REGION 5
CHICAGO, IL 60604

August 11, 2026

Mr. Glenn Skuta
Division Director, Watershed Division
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 Load (TMDL) for the Snake River Watershed TMDL (2026) (SRW), including supporting documentation. The 2026 SRW TMDLs address impaired aquatic recreation use for seven waterbodies due to excessive bacteria. The SRW encompasses parts of Aitkin, Kanabec, Mille Lacs, Pine, Chisago, and Isanti counties, in north-central Minnesota.

The 2026 SRW 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 seven bacteria TMDLs. EPA describes Minnesota's compliance with the statutory and regulatory requirements in the enclosed decision document.

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

Sincerely,

8/11/2026

X

Tera L. Fong
Director, Water Division
Signed by: TERA FONG

Cc: Andrea Plevan, MPCA
Brianna Loeks, MPCA

(Enclosure)

Document Number: wq-iw6-15g

TMDL: Snake River (St Croix) Watershed TMDLs 2026 *E. coli* TMDLs in portions of Aitkin, Kanabec, Mille Lacs, Pine, Chisago, and Isanti counties, East-Central Minnesota
Date: 8/11/2026

Decision Document for the Snake River Watershed (St Croix) Total Maximum Daily Load Report 2026

Section 303(d) of the Clean Water Act (CWA) and the 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 the EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and the 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 the 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 the EPA's TMDL regulations should be resolved in favor of the regulations themselves.

1. Identification of Water body, Pollutant of Concern (POC), 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 POC and the water quality standard (see Section 2 below).

The TMDL submittal should include an identification of the point and nonpoint sources of the POC, 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 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 the 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 POC 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.

The EPA Review of the Snake River TMDL Location, Pollutant, Pollutant Sources, and Priority Ranking

Location Description/Spatial Extent:

The Snake River Watershed (SRW), located in the St. Croix River Basin in East Central Minnesota, covers portions of Aitkin, Kanabec, Mille Lacs, Pine, Chisago, and Isanti counties (Section 1.1 of the final TMDL document). Previous TMDLs have been approved by the EPA within the basin for total suspended solids, fecal coliform, *E. coli,* mercury, and phosphorus. A detailed list of all previously approved TMDLs within the basin along with their approval dates can be found in Table 29 in Appendix B of the final TMDL document. All citations in this Decision Document address the final Snake River Watershed TMDL dated June 2026 unless specifically noted.

The SRW is approximately 1,006 square miles in size (Section 3 of the final TMDL document). The northern part of the watershed is located in the Northern Lakes and Forest Ecoregion and consists mainly of forests and wetlands, while the southern part of the watershed is within the North Central Hardwood Forest ecoregion and consists of a mixture of forest, grassland, pasture/hay and cropland. The Snake River originates in Aitkin County and flows south through Kanabec County, east through Pine County, and discharges into the St. Croix River on the border of Minnesota and Wisconsin (Figure 2 of the final TMDL document).

The SRW TMDL developed by the Minnesota Pollutant Control Agency (MPCA) addresses seven river segments with impaired aquatic recreation designated uses due to excessive bacteria. Table 1 of this Decision Document provides additional details about the waterbodies and associated impairments. All seven of the waterbodies addressed by this TMDL document have impaired Aquatic Recreation (AQR) Designated Uses for which the pollutant of concern is *E. coli*.

Table 1. Impaired water bodies in the Snake River Watershed addressed in this TMDL report.

WID	Water body name	Water body description	Use class	Listing year	Affected designated use	Tmdl Pollutant	Category 4A upon TMDL approval [a]
07030004-549	Knife River	Dry Run to Knife Lake	2Bg	2020	Aquatic recreation	*E. coli*	Y
07030004-558	Snowshoe Brook	Unnamed creek to Snake River	2Bg	2020	Aquatic recreation	*E. coli*	Y
07030004-560	Bean Brook	Unnamed wetland to Knife River	2Bg	2020	Aquatic recreation	*E. coli*	Y
07030004-572	Camp Creek	Unnamed creek to Ann Lake	2Bg	2020	Aquatic recreation	*E. coli*	Y
07030004-629	Unnamed creek	Headwaters to Snake River	2Bg	2020	Aquatic recreation	*E. coli*	Y
07030004-598	Unnamed creek	Headwaters to Ann Lake	2Bg	2020	Aquatic recreation	*E. coli*	Y
07030004-577	Unnamed creek	Headwaters to Cross Lake	2Bg	2010	Aquatic recreation	*E. coli*	Y

a. Impairment will be categorized as 4A (impaired and a TMDL study has been approved by EPA) upon approval of this TMDL and will appear as 4A in the next impaired waters list.

Tribal Lands:

Section 1.3 of the SRW final TMDL Document explains that the watershed includes portions of the traditional homelands of the Anishinaabe (Chippewa, Ojibwe) and Dakota tribes, including a portion of the Mille Lacs Band of Ojibwe Reservation. Minnesota does not have jurisdiction over lands of federally recognized Native American Tribes. Impacts from Tribal lands is accounted for as a boundary condition to the Knife River reach -549. The TMDL does not allocate any loads to Tribal lands or sources.

Land Use:

In Section 3.3 of the final TMDL document, MPCA noted that the northwest corner of the SRW remains largely forested with human influence increasing toward the southeast corner, including hay pasture, cultivated crops, and medium intensity development. Impervious surfaces constitute only 0.61% of the SRW surface area. A significant portion of the waterways have been altered (35.3%), however, a still greater proportion of the waterways remain in a natural state (48.7%). Table 2 of this Decision Document (Table 4 of the SRW TMDL document) provides additional detail about the land use characteristics of the individual impaired subwatersheds within the SRW basin.

Table 2. Land use/cover within impaired subwatersheds

WID	Stream Name	Land Use/Land Cover Percentage of Drainage Area [%]					
		Water/ Wetland	Forest/ Shrub	Pasture/ Hay	Cropland	Barren/ Mining	Developed
07030004-549	Knife River	12.6%	68.3%	13.3%	2.1%	0.2%	2.9%
07030004-558	Snowshoe Brook	10.2%	64.2%	20.7%	1.1%	<0.1%	3.3%
07030004-560	Bean Brook	14.8%	71.1%	9.9%	0.6%	<0.1%	3.1%
07030004-572	Camp Creek	10.1%	82.6%	5.3%	0.1%	<0.1%	1.7%
07030004-629	Unnamed Creek	11.0%	23.0%	40.2%	18.3%	<0.1%	7.0%
07030004-598	Unnamed Creek	8.9%	36.4%	36.9%	12.1%	<0.1%	5.7%
07030004-577	Unnamed Creek	17.8%	33.6%	25.6%	17.5%	<0.1%	4.9%

Problem Identification:

The impaired segments identified in Table 1 of this Decision Document are included on the final 2024 Minnesota 303(d) list as impaired for the aquatic recreational use due to *E. coli*. Water quality monitoring within the impaired assessment units shows numerous exceedances of the *E. coli* Water Quality Standards (WQS) criteria. Excessive *E. coli* can negatively impact recreational uses (e.g., swimming, wading, boating, fishing etc.) and public health. At elevated levels, *E. coli* may cause illness within humans who have contact with or ingest *E. coli* laden water. Recreation-based contact can lead to ear, nose, and throat infections, and stomach illness.

Priority Ranking:

The MPCA's schedule for TMDL completions, as indicated on the 303(d) impaired waters list, reflect Minnesota's priority ranking of these TMDLs. The 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 under the 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 2032. The waters of the SRW addressed by this TMDL are part of the MPCA prioritization plan to meet the EPA's national goals and are identified for TMDL development between 2024 and 2026 on the 2024 303(d) list.

Pollutant of Concern:

The pollutant addressed by these TMDLs is *E. coli* bacteria. TMDL targets are expressed as billions of *E. coli* organisms per day.

Identification of Point Sources of E. coil:

NPDES permitted facility E. coli sources:

The final TMDL document, in Section 3.5.1, identifies two NPDES permitted facilities that contribute *E. coli* loads to the Knife River through discharges of treated wastewater. These facilities are the Wahkon and Isle wastewater treatment plants, located within the Mille Lacs Band of Ojibwe Reservation boundaries. The facilities operate under MPCA-issued NPDES permits and discharge upstream of the Knife River (-549). These facilities were considered part of the "background load" in the TMDL calculations. As these facilities are located in the Mille Lacs Band of Ojibwe Reservation boundaries, no wasteload allocations were assigned or approved for the facilities.

Municipal Separate Storm Sewer System (MS4s):

MPCA did not identify any permitted MS4 communities in the final TMDL document.

Stormwater runoff POC Sources from Permitted Construction and Industrial areas:

MPCA did not identify construction and industrial stormwater as sources of *E. coli* within the SRW TMDL basin.

Concentrated Animal Feedlot Operations (CAFOs):

MPCA did not identify any CAFOs in the SRW TMDL in the final TMDL document.

E. coli Nonpoint Source Identification:

The potential nonpoint sources of *E. coli* to the SRW identified by MPCA are watershed runoff (including nonpermitted feedlots), sewage treatment wastewater, and natural background sources (Section 3.5 of the final TMDL document).

Watershed Runoff:

MPCA identified stormwater from agricultural land use practices and feedlots/pastures near surface waters as potential sources of bacteria in the SRW. 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. Feedlots generate manure which may be spread onto fields. Pasture is the predominant land use in two of the impaired reaches, and the second most dominant in two others. Figure 11 of the final TMDL document provides a map showing the location and size of registered feedlots within the SRW.

Discharges of E. coli from Subsurface Sewage Treatment Systems (SSTS) or unsewered communities:
Failing septic systems (SSTS) were identified by MPCA as a potential source of bacteria within the SRW (Section 3.5.2.4 of the final TMDL document). SSTSs generally do not discharge directly into a waterbody, but effluents from SSTSs 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. Estimates of SSTS failure rates in the counties in the SRW range from 4% to 20%, and ITPHS rates range from 0% to 7%.

***Wildlife sources of E. coli*:**
Wildlife is a known source of bacteria in water bodies as many animals spend time in or around water. 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. MPCA does not consider wildlife *E. coli* sources to be a major driver of impairment to the impaired reaches of the SRW.

Future Growth:
Over the next 30 years, the populations in three of the counties in the SRW are expected to increase (Chisago, Isanti, Mille Lacs), two counties are expected to remain largely stable (Aitkin, Kanabec), and one county is expected to decrease (Pine). The SRW TMDL does not include an allocation for a reserve capacity for future sources of *E. coli*. Additional discussion on how new or expanded MS4 and/or NPDES *E. coli* sources will be dealt with is discussed in Section 5 of the final TMDL document.

Microbial Source Tracking (MST):
DNA of *E. coli* were collected and analyzed to determine the source of the animal species from which they originated. Knowledge of the contributions of different types of *E. coli* source types is useful information when further investigating the sources of the *E. coli* and designing pollutant source reduction programs.

MPCA conducted MST sampling and analysis within the SRW to identify and categorize *E. coli* sources from 5 different categories of sources, including human, bovine, porcine (pigs), beaver, and goose. As explained by MPCA, the MST only documents the presence of the source type; the sampling does not identify the relative abundance of the source.

A discussion of the results is presented in Section 3.5.3 of the final TMDL document. Human sources were consistently the most common, being detected at all 14 sampling locations in June and 6 of the 14 sampling locations in August. Bovine sources were the second most common being detected at 7 of the 14 sampling locations in June, and 5 of the 14 locations in August. Table 10 of the final TMDL document provides a summary of the MST results, and Figure 12 of the final TMDL document provides a map of the MST sampling locations. MPCA noted that these results were not used to develop *E. coli* allocations, but to provide additional information for assessing bacteria sources and targeting implementation efforts.

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

2. Description of the Applicable WQSs 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)). The 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 POC 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 POC and the attainment of the numeric water quality target. Occasionally, the POC is different from the pollutant that is the subject of the numeric water quality target (e.g., when the POC 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 POC and the chosen numeric water quality target.

The EPA Review of the Snake River TMDL Water Quality Standards Linkage:

Designated Uses of the Impaired Waterbodies:

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), the 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 SRW TMDLs are designated as Class 2 waters for aquatic recreation use (bacteria). The Class 2 designated use is described in Minnesota Rule 7050.0140:

"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." (Class 2)

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

Narrative WQS Criteria:

Minnesota Rule 7050.0150 (3) sets 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."

Numeric WQS Criteria:

The seven impaired waterbodies addressed by this TMDL are all Class 2 waterbodies. The numerical water quality *E. coli* criterion the impaired waters are provided in Table 3 of this Decision Document.

Table 3. Water quality standards for *E. coli* in the SRW TMDL

Parameter	Water body type	Water quality standard	Numeric standard
E. coli	Class 2 (A and B) streams	Not to exceed 126 organisms per 100 milliliters (org/100 mL) 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 org/100 mL. The standard applies only between April 1 and October 31.	≤ 126 organisms/100 mL water (monthly geometric mean) ≤ 1,260 organisms/100 mL water (individual sample)

E. coli TMDL Targets:

The *E. coli* TMDL targets employed by MPCA for the SRW bacteria TMDLs are the *E. coli* numerical WQS criterion for Class 2 waterbodies shown in Table 2 of this Decision Document and applicable from April 1 to October 31. The focus of the MPCA TMDL is on the 126 organisms per 100 mL (126 orgs/100 mL) geometric mean portion of the standard (Section 2.4 of the final TMDL document). The MPCA determined that using the 126 orgs/100 mL portion of the standard for TMDL calculations will result in

the greatest bacteria reductions within the SRW and will result in the attainment of the 1,260 orgs/100 mL portion of the standard. While the *E. coli* TMDLs will focus on the geometric mean portion of the water quality standard, attainment of both parts of the water quality standard is required.

The EPA finds that the final TMDL document submitted by the MPCA satisfies the requirements of the first 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. The EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating WQS (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. The 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.

The EPA Review of the Snake River Watershed TMDL Pollutant Loading Capacities:

The MPCA used the geometric mean (126 orgs/100 mL) of the *E. coli* water quality standard to calculate loading capacity values for the *E. coli* TMDLs. The MPCA believes the geometric mean of the WQS provides the best overall characterization of the status of the watershed. The 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."* The MPCA stated that the *E. coli* TMDLs will focus on the geometric mean portion of the water quality standard (126 orgs/100 mL) and that it expects that by attaining the 126 orgs/100 mL portion of

the *E. coli* WQS the 1,260 orgs/100 mL portion of the *E. coli* WQS will also be attained. The 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 SRW *E. coli* TMDLs, the MPCA used Minnesota's WQS for *E. coli* (126 orgs/100 mL). A loading capacity is, "the greatest amount of loading that a water can receive without violating WQS." (40 CFR §130.2). Therefore, a loading capacity set at the WQS will ensure that the water does not violate WQS. The 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.

A separate flow duration curve (FDC) was created for each *E. coli* TMDL in the SRW. The SRW FDCs are developed using flow data generated from Hydrologic Simulation Program-Fortran (HSPF) modeling efforts at the outlet of the impaired reach. The model conditions were compared to the U.S. Geological Survey (USGS) Gages 05338500 and 05337400 in the Snake River Watershed, and USGS Gage 05336700 in the Kettle River Watershed. The Snake River HSPF model was calibrated for years 2002 to 2009 and validated between years 1995 and 2001.

The HSPF model 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 SRW.

Simulated daily average flows from the HSPF model developed for the SRW were used in developing the *E. coli* stream FDC TMDLs. HSPF hydrologic models were developed to simulate daily average flows from 2002 through 2018 within the SRW. Daily stream flows were necessary to implement the load duration curve (LDC) approach. FDCs were developed for each impaired reach addressed in the final TMDL document using simulated flows. Flows were simulated for all dates within the time period and not restricted to those within the time period that the *E. coli* WQS is in effect. If the impaired waterbody was not the outpoint/pourpoint of the simulated catchment, flow data from a similar reach and an area-weighted approach was used to estimate the flow data for the impaired reach.

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 was transformed into a LDC by multiplying individual flow values by the WQS (126 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 SRW *E. coli* TMDLs, have flow duration interval (percentage of time flow exceeded) on the X-axis and *E. coli* loads (number of *E. coli* per unit time) on the Y-axis. The SRW LDCs use *E. coli* measurements in billions

[1] HSPF User's Manual - https://water.usgs.gov/software/HSPF/

of *E. coli* per day. The curved line on a LDC graph represents the TMDL of the respective flow conditions observed at that location.

E. coli concentrations from monitoring data within the SRW 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 graph as the LDCs. LDCs for the seven impaired reaches are included in Appendix A of the final TMDL document.

The LDC plots are 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, the MPCA believes and the EPA concurs that the strengths outweigh the weaknesses for the LDC method.

Implementing the results shown by the LDCs 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 *E. coli* loads based on flow magnitudes. Different sources will contribute *E. coli* 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 *E. coli* loading into surface waters. This allows for a more efficient implementation effort.

The *E. coli* TMDLs for the SRW were calculated and those results are found in Attachment 1 of this Decision Document. The load allocation was 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 Total LA to cover all nonpoint source contributions.

As noted in Section 1 of this Decision Document (***Tribal Lands***), a portion of the Knife River subwatershed (-549) is within the Mille Lacs Band of Oneida reservation lands, and not subject to this

TMDL action. To account for the downstream flow of water/runoff from Tribal lands, MPCA calculated the load from Tribal lands as a "boundary condition" (BC) (Section 4.2 of the final TMDL document). This BC load was calculated by MPCA by areal extent of the Tribal lands in the Knife River subwatershed and subtracting that load from the overall TMDL load for the Knife River. Table 4 of Attachment 1 of this Decision Document highlights the BA for the Knife River. The EPA reiterates that this is not an approved load for the Tribal lands, but rather accounts for runoff from Tribal lands.

The TMDL Tables in Attachment 1 of this Decision Document report 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 *E. coli* monitoring data and allows for the estimation of load reductions necessary for attainment of the *E. coli* 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. The TMDL Tables in Attachment 1 of this Decision Document identify the loading capacity for the water bodies at the midpoint of each flow regime. Although there are numeric loads for each flow regime, the LDC is what is being approved for this TMDL.

Tables 4-10: Bacteria (*E. coli*) TMDLs for waters in the Snake River Watershed are located at the end of this Decision Document in Attachment 1

The TMDL summary tables in Attachment 1 of this Decision Document communicate the MPCA's estimate of reductions required for streams impaired due to excessive *E. coli*. Attaining these reduction percentage estimates under the flow conditions which the reductions are prescribed will allow the impaired segment to meet their water quality targets. This loading reduction (i.e., the percentage column) was estimated from existing *E coli* concentration and TMDL load calculations. The MPCA expects that this reduction 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.

The EPA concurs with the data analysis and LDC approach utilized by the MPCA in its calculations of loading capacities, wasteload allocations, load allocations and the margins of safety for the SRW *E. coli* TMDLs. The methods used for determining the TMDL are consistent with the EPA's technical memos.[2]

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

[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.

4. Load Allocations (LA)

The 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.

The EPA Review of the Snake River Watershed TMDL Load Allocations:

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

The calculated LA values for the *E. coli* TMDL are applicable across all flow conditions in the impaired reaches represented by the LDCs in Appendix A of the final TMDL document and Tables 4-10 in Attachment 1 of this Decision Document. The MPCA identified several categories of nonpoint sources which contribute *E. coli* loads to the surface waters of the SRW, including stormwater from agricultural and feedlot areas, failing septic systems, and wildlife. The MPCA did not determine load allocation values for each of these potential nonpoint source considerations but aggregated the nonpoint sources into one "watershed load" LA calculation.

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

5. Wasteload Allocations (WLAs)

The 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.

The EPA Review of the Snake River Watershed TMDL Waste Load Allocations:

NPDES permitted facilities

MPCA did not identify any NPDES-permitted discharges in the Minnesota portion of the TMDL watershed. In Section 3.5.2 of the final TMDL document, MPCA identifies two NPDES-permitted facilities that contribute *E. coli* loads to the Knife River through discharges of treated wastewater. These facilities are the Wahkon and Isle wastewater treatment plants, located within the Mille Lacs Band of Ojibwe Reservation boundaries. The facilities operate under MPCA-issued NPDES permits and discharge upstream of the Knife River (-549). These facilities were considered part of the "background

load" in the TMDL calculations. As these facilities are located in the Mille Lacs Band of Ojibwe Reservation boundaries, no wasteload allocations were assigned or approved for the facilities.

CAFOs

The MPCA states in Sections 3.5.1 of the final TMDL document that there are no NPDES permitted animal feedlots (CAFOs) in the impaired watersheds addressed by this TMDL.

Construction and industrial stormwater:

MPCA did not identify any permitted construction or industrial stormwater dischargers in the SRW TMDL watersheds. Therefore, no WLAs were developed (Section 6.1 of the final TMDL document).

MS4s:

MPCA stated that there are no MS4 dischargers located within the SRW TMDL watersheds (Section 6.1 of the final TMDL document).

The EPA finds the MPCA's approach for calculating the WLAs for the SRW bacteria TMDL to be reasonable and consistent with the EPA's guidance.

6. Margin of Safety (MOS)

The Clean Water Act, § 303(d)(1)(c), and 40 C.F.R. 130.7 (c)(1) require that a TMDL include a margin of safety (MOS) "which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." The 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. The MOS may include both explicit and implicit components.

The EPA Review of the Snake River Watershed TMDL MOS:

Section 4.5 of the final TMDL document discusses the determination of the MOS. The MOS for each reach is found in Tables 4-10 of Attachment 1 of this Decision Document.

The SRW *E. coli* TMDL incorporates a 10% explicit MOS applied to the total loading capacity calculation for each flow regime of the LDC for each of the seven *E. coli* TMDLs. The 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
- Environmental variability in pollutant loading and water quality data (i.e., collected water quality monitoring data, field sampling error, etc.)
- Calibration and validation processes of the LDC modeling efforts
- Uncertainty in modeling outputs
- Limitations associated with the drainage area-ratio method used to extrapolate flow data

MPCA explained that the initial HSPF model (2014) was revised in 2020 to include additional data and further refine the flow conditions in the TMDL watersheds. The model output was compared to two flow gages in nearby watersheds, and the results indicate the HSPF model is a valid representation of the hydrologic conditions int eh watersheds (Section 4.5 of the final TMDL document).

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

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)).

The EPA Review of the Snake River Watershed TMDL Seasonal Variation:

MPCA noted that *E. coli* loads vary by season, typically reaching higher numbers in the dry summer months when low flows and *E. coli* growth rates contribute to their abundance, and reaching relatively lower values in colder months when *E. coli* 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, regardless of the flow condition. The development of the LDCs by MPCA 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 by MPCA from these modeled flow conditions represented a range of flow conditions within the SRW and thereby accounted for seasonal variability over the recreation season (Section 4.6 of the final TMDL document).

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. By meeting the water quality targets during the summer months, 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).

The EPA finds that the TMDL document submitted by the 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, the 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 the EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement WQS.

The EPA Review of the Snake River Watershed TMDL Reasonable Assurance:

The SRW *E. coli* TMDLs provide reasonable assurance that actions identified in the implementation section of the final TMDL document (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 SRW. The recommendations made by the 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.

Waste Load Allocations:

Although no WLAs were developed as part of this TMDL effort, the TMDL would need to be modified to determine a WLA for the facility. 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.

SRW Partnerships:

The MPCA has identified several local partners which have expressed interest in working to improve water quality within the SRW. The Snake River Watershed Plan Partnership consists of the Aitkin Soil and Water Conservation District (SWCD), Aitkin County, Kanabec SWCD, Kanabec County, Mille Lacs County SWCD, Pine County SWCD, and Pine County. Implementation practices will be implemented over the next several years. It is anticipated that staff from SWCDs, the local Minnesota Board of Water and Soil Resources (BWSR) offices, and other local watershed groups, will work together to reduce pollutant inputs to the SRW.

The Snake River Watershed Landscape Stewardship Plan was created by The Nature Conservancy and the Forest Stewards Guild to facilitate collaboration between landowners, resource managers, local officials, and other stakeholders to implement landscape stewardship practices in the SRW.

Comprehensive Watershed Restoration Planning in the SRW:

This TMDL document is part of a larger effort to restore and protect the Snake River Watershed. Additional components of that effort include the:

- Snake River Watershed Restoration and Protection Plan (WRAPS; MPCA 2014a) and Snake River Watershed WRAPS Update (MPCA 2026)
- The Snake River Comprehensive Watershed Management Plan (Snake River Watershed Partnership Planning 2023)
- Snake River Watershed Monitoring and Assessment Report (MPCA 2017a)

- Snake River Watershed Water Assessment and Trends Update (MPCA 2020b)
- Snake River Watershed Stressor Identification Report (MPCA 2017b) and the Snake River Watershed Stressor Identification Update (MPCA 2021)
- Snake River Watershed Stressor Identification Report-Lakes (DNR 2021)
- Snake River TMDL (MPCA 2013).

SRW WRAPS Plan:

The MPCA authored the Snake River Watershed WRAPS document which provides information on the development of scientifically supported restoration and protection strategies for implementation planning and action. The MPCA sees the Snake River Watershed WRAPS document as a starting point for which the 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 places to do work.

1W1P watershed plan:

A "1 Watershed 1 Plan" (1W1P) was published for the Snake River Watershed in January of 2023 based on input from state agencies, local counties, soil and water conservation districts, and members of the community. The goals identified in the plan include the reduction of *E. coli* exceedances in priority impaired streams by 10%. Additional goals of reducing phosphorus loading to impaired lakes and sediment loading to impaired streams are likely to have secondary beneficial reduction effects on *E. coli* loads as well. Activities and BMPs planned include outreach and education efforts, restoration projects, septic upgrades, shoreline protection BMPs, and land protection. Specific work mentioned includes upgrading non-conforming septic systems within shoreline zones and promoting and installing feedlot runoff management BMPs in shoreland areas.

Ongoing BMP implementation in the SRW:

Section 6.2 of the final TMDL document discusses nonpoint source reduction Best Management Plans (BMPs) and implementation efforts already ongoing within the SRW. Existing nonpermitted pollutant reduction programs are available to provide assistance with identifying BMPs, focusing BMP activity within the SRW, and supporting BMP implementation through state initiatives, ordinances, and dedicated funding. Common BMPs being implemented include cover crops, pasture managment through prescribed grazing, and installing fencing to prevent livestock from having direct access to streams. Implementation efforts are tracked through the MPCA's Healthier Watersheds website.

Feedlots:

Section 6.2.2 of the final TMDL document discusses programs for reducing NPS pollution from agricultural feedlots. 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.

MN Buffer Law:

Section 6.2.3 of the final TMDL document discusses the Minnesota buffer law. The buffer law (Minn. Stat. § 103F.48) requires perennial vegetative buffers to be maintained up to 50 feet from the shoreline along lakes, rivers, and streams, and buffers of 16.5 feet along ditches. These buffers will help to filter out pathogens prior to reaching surface waters. The buffer program is administered primarily at the local level and is overseen by the BWSR. As of January 2024, in the SRW, compliance with the buffer law is nearly 100%.

Conservation Easements Program:

Section 6.2.5 of the final TMDL document discusses the use of conservation easements as critical component of the state's efforts to improve water quality. Conservation easements are utilized by the state to permanently restore wetlands and adjacent native grassland wildlife habitats, and to protect riparian buffers. State and federal programs work in cooperation with the SWCD to compensate landowners for granting conservation easements to establish and/or protect native vegetation habitats on marginal, flood prone, environmentally sensitive, and highly erodible lands for periods of time from 10 years to permanent/perpetual easements. Establishment of conservation easements on lands within the SRW, particularly within the impaired reaches watersheds, will help to reduce overland runoff and associated *E. coli* pollutant loads. As of 2024, there are 1,927 acers of short-term easements, and 6,692 acres of long term or permanent easements within the counties of the SRW. While many of the current easements are outside of the SRW boundaries, easements are expected to play an important role in future *E. coli* pollutant load reduction efforts.

SSTSs Regulation and Control:

Section 6.2.1 of the final TMDL document discusses SSTS (septic tanks). SSTSs are regulated through Minn. Stat. §§ 115.55 and 115.56. SSTS specific rule requirements can be found in Minn. R. 7080 through 7083. Regulations include:

- Minimum technical standards for design and installation of individual and mid-size SSTS
- A framework for local units of government to administer SSTS programs
- Statewide licensing and certification of SSTS professionals
- SSTS product review and registration
- Establishment of the SSTS Advisory Committee
- Various ordinances for SSTS installation, maintenance, and inspection.

In accordance with Minnesota statutes and regulations, individual counties maintain an SSTS ordinance to regulate the treatment and dispersal of sewage within the county's jurisdiction. County SSTS regulatory programs will continue to work to ensure SSTS systems come into compliance with state and county statutes and to find and eliminate direct sewage discharges to surface waters (straight pipes). Straight pipes systems are considered to be an imminent threat to public health and safety and once discovered are issued an Administrative Penalty Order and required to be removed within 10 months.

Large-scale SSTS compliance inspection programs, typically focused in riparian communities near impaired waterbodies have also been funded in the past through grants provided by the BWSR to local governments.

Minnesota Agricultural Water Quality Certification Program

Section 6.2.4 of the final TMDL document discusses the Minnesota Agricultural Water Quality Certification Program (MAWQCP). This program provides a voluntary opportunity for farmers and agricultural landowners to take the lead in implementing conservation practices to protect Minnesota's lakes, rivers, and streams in exchange for regulatory certainty for a period of 10 years. In the SRW, 9,309 acres are certified under the MAWQCP.

Funding Sources:

Funding to implement the SRW *E. coli* pollutant load reductions may be sought from a variety of local, state, federal, and private sources. Examples of major funding sources that may be utilized include:

- BWSR's Clean Water Fund Watershed-based Implementation Funding (WBIF)
- Clean Water Fund Competitive Grants (e.g., Projects and Practices)
- Conservation funds from Natural Resources Conservation Service (NRCS) (e.g., Environmental Quality Incentives Program and Conservation Stewardship Program)

The BWSR 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).

WBIF funds are an alternative to the project-by-project competitive funding program. WBIF funds are granted in a noncompetitive process and used to finance water quality improvement projects for lakes, rivers and streams, and groundwater (https://bwsr.state.mn.us/watershed-based-implementation-funding-program). WBIF funding requires the completion of a 1W1P comprehensive watershed management plant that provides assurance that implementation actions are prioritized, targeted, and measurable. In 2024, the SRW was awarded $1,024,471 in WBIF funds. Based on information in the MPCA's Healthier Watersheds website, from 2004 to 2024, over $99 million dollars have been spent on implementation projects in the SRW (Figure 16 of the final TMDL document).

Adaptive Management:

Continued water quality monitoring within the basin is supported by the MPCA in Section 7.1 of the final TMDL document and also discussed further in Section 9 of this Decision Document. Additional water quality monitoring results could provide insight into the success or failure of BMP systems designed to reduce *E. coli* and nutrient loading into the surface waters of the SRW. MN utilizes an adaptive management approach when implementing TMDL pollutant load reductions as discussed in Section 8.4 of the final TMDL document. An adaptive management approach allows local watershed managers to reflect on the progress of the various pollutant removal strategies and change course if observed progress is unsatisfactory.

Clean Water Legacy Act:

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 the 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., the 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 the 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. The MPCA has developed guidance on what is required in the WRAPS (*Watershed Restoration and Protection Strategy Report Template*, MPCA).

The EPA finds that this criterion has been adequately addressed.

9. Monitoring Plan to Track TMDL Effectiveness

The 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 WQSs.

The EPA Review of the Snake River Watershed TMDL Monitoring Plan:

Section 7 of the final TMDL document outlines MPCA's plans for future water monitoring efforts in the SRW. Progress of TMDL implementation will be measured through regular monitoring efforts of water quality and total BMPs completed.

At a minimum, the SRW will be monitored once every 10 years as part of the MPCA's Intensive Watershed Monitoring cycle. As part of Minnesota's approach, watersheds are monitored once every

10 years at the HUC-8 scale. While this monitoring effort is intended to identify waters that are impaired or in need of protection to prevent impairment, over a longer period of time, the information can be used to assess the overall trend in water quality to determine whether it is improving or declining. MPCA stated that the SRW is to be monitored under this program in 2028.

Monitoring of pollutant loads is conducted along major river stems, major watershed outlets, and in selected subwatersheds as part of MPCA's Watershed Pollutant Load Monitoring Network (WPLMN). The 2026 WRAPS update describes the site locations and monitoring efforts in the Snake River watershed.

Both the BWSR and the U.S. Department of Agriculture (USDA) monitor and track ongoing implementation efforts including the location of BMP installations. Tracking information is made available through the MPCA's Healthier Watersheds webpage.

Water quality monitoring is a critical component of the adaptive management strategy employed as part of the implementation efforts utilized in the SRW. 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 waterbodies of the SRW. 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.

The EPA finds that this criterion has been adequately addressed.

10. Implementation

The 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, the EPA's policy recognizes that other relevant watershed management processes may be used in the TMDL process. The EPA is not required to and does not approve TMDL implementation plans.

The EPA Review of the Snake River Watershed TMDL Implementation Planning:

The TMDL outlined some implementation strategies in Section 8 of the final TMDL document. Additional supporting detail is also included in the discussion on reasonable assurance in Section 6 of the final TMDL document and reviewed in Section 8 of this final TMDL Decision Document. The MPCA outlined the importance of prioritizing areas within the SRW, education and outreach efforts with local partners, and partnering with local stakeholders to improve water quality within the watershed.

Point Source Implementation:

MPCA explained that the two WWTPs in the Knife River watershed are in the Mille Lacs Band of Ojibwe Reservation, and thus outside of this TMDL effort. However, MPCA did note that the two permits have existing permit limits for bacteria that are consistent with this TMDL effort (Section 8.1 of the final TMDL document).

LA Implementation / Non-NPDES-Permitted Sources:

In January of 2023, a 1W1P was published for the Snake River Watershed. The findings from the SRW TMDLs will be used to inform the selection of implementation activities that align with the goals of the 1W1P. MPCA anticipates that achieving the needed pollutant load reduction will require numerous BMPs that address non-NPDES-permitted sources of *E. coli*. Table 14 of the final TMDL document provides a summary of the potential BMPs to be considered during the implementation of the TMDL. Livestock, manure application, and ITPHS are the most likely targets for BMPs during the SRW TMDL implementation.

BMPs mentioned for reducing pollutant loads in the TMDL and WRAPS 2026 update include:

- Agricultural runoff control and manure management: Using filter strips and field borders to reduce runoff from agricultural fields and thus related pollutants including bacteria. Minnesota has a Buffer Law (as discussed in Section 8 of this Decision Document) that requires stream and ditch buffers to reduce pollutant impacts.
- Feedlots: MPCA noted that increasing manure storage at feedlots will reduce the risk of manure discharges. MPCA and delegated local governments inspect feedlots to ensure proper procedures are followed. MPCA also noted that nutrient management plans are important for addressing where and how manure is applied, and Minnesota encourages incorporation of manure into soil within 24 hours. Controlling access of livestock to small streams was also discussed as important to reducing bacteria impacts.
- SSTS (Septics): Continuing the SSTS programs discussed in Section 8 of this Decision Document will also be important in controlling pollutant loads. Proper maintenance and replacement of failing systems will be essential to reduce bacteria loads (Section 8.2.1 of the final TMDL document).
- Conducting education and outreach to promote the adoption of BMPs for both agricultural sites and SSTSs.

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

11. Public Participation

The 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, the EPA has explained that final TMDLs submitted to the 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 the EPA establishes a TMDL, the EPA regulations require the 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 the EPA determines that a state/Tribe has not provided adequate public participation, the EPA may defer its approval action until adequate public participation has been provided for, either by the state/Tribe or by the EPA.

The EPA Review of the Snake River Watershed TMDL Public Participation:

The public participation section of the final TMDL submittal is found in Section 9 of the final TMDL document and Section 12 of the 2026 WRAPS update (MPCA, 2026). Throughout the development of the SRW 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, the MPCA worked with county and SWCD staff in the SRW to promote water quality, to gain input from landowners via surveys and interviews and to better understand the social dynamics of stakeholders in the LSRW. Several Tribes in northern Minnesota were also contacted during the TMDL and WRAPS Update process. The MPCA's goal was to create civic engagement and discussion which would enhance the content of the TMDL, WRAPS and BWSR's 1W1P documents.

The MPCA posted the draft TMDL online at (http://www.pca.state.mn.us/water/tmdl) during its public comment period of April 13, 2026, to May 13, 2026. One comment letter was received regarding farm field runoff. The MPCA reviewed the comment submitted, and responded appropriately.

The EPA finds that the TMDL document submitted by the 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 the 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 the EPA review and approval. This clearly establishes the state's/Tribe's intent to submit, and the 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.

The EPA Review of the Snake River Watershed TMDL Submittal Letter:

The EPA received the final Snake River Watershed TMDL (2026) document, submittal letter and accompanying documentation from the MPCA on July 13, 2026. The transmittal letter explicitly stated that the final TMDLs referenced in Table 1 of this Decision Document were being submitted to the EPA pursuant to Section 303(d) of the Clean Water Act for the 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 Snake River Watershed (2026) TMDLs by the MPCA satisfies the requirements of this twelfth element.

13. Conclusion

After a full and complete review, the EPA finds that the seven *E. coli* TMDL satisfy all elements for approvable TMDLs. This SRW TMDL approval is for seven TMDLs, addressing segments for aquatic recreational (Table 1 of this Decision Document).

Tribal Consultation

Pursuant to Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* and the *EPA Policy on Consultation and Coordination with Indian Tribes* (December 2023), EPA invited the Mille Lacs Band of Ojibwe to consult on EPA's review of the Snake River Watershed (2026) TMDLs. The EPA did not receive any response from the Mille Lacs Band of Ojibwe in its invitation to engage in consultation on the TMDLs.

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.

Attachment #1: Bacteria (*E. coli*) TMDLs for the Snake River Watershed TMDL document (2026)

Table 4. Knife River (07030004-549) *E. coli* TMDL summary

- Listing year: 2020
- Baseline year: 2012
- Numeric standard used to calculate TMDL: 126 org/100 mL E. coli
- TMDL and allocations apply Apr–Oct

TMDL parameter	TMDL *E. coli* load (billion org/day) by flow zone				
	Very high	**High**	**Mid**	**Low**	**Very low**
Total LA	483	150	60	21	10
MOS	53.7	16.7	6.7	2.4	1.1
MN portion of TMDL[c]	537	167	66.7	23.4	11.1
BC (Mille Lacs Reservation)[a]	141	43.9	17.8	6.2	2.9
TMDL	678	211	85	30	14
Maximum monthly geometric mean (org/100 mL)[a]	169				
Estimated percent reduction[b]	26%				

a. The Mille Lacs Reservation BC implicitly includes discharge from the Wahkon and Isle WWTPs. The BC assumes that the *E. coli* concentration in the Knife River Watershed streams that flow out of the Reservation has a geometric mean of 126 org/100 mL.

b. The maximum monthly geometric mean and estimated percent reduction apply to the impairment as a whole and is not dictated by flow zone.

c. EPA note: This approval applies only to the Minnesota portion of the TMDL.

Table 5. Snowshoe Brook (07030004-558) *E. coli* TMDL summary.

- Listing year: 2020
- Baseline year: 2012
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

TMDL parameter	TMDL *E. coli* load (billion org/day) by flow zone				
	Very high	**High**	**Mid**	**Low**	**Very low**
Total LA	158	52.2	21.6	7.5	3.5
MOS	17.5	5.8	2.4	0.8	0.4
TMDL	175	58	24	8.3	3.9
Maximum monthly geometric mean (org/100 mL)[a]	157				
Estimated percent reduction[a]	20%				

a. The maximum monthly geometric mean and estimated percent reduction apply to the impairment as a whole and is not dictated by flow zone.

Table 6. Bean Brook (07030004-560) *E. coli* TMDL summary.

- Listing year: 2020
- Baseline year: 2012
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

TMDL parameter	TMDL *E. coli* load (billion org/day) by flow zone				
	Very high	High	Mid	Low	Very low
Total LA	69.7	22.4	8.7	3.2	1.5
MOS	7.8	2.5	1.0	0.4	0.2
TMDL	77.5	24.9	9.7	3.6	1.7
Maximum monthly geometric mean (org/100 mL)[a]	171				
Estimated percent reduction[a]	26%				

a. The maximum monthly geometric mean and estimated percent reduction apply to the impairment as a whole and is not dictated by flow zone.

Table 7. Camp Creek (07030004-572) *E. coli* TMDL summary.

- Listing year: 2020
- Baseline year: 2012
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

TMDL parameter	TMDL *E. coli* load (billion org/day) by flow zone				
	Very high	High	Mid	Low	Very low
Total LA	64.7	22.1	8.2	3.5	1.7
MOS	7.2	2.5	0.9	0.4	0.2
TMDL	71.9	24.6	9.1	3.9	1.9
Maximum monthly geometric mean (org/100 mL)[a]	337				
Estimated percent reduction[a]	63%				

a. The maximum monthly geometric mean and estimated percent reduction apply to the impairment as a whole and is not dictated by flow zone.

Table 8. Unnamed Creek (07030004-629) *E. coli* TMDL summary.

- Listing year: 2020
- Baseline year: 2012
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

TMDL parameter	TMDL *E. coli* load (billion org/day) by flow zone				
	Very high	High	Mid	Low	Very low
Total LA	34	11.2	4.6	1.3	0.41
MOS	3.8	1.3	0.5	0.2	0.05
TMDL	37.8	12.5	5.1	1.5	0.46
Maximum monthly geometric mean (org/100 mL)[a]	373				
Estimated percent reduction[a]	66%				

a. The maximum monthly geometric mean and estimated percent reduction apply to the impairment as a whole and is not dictated by flow zone.

Table 9. Unnamed Creek (07030004-598) *E. coli* TMDL summary.

- Listing year: 2020
- Baseline year: 2012
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

TMDL parameter	TMDL *E. coli* load (billion org/day) by flow zone				
	Very high	High	Mid	Low	Very low
Total LA	5.7	1.9	0.76	0.23	0.07
MOS	0.63	0.21	0.09	0.03	0.01
TMDL	6.3	2.1	0.85	0.26	0.08
Maximum monthly geometric mean (org/100 mL)[a]	435				
Estimated percent reduction[a]	71%				

a. The maximum monthly geometric mean and estimated percent reduction apply to the impairment as a whole and is not dictated by flow zone.

Table 10. Unnamed Creek (07030004-577) *E. coli* TMDL summary.

- Listing year: 2010
- Baseline year: 2012
- Numeric standard used to calculate TMDL: 126 org/100 mL *E. coli*
- TMDL and allocations apply Apr–Oct

TMDL parameter	TMDL *E. coli* load (billion org/day) by flow zone				
	Very high	High	Mid	Low	Very low
Total LA	130	40.8	15.6	5.4	1.4
MOS	14.4	4.5	1.7	0.60	0.1
TMDL	144	45.3	17.3	6.0	1.5
Maximum monthly geometric mean (org/100 mL)[a]	205				
Estimated percent reduction[a]	39%				

a. The maximum monthly geometric mean and estimated percent reduction apply to the impairment as a whole and is not dictated by flow zone.