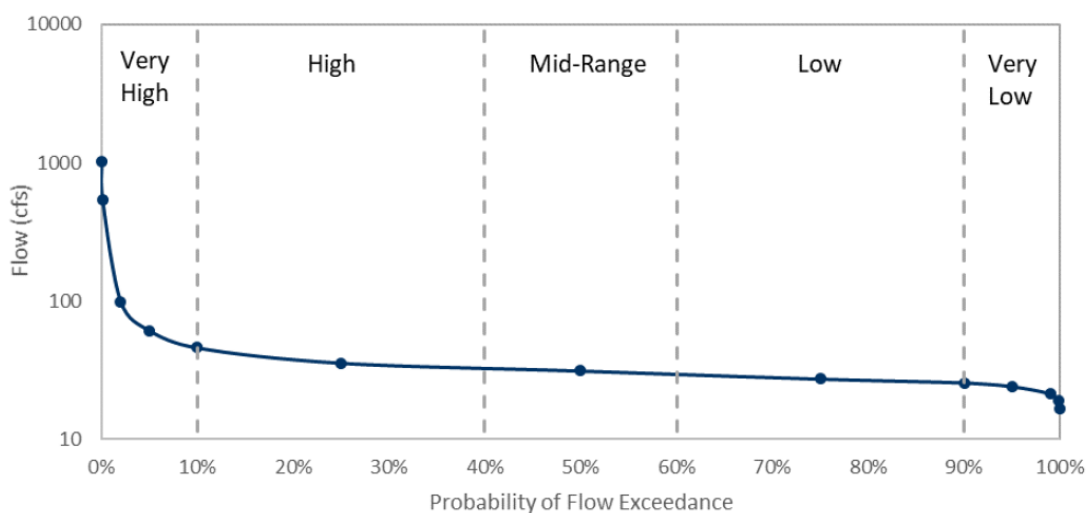


Figure 4-1. Flow duration curve for Pine Creek developed from regression equations (Ziegeweid et al. 2015).
Excerpted from the TMDL document

The critical conditions for meeting WQS are described and accounted for.

Critical conditions are accounted for through the use of load duration curves which directly calculate the loading capacity of the waterbody for all flow conditions. Critical conditions are also addressed directly within the WQS by targeting the criteria for the critical seasons. Section 4.3.3 of the TMDL document discusses how critical conditions are accounted for in the TMDL.

*Critical conditions and seasonal variation are addressed in this TMDL through several mechanisms. The TSS standard applies during the open water months, and data was collected throughout this period. The water quality analysis conducted on these data evaluated variability in flow through the use of five flow regimes: from high flows (such as flood events), to low flows (such as baseflow). Through the use of LDCs and monthly summary figures, TSS loading was evaluated based on estimated flow conditions at the time of sampling (and by month).
[Excerpted from the TMDL document.]*

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of Section 3.

Section 4. Load Allocations (LAs)

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

Section 4 Review Comments

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

Load allocations are discussed in Section 4.2.2 of the TMDL document.

*LAs represent the portion of the LC that is designated for non-NPDES permitted sources of TSS and E. coli (as described in Section 3.5.2 and Section 3.5.2.2 respectively). The remainder of the LC (TMDL) after subtraction of the MOS and calculation of the WLA was used to determine the LA for the impaired stream on an areal basis.
[Excerpted from the TMDL document.]*

TSS load allocations

TSS load allocations are presented in Figure 4-2 and Table 4-1 in units of lbs of TSS per day.

E. coli load allocations

E. coli load allocations are presented in Figure 4-3 and Table 4-3 in units of billions of organisms per day.

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of Section 4.

Section 5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h), 40 C.F.R. §130.2(i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass-based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permittees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

Section 5 Review Comments

The waste load allocations are properly assigned.

TSS Waste Load Allocations

MS4s (TSS)

Three regulated MS4s are provided individual TSS WLAs. The WLAs and associated NPDES permit numbers are presented in Table 4-1 of the TMDL document in units of lbs/day. The WLA for each permittee is based on the percent of the impaired drainage area that is an MS4 regulated area multiplied by the LA, as noted in Section 4.3.1.1 of the TMDL.

NPDES Permitted Wastewater Treatment Plants and Industrial Point Source (TSS)

There are no regulated WWTFs in the Mississippi River – La Crescent Watershed that discharge to the impaired Pine Creek. Therefore, no WLAs are provided for this source.

Construction and Industrial Stormwater Sources (TSS).

The WLAs and associated NPDES permit numbers are presented in Table 4-1 of the TMDL document in units of lbs/day.

Regulated construction stormwater is discussed in Section 4.3.1.2 of the TMLD document.

A categorical WLA was assigned to all construction activity in the impaired stream subwatershed. First, the average annual fraction of the watershed area under construction activity over the past five years, was calculated based on the MPCA Construction Stormwater Permit data from January 1, 2014, to January 1, 2019. This fraction, calculated to be 0.17% of the entire Mississippi River - La Crescent Area Watershed, was multiplied by the LA to determine the construction stormwater WLA. The LA is equal to the total TMDL (LC) minus the MOS.

[Excerpted from the TMDL document.]

Regulated industrial stormwater is discussed in Section 4.3.1.3 of the TMLD document.

A categorical WLA was assigned to all industrial activity in the impaired stream subwatershed. First, the fraction of the watershed area under industrial activities, was calculated based on 2017, FSA aerial imagery of mining activity near industrial permit locations. This fraction, calculated to be 0.26% of the direct drainage area watershed, was multiplied by the LA to determine the industrial stormwater WLA. The LA is equal to the total TMDL (LC) minus the MOS.

[Excerpted from the TMDL document.]

E. coli Waste Load Allocations

MS4s (E. coli)

Three regulated MS4s are provided individual *E. coli* WLAs. The WLAs and associated NPDES permit numbers are presented in Table 4-3 of the TMDL document in units of billions of organisms per day. The WLA for each permittee is based on the percent of the impaired drainage area that is an MS4 regulated area multiplied by the LA, as noted in Section 4.3.1.1 of the TMDL.

NPDES Permitted Wastewater Treatment Plants (E. coli)

There are no regulated WWTFs in the Mississippi River – La Crescent Watershed that

discharge to the impaired Pine Creek. Therefore, no WLAs are provided for this source.

Construction and Industrial Stormwater Sources. (E. coli)

No waste load allocations are provided for construction and industrial stormwater sources.

Regulated construction stormwater is discussed in Section 4.4.1.2 of the TMLD document.

E. coli WLAs for regulated construction stormwater (MNR100001) were not developed since E. coli is not a typical pollutant from construction sites.

[Excerpted from the TMDL document.]

Regulated construction stormwater is discussed in Section 4.4.1.2 of the TMLD document.

There are no E. coli benchmarks associated with the industrial stormwater permit because no industrial sectors regulated under the permit are known to be E. coli sources. Therefore, E. coli TMDLs will not include an industrial stormwater WLA.

[Excerpted from the TMDL document.]

Future capacity needs.

Section 5.2 of the TMDL document discusses how future capacity needs of new or expanding wastewater sources are covered by a joint EPA and MPCA process.

The MPCA, in coordination with the EPA Region 5, has developed a streamlined process for setting or revising WLAs for new or expanding wastewater discharges to waterbodies with an EPA approved TMDL (MPCA 2012). This procedure will be used to update WLAs in approved TMDLs for new or expanding wastewater dischargers whose permitted effluent limits are at or below the instream target and will ensure that the effluent concentrations will not exceed applicable water quality standards or surrogate measures. The process for modifying any and all WLAs will be handled by the MPCA, with input and involvement by the EPA, once a permit request or reissuance is submitted. The overall process will use the permitting public notice process to allow for the public and EPA to comment on the permit changes based on the proposed WLA modification(s). Once any comments or concerns are addressed, and the MPCA determines that the new or expanded wastewater discharge is consistent with the applicable water quality standards, the permit will be issued and any updates to the TMDL WLA(s) will be made. For more information on the overall process, visit the MPCA's TMDL Policy and Guidance webpage.

[Excerpted from the TMDL document.]

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

Section 5.

Section 6. Margin of Safety (MOS)

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

Section 6 Review Comments:

Whether the MOS is expressed explicitly and/or implicitly, a justification must be provided that explains why the MOS chosen is believed to be adequate to account for any uncertainties and errors in the data and calculation of the TMDL.

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

A MOS of 30% is provided for and justified for both TSS and *E. coli* in Section 4.3.2 of the TMDL document.

*An explicit MOS equal to 30% of the LC was used for the stream TMDLs based on the uncertainty in the flow estimates. The flow duration curve is created from regression equations. For most of the flows the standard error of estimate (SEE) for the regression equations developed for southeast Minnesota (Region F) are approximately 30±3% with the SEE increasing for higher flows (Ziegeweid et al. 2015). The allocations are a function of flow, which varies from high to low flows. This variability is accounted for through the development of a TMDL for each of five flow regimes.
[Excerpted from the TMDL document.]*

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of Section 6.

Section 7. Seasonal Variation

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

Section 7 Review Comments:

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

Seasonal variation is addressed through the application of seasonal water quality standards and the development of load duration curves and is discussed in Section 4.4.3 of the TMDL document. Load duration curves establish the loading capacity based directly on concentration and flow.

The stream water quality standards for aquatic recreation applies April through October. E. coli loading varies with the flow regime and season.

Critical conditions and seasonal variation are addressed in this TMDL through several mechanisms. The E. coli standard applies during the recreational period, and data was collected throughout this period. Through the use of LDCs and monthly summary figures, E. coli loading was evaluated at estimated flow conditions at the time of sampling (and by month), and monthly E. coli concentrations were evaluated against precipitation and streamflow.

[Excerpted from the TMDL document.]

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of Section 7.

Section 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.

Section 8 Review Comments:

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

Reasonable assurance that point source load reductions will occur is provided by the State NPDES based permitting programs.

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

The organizations that intend to implement load reductions are identified:

Section 6.1.1 of the TMDL document identifies a number of local stakeholders who have been and are expected to continue to work toward water quality improvements in the watershed.

At the local level, the Winona SWCD, Houston SWCD and Natural Resources Conservation Service (NRCS) currently implement programs that target improving water quality and have been actively involved in projects to improve water quality in the past. [Excerpted from the TMDL document.]

Potential measures to achieve load reductions are identified.

Section 8.2 of the TMDL document discusses in detail a number of potential control measures that can be used to reduce non-point source pollution loads.

Including;

- Riparian buffers (NRCS code 390)
- Livestock access control/fencing (NRCS codes 472 and 382)
- Water and sediment control basins (NRCS code 638)
- Grade stabilization (NRCS code 410)
- Conservation cover (327), conservation/reduced tillage (329 and 345), and cover crops (340)
- Livestock waste storage facilities (NRCS code 313)
- Septic system maintenance and compliance

Section 8.3 provides an in depth discussion of potential outreach and education measures to be used.

A crucial part in the success of restoring impaired streams will be participation from local citizens. In order to gain support from these citizens, education and civic engagement opportunities will be necessary. A variety of educational avenues can and will be used throughout the Mississippi River – La Crescent Area Watershed. These include (but are not limited to):

- *Events, meetings, workshops, focus groups, trainings*
- *Publications*
 - *Annual reports*
 - *County newsletters*
- *Websites*
 - *Winona County SWCD*
 - *Root River SWCD*
 - *Winona County*
 - *Houston County*
 - *City of La Crescent*

Local staff (conservation district, watershed, county, etc.) and board members work to educate the residents of the watersheds about ways to clean up their streams on a regular basis. Education will continue throughout the Mississippi River – La Crescent Area Watershed.

[Excerpted from the TMDL document.]

Potential resource needs for implementation are identified.

Clean Water Legacy Act: The 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 Watershed Restoration and Protection Strategies (WRAPS). The WRAPS are required to contain such elements as the identification of impaired waters, watershed modeling outputs, point and nonpoint sources, load reductions, etc. (Chapter 114D.26; CWLA). The WRAPS also contain an implementation table of strategies and actions that are capable of achieving the needed load reductions, for both point and nonpoint sources (Chapter 114D.26, Subd. 1(8); CWLA). Implementation plans developed for the TMDLs are included in the table, and are

considered “priority areas” under the WRAPS process (Watershed Restoration and Protection Strategy Report Template, MPCA). This Table includes not only needed actions but a timeline for achieving water quality targets, the reductions needed from both point and nonpoint sources, the governmental units responsible, and interim milestones for achieving the actions. MPCA has developed guidance on what is required in the WRAPS (Watershed Restoration and Protection Strategy Report Template, MPCA). The WRAPS document for the Mississippi River – La Crescent was approved by MPCA on August 4, 2020.

Federal conservation funding programs include CRP, Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program (CSP). More information on federal conservation funding in the two counties can be found on the Minnesota’s Board of Soil and Water Resources (BWSR) website.

[Excerpted from the TMDL document.]

Since 2004, over \$4.5 million implementation dollars have been spent addressing water quality issues in the Mississippi River - La Crescent Area Watershed (Figure 6-2).

[Excerpted from the TMDL document.]

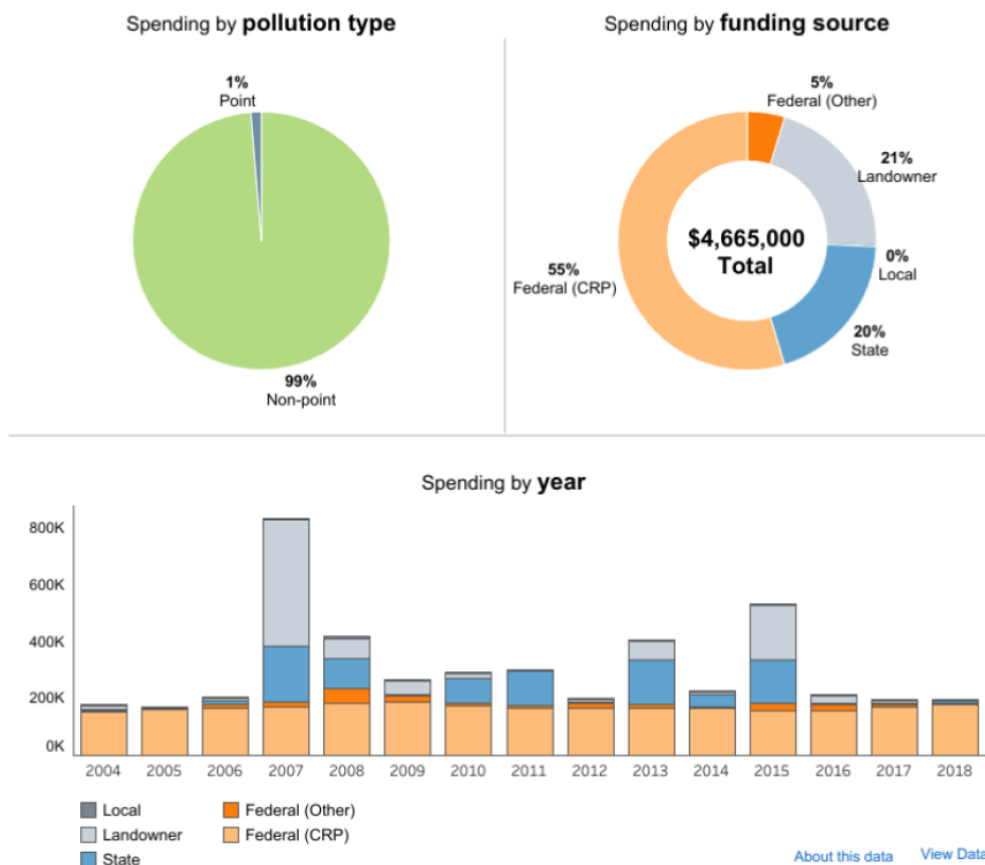


Figure 6-2. Mississippi River - La Crescent Watershed water quality funding by pollution type, funding source, and year. Note that this spending does not include stormwater BMPs that may have already been implemented in the MS4s.

Excerpted from the TMDL document

The estimated costs associated with achieving the load reductions are discussed in Section 8.6 of the TMDL document.

TSS Load Reduction Cost Estimates

Key implementation strategies to reduce TSS loads to Pine Creek include riparian buffers, livestock access control/fencing, WASC OB, conservation cover, conservation/reduced tillage, and cover crops. The FY2020 Minnesota EQIP Payment Schedules for these NRCS practices are listed in Table 8-1. Based on the range of implementation for these practices noted in the MRLC WRAPS, the total cost to address the TSS impairment in Pine Creek is estimated to be \$22M to \$63M dollars. [Excerpted from the TMDL document.]

Table 8-1. FY2020 Minnesota EQIP Payment Schedule for select NRCS practices.

NRCS Code	Practice	Unit	Unit Cost
327	Conservation cover with native species	Ac	\$106.47
329	Residue and tillage management, no till/strip-till	Ac	\$13.82
340	Cover crop – basic (organic and non-organic)	Ac	\$24.02
382	Livestock fencing – multi strand barbed or smooth wire difficult terrain	Ft	\$1.81
390	Riparian herbaceous cover – native species with forgone income	Ac	\$298.74
472	Livestock access control	Ac	\$23.75
638	Water and sediment control basin – berm less than 4 feet tall, grassed	Ft	\$6.59

Excerpted from the TMDL document

E. Coli Load Reduction Cost Estimates

*The initial estimate for implementing the Lower Mississippi River Fecal Coliform TMDL was \$240M; the Mississippi River - La Crescent Area Watershed is approximately 1.3% (95 sq. mi. out of 7,266 sq. mi.) of the basin. Given the regional and ubiquitous nature of pathogen impairments in southeast Minnesota, a 1.3% apportionment of the overall cost (or \$3.14 million dollars) is a reasonable estimate for addressing the issue at the HUC-8 Mississippi River - La Crescent Area Watershed scale.
 [Excerpted from the TMDL document.]*

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of Section 8.

Section 9. Monitoring Plan to Track TMDL Effectiveness

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

Section 9 Review Comments

An effectiveness monitoring plan is provided. (Recommended for all waterbodies, required for waterbodies with both PS and NPS load allocations to ensure load reductions occur.)

Section 7 of the TMDL document includes a discussion on the monitoring measures that will be needed to target the implementation and track the effectiveness of the BMPs needed to implement the load reductions needed to meet the TMDL loads.

The Mississippi River – La Crescent Area Watershed was part of the MPCA IWM effort in 2015-2016. There were eight stream sites monitored for biology (fish and macroinvertebrates) in the watershed. The IWM is a 10-year rotation for monitoring and assessing waters of the state. The strategy utilizes a nested watershed design that allows the aggregation of watersheds from a coarse to a fine scale. More detail about the MPCA IWM strategy can be found in the Upper Iowa River, Mississippi River – Reno, Mississippi River – La Crescent Watersheds Monitoring and Assessment Report. [Excerpted from the TMDL document.]

Further monitoring of groundwater and stream flow is needed in the watershed especially because of the correlation between in-stream flow and sediment in southeast Minnesota (Dogwiler & Kumarasamy 2016; Ellison et al. 2014). [Excerpted from the TMDL document.]

The source sampling can be used to: a) better define the concentrations of the tracers derived from different sources of sediment within the watershed; b) characterize floodplain deposition rates and floodplain/bank tracer concentrations; and c) determine the extent to which groundwater seeps may influence fingerprinting estimates. An example of a completed sediment fingerprinting study from Minnesota is MDA’s Root River Integrated Sediment Budget. [Excerpted from the TMDL document.]

As for E. coli, more research is needed to fully understand the watershed dynamics behind E. coli concentrations in streams. In the revised Regional TMDL Evaluation of Fecal Coliform Bacteria Impairments in the Lower Mississippi River Basin in Minnesota Implementation Plan, several research and development needs were identified including:

- *Sources of fecal coliform in urban areas*
- *The effectiveness of structural and non-structural BMPS in reducing E. coli loads*
- *Models to evaluate loading sources and track fecal coliform load reduction*
- *Source identification techniques with “DNA fingerprinting” and additional*

methods to assess pollutant movement through the watershed from source to surface water.

The next round of IWM (Cycle 2) for the Mississippi River - La Crescent Area Watershed will begin in 2021. Revisiting the watershed before the 10 year interval concluded was done to synchronize sampling years with the neighboring Mississippi River – Winona Area Watershed. Monitoring stations are proposed for Dakota Creek, Miller Valley Creek and Pine Creek. It is recommended during Cycle 2 to prioritize filling data gaps for sites that had insufficient information to complete an assessment. Additional sampling is needed throughout the watershed to identify hot spot sources of TSS and E. coli, and to collect additional monitoring data from waters that did not have sufficient monitoring data for assessment during the first round of IWM.

[Excerpted from the TMDL document.]

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of Section 9.

Section 10. Implementation

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

Section 10 Review Comments

Section 8 of the TMDL document provides a summary of the implementation strategy. EPA reviews but does not approve or disapprove implementation strategies.

The TMDL results and the WRAPS report will support local working groups in developing scientifically supported restoration and protection strategies for subsequent implementation planning. Following completion of the WRAPS process, the Mississippi River – La Crescent WRAPS Report will be publicly available on the MPCA Mississippi River – La Crescent Watershed website:

<https://www.pca.state.mn.us/water/watersheds/mississippi-river-la-crescent>.

[Excerpted from the TMDL document.]

Section 8.2 of the TMDL document provides a number of potential best management practices that can be used to achieve load reductions.

Section 8.3 of the TMDL document discusses the importance and planning and enlisting the support and participation of local citizens in future restoration efforts.

Section 8.4 of the TMDL document discusses potential resources that can provide technical assistance for planning and implementing restoration efforts.

Section 8.5 of the TMDL document discusses partnerships with state and local government organization and NGOs.

Section 8.6 of the TMDL document discusses the potential costs associated with the various BMP practices that may be relied upon to implement the needed load reductions.

Section 8.7 of the TMDL document discusses the adaptive management process that will be relied upon to provide the necessary flexibility needed for implementation planning as efforts move forward.

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

Section 11. Public Participation

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

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

Section 11 Review Comments

TMDL development provided for adequate public participation.

Public Participation Process is described.

Section 9 of the TMDL document discusses the opportunities provided for public participation during the TMDL development. The development process included the formation of a Technical Advisory Committee (TAC) consisting of representatives from Soil and Water Conservation Districts, Counties, nonprofit organizations, and State agencies.

Table 9-1 of the TMDL document provides information on the meetings of the TAC.

Table 9-1. Mississippi River - La Crescent Area Watershed TMDL TAC Meetings.

Date	Location	Meeting Focus
7/23/2019	Winona County Government Center	TMDL and WRAPS Kick-off meeting
12/12/2019	Winona County Government Building	Reviewing draft TMDL and discussing preliminary comments

Excerpted from the TMDL document

Table 9-1 of the TMDL document provides descriptions of additional events held to engage the public in the TMDL development process.

Table 9-2. Mississippi River – La Crescent Area Watershed TMDL Civic Engagement Opportunities.

Date	Event	Description
2016 - 2018	Watershed-wide interviews with local officials & conservation leaders within MRLC Watershed	1. Identify what is working to engage people in water protection; 2. Learn what local leaders need to meet goals; 3. Inform and pave the way for WRAPS development
2017-2019	Connect with Agriculture Retail & Conservation Sectors in southeast Minnesota.	NewGround Inc. staff worked to connect agriculture retailers, crop advisors and conservation staff to build shared work across sectors for nutrient efficiency on southeast Minnesota farms.

Excerpted from the TMDL document

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

An opportunity for public comment on the draft TMDL report was provided via a public notice in the State Register from June 1, 2020 through July 1, 2020. No comment letters were received during the public comment period.

[Excerpted from the TMDL document.]

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of Section 11.

Section 12. Submittal Letter

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

Section 12 Review Comments:

A Submittal Letter is provided requesting formal review.

A submittal letter was received by EPA Region 5 as an attachment to an August 6th email from the Minnesota Pollution Control Agency.

*I am pleased to submit the Total Maximum Daily Load (TMDL) study for impairments of total suspended solids (TSS) and E. coli for the Mississippi River - La Crescent Watershed to the U.S. Environmental Protection Agency (EPA) for final review and approval.
[Excerpted from the TMDL submittal letter.]*

Additional Identifying information was included in the August 6, 2020 transmittal email.

*Thus this TMDL study addresses a bacteria (in the form of E. coli) impairment on Minnesota's 2018 303(d) list of impaired waters, and a TSS stressor of aquatic life and turbidity impairment that are expected to be added to a subsequent impaired waters list. Impairments are impacting one reach of Pine Creek located in Houston County. The waterways of the Mississippi River-La Crescent Watershed drain to the Mississippi River near La Crescent, Minnesota. The **Mississippi River-La Crescent Watershed (HUC 0704006)** is located in southeastern Minnesota in the Lower Mississippi River Basin.
[Excerpted from the transmittal email document sent August 6, 2020]*

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

Section 12.

Section 13: Conclusions

After a full and complete review, EPA finds that the TMDL study satisfies all of the elements of an approvable TMDL. The EPA is approving two TMDLs, one for TSS and one for *E. coli*.

EPA’s approval of this TMDL extends to the water bodies identified in TMDL Review Table 2 with the exception of any portions of the water body that is within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove TMDLs for those waters at this time. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under the CWA Section 303(d) for those waters.

TMDL Review Table 2 - Final Approved TMDLs				
AUID	Affected Use	Waterbody	Location/Reach Description	Pollutant
07040006-576	Aquatic Life	Pine Creek	T104 R5W S4, north line to Highway 16	TSS
07040006-576	Aquatic Recreation	Pine Creek	T104 R5W S4, north line to Highway 16	<i>E. coli</i>



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

August 10, 2020

REPLY TO THE ATTENTION OF:
WW-16J

President Marlon WhiteEagle
Ho-Chunk Nation
P.O. Box 667
Black River Falls, WI 54615

Re: Invitation for Consultation on EPA's Final Review of the Mississippi River – La Crescent Area Watershed Total Maximum Daily Load Report

Dear President WhiteEagle:

The U.S. Environmental Protection Agency is initiating consultation with federally recognized Indian Tribes in the Mississippi River – La Crescent Area Watershed TMDL study area regarding EPA's review and decision on the Minnesota Pollution Control Agency's (MPCA) Mississippi River – La Crescent Area Watershed Total Maximum Daily Load study report. The TMDLs arising from this study report address impairments to aquatic life and aquatic recreation designated uses due to excessive total suspended solids and E. coli bacteria. EPA will review the final TMDL study report to ensure that it is consistent with Section 303(d) of the Clean Water Act and EPA's implementing regulations at 40 C.F.R. Part 130.

The MPCA placed the TMDL study report on public notice from June 1, 2020 to July 1, 2020, and submitted the final TMDL report to EPA on August 6, 2020. Further information about the TMDL study, including a copy of the final TMDL study report, may be found at (<https://www.pca.state.mn.us/water/watersheds/mississippi-river-la-crescent>)

As recently stated in David Ross's memorandum *Policy for the EPA's Review and Action on Clean Water Act Program Submittals*, dated June 3, 2019¹, EPA has a statutory obligation under Section 303(d) of the CWA to make a determination on state submittals, such as these, within 30 days. Therefore, EPA aims to make its decision on the State's submittal by September 4, 2020.

EPA invites you and your designated consultation representative(s) to participate in consultation with EPA regarding EPA's review of the final TMDL study report submitted by the State. Because of the very short time frame available to EPA, we have set aside 9:00 AM to 10:00 AM on August 26, 2020 for a consultation call, which we will use if interest is expressed in consulting in that manner. Please have your representative contact James Ruppel of my staff via email at ruppel.james@epa.gov within 10 days from the date of this letter, to indicate if you

¹ <https://www.epa.gov/wqs-tech/memorandum-policy-epa-review-and-action-clean-water-act-program-submittals>

would or would not like to consult on this issue. Comments may also be provided in writing to James Ruppel via email and must be received by August 21, 2020. If you wish to consult by other means, we will work with you or your designated representatives to generate a timeline and preferred method for our consultation. This consultation would conform with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* and with the *EPA Policy on Consultation and Coordination with Indian Tribes (May 2011)*, available for reference on EPA's tribal consultation and coordination website (<https://www.epa.gov/tribal/forms/consultation-and-coordination-tribes>).

Thank you for your attention to this matter. If your designated representative has questions regarding this consultation process, please contact James Ruppel at 312-886-1823, ruppel.james@epa.gov.

Sincerely,

Tera L. Fong
Division Director, Water Division

cc: Celine Lyman, MPCA
Tribal Water Contact via e-mail



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

REPLY TO ATTENTION OF

WW-16J

August 31, 2020

President Marlon WhiteEagle
Ho-Chunk Nation
P.O. Box 667
Black River Falls, WI 54615

Re: Close out of EPA's tribal consultation invitation and final review of the Mississippi River- Le Crescent Watershed Total Maximum Daily Load (TMDL) Study

Dear President WhiteEagle:

In a August 10, 2020 letter to the Ho-Chunk Nation the U.S. Environmental Protection Agency invited the Ho-Chunk Nation to consult with EPA regarding its review of the Minnesota Pollution Control Agency's (MPCA) Mississippi River – La Crescent Area Watershed TMDL. The TMDLs arising from this TMDL study address impairments to aquatic life and aquatic recreation designated uses due to excessive total suspended solids and *E. coli* bacteria.

In its August 10th tribal consultation invitation letter, EPA requested that the Ho-Chunk Nation communicate with EPA by August 20, 2020 to express its intention regarding the consultation request. EPA did not receive any communication from the Ho-Chunk Nation related to its tribal consultation request. It is EPA's understanding that the Ho-Chunk Nation does not wish to consult with EPA on this review, and EPA is concluding its decision making with respect to the Mississippi River – La Crescent Area Watershed TMDL.

Thank you for your attention to this matter. For questions regarding this consultation process, please contact James Ruppel, at (312) 886-1823 or ruppel.james@epa.gov.

Sincerely,

Tera L. Fong
Division Director, Water Division