



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

MAY 09 2018

REPLY TO THE ATTENTION OF

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 final Total Maximum Daily Loads (TMDLs) for four waterbodies in the Little Fork River watershed, including supporting documentation and follow up information. The Little Fork River watershed is located in Koochiching, St. Louis, and Itasca Counties, Minnesota. The TMDLs were calculated for total suspended solids to address the impaired aquatic life 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 four TMDLs in the Little Fork River 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 addressing aquatic recreational and aquatic life uses, and look forward to future submissions by the State of Minnesota. If you have any questions, please contact Mr. Peter Swenson, Chief of the Watersheds and Wetlands Branch, at 312-886-0236.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Korleski".

Christopher Korleski  
Director, Water Division

Enclosure

cc: Celine Lyman, MPCA  
Mike Kennedy, MPCA

wq-iw10-05g

**DECISION DOCUMENT FOR THE LITTLE FORK RIVER WATERSHED TMDLS;  
KOOCHICHING, ST. LOUIS, AND ITASCA COUNTIES, MN**

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

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

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

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the NPDES permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA’s review of the load and wasteload allocations, which are required by regulation.

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

- (1) the spatial extent of the watershed in which the impaired waterbody is located;
  - (2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
  - (3) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;
  - (4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility);
- and

(5) an explanation and analytical basis for expressing the TMDL through *surrogate measures*, if applicable. *Surrogate measures* are parameters such as percent fines and turbidity for sediment impairments; chlorophyll *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

**Comment:**

**Location Description/Spatial Extent:**

The Little Fork River watershed is located in Koochiching, St. Louis, and Itasca Counties, Minnesota, in the northern portion of Minnesota. The Little Fork River begins in St. Louis and Itasca Counties, and flows north to the Rainy River just west of International Falls, Minnesota. The total watershed area is 1,298,296 acres (1872 square miles). The TMDL addresses four streams impaired for total suspended solids (TSS). Table 1 of this Decision Document identifies the waterbodies addressed in this TMDL, and information on the impaired rivers are in Table 2 of this Decision Document.

**Table 1:** Waterbodies Addressed by the Little Fork River Watershed TMDLs

Waterbody	Reach Description	AUID	Designated Use	Listing Year
Little Fork River	Willow River to Valley River	09030005-506	2B	2010
Little Fork River	Prairie Creek to Nett Lake River	09030005-508	2B	2010
Little Fork River	Cross River to Beaver Brook	09030005-510	2B	2008
Little Fork River	Beaver Brook to Rainy River	09030005-501	2B	2006

**Table 2:** Impaired River information

Waterbody	AUID	Direct Drainage Area (acres)	Total Drainage Area (acres)
Little Fork River	-506	27,038	652,800
Little Fork River	-508	168,528	870,400
Little Fork River	-510	85,021	1,094,400
Little Fork River	-501	28,138	1,298,296

A portion of the watershed includes the Bois Forte Band of Chippewa Tribal Reservation. The TMDL areas in Table 2 of this Decision document do not include the lands within the Bois Forte Band of Chippewa Tribal Reservation. The TMDL also excludes the portion of the Little Fork River (segment -508) that is within the Bois Forte Band of Chippewa Tribal Reservation (personal communication, Mike Kennedy, MPCA, 2/22/2018).

**Land Use:**

The Little Fork River watershed is a mixture of forest (45%), and wetlands (46%). There is little agricultural land (0.50%) or developed land (1.90%) (Section 3.3 of the TMDL and Table 3 of this Decision Document). MPCA does not anticipate changes in TSS loading due to changes in land use within the watersheds. MPCA does not expect significant growth in the watershed.

**Table 3: Land use in the Little Fork River Watershed**

Land cover class	TMDL Project Area (Total drainage area for AUID 09030005- 501)		Little Fork River, Impaired Reach Subwatersheds, Direct Drainage							
			Willow River to Valley River - 506		Prairie Creek to Nett Lake River - 508		Cross River to Beaver River -510		Beaver Brook to Rainy River -501	
	acres	%	acres	%	acres	%	acres	%	acres	%
Open Water	29,024	2.50%	116	0.10%	919	0.70%	3,273	3.00%	1,153	1.10%
Developed	22,407	1.90%	1,016	1.30%	1,666	1.20%	2,303	2.10%	2,284	2.10%
Barren Land	4,998	0.40%	2	0.00%	19	0.00%	13	0.00%	57	0.10%
Forest	529,543	44.90%	31,269	39.70%	33,762	24.80%	62,475	57.80%	32,749	30.40%
Grassland	41,022	3.50%	1,272	1.60%	1,141	0.80%	3,946	3.70%	2,996	2.80%
Cultivated Crops	5,493	0.50%	612	0.80%	241	0.20%	138	0.10%	2,430	2.30%
Wetlands	548,024	46.40%	44,526	56.50%	98,255	72.20%	35,849	33.20%	66,139	61.30%
<b>Total</b>	1,180,510	100.00%	78,811	100.00%	136,003	100.00%	107,997	100.00%	107,808	100.00%

**Problem Identification:**

The waterbodies were placed on the MPCA 303(d) list of impaired waters from 2006 to 2010. The segments were placed on the MPCA 303(d) list of impaired waters due to exceedances of the TSS criterion and the previous turbidity criterion. Section 3.4 of the TMDL summarizes the data used to assess the waterbodies, and indicates that the TSS criterion was exceeded by approximately 50% of the TSS samples in the watersheds (Table 5 of the TMDL).

**Pollutant of Concern:**

The pollutant of concern is TSS.

**Pollutant:**

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

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

Excess siltation and flow alteration in streams impacts aquatic life by altering habitats. Excess sediment can fill pools, embed substrates, and reduce connectivity amongst different stream habitats. The result is a decline in habitat types that, in healthy streams, support diverse macroinvertebrate communities. Excess sediment can reduce spawning and rearing habitats for certain fish species. Flow alterations in the Little Fork River watershed have resulted from drainage changes on or near timbering lands. This results in higher peak flows during storm events and flashier flows which carry sediment loads to streams and erode stream banks.

## **Source Identification (point and nonpoint sources):**

### Point Source Identification:

MPCA identified three Wastewater Treatment Facilities (WWTF) and one industrial wastewater facility discharging to TSS-impaired watersheds (Table 9 of Section 5 of this Decision Document).

Stormwater runoff from permitted construction and industrial areas were reviewed by MPCA as sources of TSS. Construction and industrial sites may contribute sediment via stormwater runoff during precipitation events. These areas within the Little Fork River watershed must comply with the requirements of the MPCA's NPDES Stormwater Program. The NPDES program requires construction and industrial sites to create a Stormwater Pollution Prevention Plan (SWPPP) that summarizes how stormwater will be minimized from the site. MPCA identified the average construction activity in the watershed, and based the WLA for construction and industrial stormwater on the percentage of land area addressed.

### Non-Point Source Identification:

The Little Fork River watershed has been impacted by timber-harvesting for over 100 years. Many of the sources of TSS are a result of harvesting and transport of lumber in the watershed, either from the loss of cover or from destruction of streambanks and channels during the transportation of lumber.

*Upland erosion:* During the modeling process, MPCA determined that erosion from upland sources contributes sediment load in the Little Fork River watershed (Section 3.5.1.2 of the TMDL). The loss of cover in upland regions can result in higher rates of runoff during storm events. While some areas have recovered, second-generation timber harvesting has been ongoing in the watershed.

*Stream channelization and streambank erosion:* Eroding stream banks and channelization efforts may add sediment to local surface waters. Eroding riparian areas may be linked to soil inputs within the water column and potentially to changes in flow patterns. Changes in flow patterns may also encourage down-cutting of the stream bed and streambanks. Stream channelization efforts can increase the velocity of flow (via the removal of the sinuosity of a natural channel) and disturb the natural sedimentation processes of the streambed. Much of the Little Fork River has become entrenched (confined within the river valley without access to the flood plain), which does not allow sediment to be deposited in the flood plain during high flow events (Section 3.5.1.2 of the TMDL). Much of the Little Fork River was used to transport logs from timbering, and numerous locations still show the impacts of logs damaging streambanks even after several decades (Figure 6 of the TMDL).

*Tributary Loads:* MPCA also modeled the effects of TSS loading from smaller tributaries in the watershed (Table 6 of the TMDL). The modeling looked at the overall loads from the watersheds, and did not attempt to further refine the sources of TSS. Willow River was noted as a significant contributor of TSS in the watershed. MPCA noted that additional monitoring is needed to further define the TSS sources in the tributaries.

## **Future Growth:**

MPCA expects little change in the allocations between point and nonpoint sources. Much of the land in the watershed is publicly owned (State Forest), and increased urbanization is unlikely.

**Priority Ranking:**

The water bodies addressed by the Little Fork River TMDLs were given a priority ranking for TMDL development due to: the impairment impacts on public health and aquatic life, the public value of the impaired water resource, the likelihood of completing the TMDL in an expedient manner, the inclusion of a strong base of existing data, the restorability of the water body, the technical capability and the willingness of local partners to assist with the TMDL, and the appropriate sequencing of TMDLs within a watershed or basin. Water quality degradation has led to efforts to improve the overall water quality within the Little Fork River watershed, and to the development of TMDLs for these water bodies. Additionally, MPCA explained that its TMDL development priorities were prioritized to align with its Statewide watershed monitoring approach and its 10-year Watershed Restoration and Protection Strategies (WRAPS) schedule.

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

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

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

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

**Comment:****Designated Uses:**

Minnesota Rule Chapter 7050 designates uses for waters of the state. As noted in Table 1 of this Decision Document, the impaired waters addressed by this TMDL are designated as Class 2B. Class 2B waters are protected for aquatic life and recreation use (boating, swimming, fishing, etc.). The Class 2B aquatic life and recreation designated use is described as:

*“The quality of Class 2B surface waters shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life, and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable.”*

Numeric TSS criteria:

EPA approved MPCA's regionally-based TSS criterion for rivers and streams in 2015. The TSS criterion replaced Minnesota's statewide turbidity criterion. The TSS criterion provides water clarity targets for measuring suspended particles in rivers and streams, and is noted in Table 4 of this Decision Document:

**Table 4:** TSS criterion for the Little Fork River watershed

Parameter	Water Quality Standard*	Notes
TSS	15 mg/L	North River Nutrient Region – for Class 2B streams exceeded less than 10% of the time

\* Applicable from April 1-September 30.

Targets: MPCA employed the North River Nutrient Region TSS criterion of 15 mg/L.

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

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

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

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

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

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

**Comment:**

Functionally a TMDL is represented by the equation:

$$\text{TMDL} = \text{LC} = \Sigma\text{WLA} + \Sigma\text{LA} + \text{MOS} + \text{RC},$$

where: LC is the loading capacity; WLA is the wasteload allocation; LA is the load allocation; MOS is the margin of safety; and (pursuant to MPCA rules) RC is any reserve capacity set aside for future growth. MPCA used the Hydrologic Simulation Program FORTRAN (HSPF) model to determine flows which were used to develop load duration curves (LDC) for the stream segment TMDLs to determine TSS loads.

Details on the model, the LDC process, and specifics related to pollutant of concern (including the TMDL tables) can be found in the Decision Document sections below and in Section 4 of the TMDL.

### **HSPF**

HSPF is a comprehensive modeling package used to simulate watershed hydrology and water quality on a basin scale. The package includes both an Agricultural Runoff Model and a more general nonpoint source model. HSPF parametrizes numerous hydrologic and hydrodynamic processes to determine flow rate, sediment, and nutrient loads. HSPF uses continuous meteorological records to create hydrographs and to estimate time series pollution concentrations.<sup>1,2</sup> The output of the HSPF process is a model of multiple Hydrologic Response Units (HRUs), or subwatersheds of the overall Little Fork River watershed. The flow from these HRUs were calibrated to four different gage sites for the period of 2000-2009.

### **TSS:**

The approach utilized by the MPCA to calculate the loading capacity for the TSS TMDLs is described in Section 4.4 of the final TMDL.

A flow duration curve (FDC) was created for the waterbodies. The FDC was developed from flow data from several monitoring sites in the Little Fork River watershed. Daily stream flows were necessary to implement the LDC approach. MPCA utilized the flow results from the HSPF model to provide additional input into the LDCs (Section 4.1.1 of the TMDL).

The FDC was transformed into a LDC by multiplying individual flow values by the WQS (15 mg/L and then multiplying that value by a conversion factor. The resulting points are plotted onto a LDC graph. The LDC graphs for the four waterbodies have flow duration interval (percentage of time flow exceeded) on the X-axis and TSS loads (kg per unit time) on the Y-axis. The curved line on a LDC graph represents the TMDL for the respective flow conditions observed at that location.

TSS values from the monitoring sites were converted to individual sampling loads by multiplying the sample concentration by the instantaneous flow measurement observed/estimated at the time of sample collection. The individual sampling loads were plotted on the same figure with the LDC (Figures 9-12 of the TMDL).

The LDC plots were subdivided into five flow regimes; very high flows (exceeded 0–10% of the time), high conditions (exceeded 10–40% of the time), mid-range flows (exceeded 40–60% of the time), low conditions (exceeded 60–90% of the time), and very low flows (exceeded 90–100% of the time). LDC plots can be organized to display individual sampling loads and the

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<sup>1</sup> HSPF User's Manual - <https://water.usgs.gov/software/HSPF/code/doc/hspfhelp.zip>

<sup>2</sup> EPA TMDL Models Webpage - <https://www.epa.gov/exposure-assessment-models/tmdl-models-and-tools>



calculated LDC. Watershed managers can interpret these plots (individual sampling points plotted with the LDC) to understand the relationship between flow conditions and water quality exceedances within the watershed. Individual sampling loads which plot above the LDC represent violations of the WQS, and the allowable load under those flow conditions at those locations. The difference between individual sampling loads plotting above the LDC and the LDC, measured at the same flow, is the amount of reduction necessary to meet WQS.

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

Implementing the results shown by the LDC requires watershed managers to understand the sources contributing to the water quality impairment and which Best Management Practices (BMPs) may be the most effective for reducing TSS loads based on flow magnitudes. Different sources will contribute TSS 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 TSS loading into surface waters. This allows for a more efficient implementation effort.

TMDLs for the four waterbodies were calculated as appropriate. The regulated permittees discharging TSS have allocations determined for them (Tables 5-8 of this Decision Document). The load allocation was calculated after the determination of the Margin of Safety (10% of the loading capacity). Other load allocations (ex. channel erosion, streambank erosion, etc.) were not split amongst individual nonpoint contributors. Instead, load allocations were combined together into a generalized loading. Review of the LDCs indicate that exceedances are occurring under higher flow conditions, and therefore control of precipitation-related source types will be needed. The LDCs demonstrate that reductions ranging from 0%-95% are needed to attain standards.

Tables 5-8 of this Decision Document calculate five points (the midpoints of the designated flow regime) on the loading capacity curves. 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 load duration curve method can be used to display collected TSS monitoring data and allows for the estimation of load reductions necessary for attainment of the TSS water quality standard. Using this method, daily loads were developed based upon the flow in the water body. Loading capacities were determined for the segment for multiple flow regimes. This allows the TMDL to be represented by an allowable daily load across all flow conditions. Although there are numeric loads for each flow regime, the LDC is what is being approved for these TMDLs.

EPA concurs with the data analysis and LDC approach utilized by MPCA in its calculation of loading capacities, wasteload allocations, load allocations and the margin of safety for the TSS

TMDLs. The methods used for determining the TMDL are consistent with U.S. EPA technical memos.<sup>3</sup>

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

#### **4. Load Allocations (LA)**

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

#### **Comment:**

Load allocations are addressed in Section 4 of the final TMDL document. The LAs for TSS are in Tables 5-8 of this Decision Document. Review of the LDCs show that the exceedences occur under high flow conditions, indicating that precipitation-related sources are of particular concern. The LAs were subdivided in “upstream load” and “watershed and channel” loads.

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

#### **5. Wasteload Allocations (WLAs)**

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

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

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<sup>3</sup> 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.

**Comment:**

**TSS:**

MPCA identified three WWTFs and one industrial wastewater facility discharging to TSS-impaired streams (Table 9 of the TMDL; Table 9 of this Decision Document). These facilities were given an individual WLA based upon the maximum daily flow times the TSS effluent limit in the permit.

**Table 9:** Little Fork River TSS WLAs

Segment Name and ID	Facility	Permit ID	Design Flow (mgd)	Effluent Conc. Limit (mg/L)	TSS WLA (kg/day)
Little Fork River, Willow River to Valley Creek (-506)	Cook WWTF	MNG580179	1.43	45	243.8
	ISD 2142	MN0069850	0.008	16	0.5
	US Steel Corp.	MN0057207*	0.32	30	36.4
Little Fork River, Beaver Brook to Rainy River (-501)	Littlefork WWTF	MNG580081	0.73	45	124.7

\* - Industrial wastewater facility

MPCA reviewed the watershed for MS4 permittees, and determined that the one MS4 permittee, the City of Hibbing, discharges in part to the Shannon River, which is upstream of Shannon Lake. Shannon Lake is meeting the appropriate criteria, and therefore is not contributing to the downstream impairments in the Little Fork River. The load from Shannon Lake is set equal to the median outlet flow from Shannon Lake in each flow regime multiplied by the TSS target (15 mg/L) for the watershed (Table 5 of this Decision Document; Section 4.1.3.3 of the TMDL).

Therefore, MPCA determined an “upstream load” for Shannon Lake, and did not determine a specific WLA for the City of Hibbing MS4 (Section 4.1.3.3 of the TMDL).

There are no Combined Sewer Overflows (CSOs) or Concentrated Animal Feeding Operations (CAFOs) identified in the watersheds, therefore, they were not given an allocation (WLA = 0).

MPCA calculated a WLA for stormwater discharge from permitted construction sites in each segment to account for TSS loading from construction stormwater (Tables 5-8 of this Decision Document; Section 4.1.3.1 of the TMDL). MPCA reviewed the areal coverage of construction general permits issued in the counties, and calculated the coverages in Table 10 of this Decision Document. MPCA assumed the industrial stormwater areal percentage was equal to the construction stormwater area, as industrial activity makes up a very small part of the watershed.

**Table 10:** Median Construction Stormwater Percentage

County	Median Annual Construction Activity
Koochiching	0.052%
St. Louis	0.003%
Itasca	0.019%

MPCA explained that BMPs and other stormwater control measures should be implemented at active construction sites to limit the discharge of pollutants of concern. BMPs and other

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

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

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

## **6. Margin of Safety (MOS)**

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

### **Comment:**

The TSS TMDLs incorporated an explicit MOS of 10% of the total loading capacity (Tables 5-8 of this Decision Document). MPCA determined this is sufficient based upon the modeling results. MPCA noted that the MOS is reasonable due to the generally good calibration of the HSPF model for hydrology (Section 4.1.1 of the TMDL). The calibration results indicate the model adequately characterize the waterbody segments, and therefore additional MOS is not needed.

The EPA finds that the TMDL document submitted by the MPCA contains an appropriate MOS satisfying 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)).

### **Comment:**

The TSS WQS applies from April to September which is also the time period when high concentrations of sediment are expected in the surface waters of the Little Fork River watershed. Sediment loading to surface waters in the watershed varies depending on surface water flow, land cover and climate/season. Typically in the watershed, sediment is being moved from terrestrial source locations into surface waters during or shortly after wet weather events. Spring is typically associated with large flows from snowmelt, the summer is associated with the growing season as well as periodic storm events and receding streamflows. Large precipitation events and minimally covered land surfaces can lead to large runoff volumes, especially to those areas which are affected by timber operations. The conditions generally occur in the spring and early summer seasons. The LDC developed from these flow records represents a range of flow conditions within the TSS – impaired watersheds and thereby accounted for seasonal variability over the recreation season.

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, EPA’s 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

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

### **Comment:**

Section 6 of the TMDL provides information on actions and activities to reduce pollutant loading in the watershed. The main entities responsible for overseeing the pollutant reduction activities

will be the MPCA, Koochiching, Itasca, and St. Louis Counties and several Soil and Water Conservation Districts (SWCD).

The Koochiching SWCD has developed the “2018-2028 Koochiching County Comprehensive Local Water Management Plan”, which contains detailed information on priorities and activities in the Little Fork River watershed to reduce sediment loads. The District also monitors three sites on the Little Fork River for water quality.

Reasonable assurance that the WLA set forth in the TMDLs will be implemented is provided by regulatory actions. According to 40 CFR 122.44(d)(1)(vii)(B), NPDES permit effluent limits must be consistent with assumptions and requirements of all WLAs in an approved TMDL. MPCA’s NPDES permit program is the implementing program for ensuring effluent limits are consistent with the TMDL.

The stormwater program requires construction and industrial sites to create a SWPPP that summarizes how stormwater will be minimized from a site. Permittees are required to review the adequacy of local SWPPPs to ensure that each plan meets WLA set in the TMDL. In the event that the SWPPP does not meet the WLA, the SWPPP will need to be modified prior to the effective date of the next General Permit. This applies to the MS4, Construction, and Industrial Stormwater General Permits.

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 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 report for the Little Fork River watershed was finalized on November 28, 2017. Several of the implementation actions listed in the WRAPS report are already underway.

The Minnesota Board of Soil and Water Resources administers the Clean Water Fund as well, and has developed a detailed grants policy explaining what is required to be eligible to receive Clean Water Fund money (FY 2014 Clean Water Fund Competitive Grants Request for Proposal (RFP); Minnesota Board of Soil and Water Resources, 2014).

The EPA finds that this criterion has been adequately addressed.

## **9. Monitoring Plan to Track TMDL Effectiveness**

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

### **Comment:**

The final TMDL document outlines the water monitoring efforts in the Little Fork River watershed (Section 7 of the TMDL). Water quality monitoring is a critical component of the adaptive management strategy employed as part of the implementation planning efforts for the these watersheds.

Follow-up monitoring is integral to the adaptive management approach. Monitoring addresses uncertainty in the efficacy of implementation actions and can provide assurance that implementation measures are succeeding in attaining water quality standards, as well as inform the ongoing TMDL implementation strategy. To assess progress toward meeting the TMDL targets, monitoring of the waterbodies will continue to be a part of the Soil and Water Conservation Districts monitoring programs. For example, the Koochiching SWCD monitors waters in the Little Fork River watershed several times during the year. The SWCD Comprehensive Plan (2018-2028) describes the ongoing monitoring efforts in the county, including waters addressed under the TMDL. At a minimum, the Little Fork River Watershed will be monitored once every 10 years as part of the MPCA's Intensive Watershed Monitoring cycle.

The EPA finds that this criterion has been adequately addressed.

## **10. Implementation**

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

**Comment:**

Implementation strategies are outlined in Section 8 of the final TMDL document and in the Little Fork River WRAPS plan. The MPCA presented a variety of possible implementation activities which could be undertaken within the watersheds to address TSS.

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

*Streambank Stabilization:* MPCA noted that the major source of sediment is near bank erosion along the Little Fork River. Several studies have been undertaken in the watershed to assess the impacts of previous timbering activities in the watershed. In addition to these studies, MPCA utilized Light Detection and Ranging (LiDAR) to provide very detailed maps of land elevations along the Little Fork River. MPCA will be utilizing this data to further refine priority locations in the watershed where sediment erosion is particularly significant. Further information is detailed in the WRAPS document for Little Fork River.

*Public Education Efforts:* Public programs will be developed to provide guidance to the general public on pollutant reduction efforts and their impact on water quality. These educational efforts could also be used to inform the general public on what they can do to protect the overall health of the waterbodies.

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

**11. Public Participation**

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

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

**Comment:**

The public participation section of the TMDL submittal is found in Section 9 of the TMDL. Throughout the development of the Little Fork River watershed TMDLs the public was given various opportunities to participate in the TMDL process. The MPCA encouraged public participation through public meetings and small group discussions with stakeholders within the watershed.



A kick-off meeting was held on April 10, 2014, to begin the process. Table 14 of the TMDL lists the meetings and conference calls regarding the WRAPS and TMDL process. Participants included local government officials, stakeholders, and the public.

The draft TMDL was posted online by the MPCA at (<http://www.pca.state.mn.us/water/tmdl>). The 30-day public comment period began on July 24, 2017 and ended on August 23, 2017. The MPCA received three public comments and adequately addressed these comments. The comments focused on the WRAPS document. Various suggestions on additional implementation actions and activities were suggested.

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

### **Comment:**

The EPA received the final Little Fork River watershed TMDL document, submittal letter and accompanying documentation from the MPCA on December 1, 2017. The transmittal letter explicitly stated that the final Little Fork River watershed TMDLs for TSS were being submitted to EPA pursuant to Section 303(d) of the Clean Water Act for EPA review and approval. The letter clearly stated that this was a final TMDL submittal under Section 303(d) of CWA. The letter also contained the name of the watershed as it appears on Minnesota's 303(d) list, and the causes/pollutants of concern. This TMDL was submitted per the requirements under Section 303(d) of the Clean Water Act and 40 CFR 130.

The EPA finds that the TMDL transmittal letter submitted for the Little Fork River watershed by the MPCA satisfies the requirements of this twelfth element.

## **13. Conclusion**

After a full and complete review, the EPA finds that the TMDLs for the Little Fork River watershed satisfy all of the elements of approvable TMDLs. This approval is for four TMDLs, addressing aquatic life use impairments due to TSS.

The EPA's approval of these TMDLs extends to the water bodies which are identified in Table 1 of this Decision Document 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.

EPA sent letters to the Bois Forte Band of Chippewa in Minnesota. In the letter, EPA offered the Tribal representatives the opportunity to consult with the EPA regarding these TMDLs. EPA received no responses.

**Table 5: TMDL Summary for Little Fork River Segment -506**

Little Fork River 09030005-506 Load Component		Flow Regime				
		Very High	High	Mid	Dry	Very Dry
		kg per day				
Existing Load (estimated by the HSPF model)		532,166	35,649	7,581	1,676	369
Wasteload Allocation	Cook WWTP (MNG580179)	244	244	244	244	244
	ISD 2142 MN0069850	1	1	1	1	1
	US Steel Corp, MN0057207	36	36	36	36	36
	Construction stormwater (MNR100001)	3.5	0.8	0.32	0.15	0.06
	Industrial stormwater (MNR50000)	3.5	0.8	0.32	0.15	0.06
	<b>Total WLA</b>	<b>288</b>	<b>282</b>	<b>281</b>	<b>281</b>	<b>281</b>
Load Allocations	Upstream Boundary Condition*: Shannon Lake watershed	1,450	451	184	59	0
	Watershed and Channel <sup>§</sup>	77,499	16,808	7,041	3,426	1,292
	<b>Total LA</b>	<b>78,949</b>	<b>17,259</b>	<b>7,224</b>	<b>3,485</b>	<b>1,292</b>
10% MOS		8,804	1,949	834	418	175
Total Loading Capacity		88,041	19,490	8,339	4,184	1,748
Estimated Load Reduction		444,125 83%	16,159 45%	0 0%	0 0%	0 0%

\* Upstream boundary condition is set equal to the median outlet flow for Shannon Lake in each flow regime (HSPF model) multiplied by the TSS target for the impaired reach.

<sup>§</sup>Includes upland sources + stream bank, near bank, and stream bed erosion within the watershed, excluding areas included in the upstream boundary condition.

**Table 6: TMDL summary for Little Fork River Segment 508**

Little Fork River 09030005-508 Load Component		Flow Regime				
		Very High	High	Mid	Dry	Very Dry
		kg per day				
Existing Load (estimated by the HSPF model)		693,437	85,999	10,657	2,405	389
Wasteload Allocation	Construction stormwater (MNR100001)	12.7	2.1	0.8	0.4	0.1
	Industrial stormwater (MNR50000)	12.7	2.1	0.8	0.4	0.1
	<b>Total WLA</b>	<b>25</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>0.2</b>
Load Allocations	Upstream Boundary Condition*: Little Fork River - 506	79,237	17,541	7,505	3,766	1,572
	Watershed and Channel <sup>§</sup>	28,080	4,614	1,690	835	281
	<b>Total LA</b>	<b>107,317</b>	<b>22,155</b>	<b>9,195</b>	<b>4,601</b>	<b>1,853</b>
10% MOS		11,927	2,462	1,022	511	206
Total Loading Capacity		119,269	24,621	10,219	5,113	2,059
Estimated Load Reduction		574,168 83%	61,378 71%	438 4%	0 0%	0 0%

\* Upstream boundary condition =  $\sum$ WLA + LA for the upstream impaired reach (AUID 09030005-506).

<sup>§</sup>Includes upland sources + stream bank, near bank, and stream bed erosion within the watershed, excluding areas included in the upstream boundary condition.

**Table 7: TMDL Summary for Little Rock River Segment 510**

Little Fork River 09030005-510 Load Component		Flow Regime				
		Very High	High	Mid	Dry	Very Dry
		kg per day				
Existing Load (estimated by the HSPF model)		2,992,027	166,053	16,493	4,052	453
Wasteload Allocation	Construction stormwater (MNR100001)	13	3	1.5	0.7	0.1
	Industrial stormwater (MNR50000)	13	3	1.5	0.7	0.1
	<b>Total WLA</b>	<b>26</b>	<b>6</b>	<b>3</b>	<b>1.4</b>	<b>0.2</b>
Load Allocations	Upstream Boundary Condition*: Little Fork River -508	107,342	22,160	9,197	4,602	1,853
	Watershed and Channel <sup>§</sup>	24,942	5,963	2,940	1,264	162
	<b>Total LA</b>	<b>132,284</b>	<b>28,123</b>	<b>12,137</b>	<b>5,866</b>	<b>2,015</b>
10% MOS		14,701	3,125	1,349	652	224
Total Loading Capacity		147,011	31,254	13,489	6,519	2,239
Estimated Load Reduction		2,845,016 95%	134,799 81%	3,004 18%	0 0%	0 0%

\* Upstream boundary condition =  $\sum$ WLA + LA for the upstream impaired reach (AUID 09030005-508).

<sup>§</sup> Includes upland sources + stream bank, near bank, and stream bed erosion within the watershed, excluding areas included in the upstream boundary condition.

**Table 8: TMDL Summary for Little Rock River Segment 501**

Little Fork River 09030005-501 Load Component		Flow Regime				
		Very High	High	Mid	Dry	Very Dry
		kg per day				
Existing Load (estimated by the HSPF model)		1,443,898	197,440	17,358	4,878	576
Wasteload Allocation	Littlefork WWTP MNG580081	125	125	125	125	125
	Construction stormwater (MNR100001)	4.5	1.4	0.4	0.14	0.01
	Industrial stormwater (MNR50000)	4.5	1.4	0.4	0.14	0.01
	<b>Total WLA</b>	<b>134</b>	<b>128</b>	<b>126</b>	<b>125</b>	<b>125</b>
Load Allocations	Upstream Boundary Condition*: Little Fork River -510	132,310	28,129	12,140	5,867	2,015
	Watershed and Channel <sup>§</sup>	8,805	2,807	769	262	27
	<b>Total LA</b>	<b>141,115</b>	<b>30,936</b>	<b>12,909</b>	<b>6,128</b>	<b>2,042</b>
10% MOS		15,694	3,451	1,448	695	241
Total Loading Capacity		156,943	34,515	14,483	6,948	2,408
Estimated Load Reduction		1,286,955 89%	162,925 83%	2,875 17%	0 0%	0 0%

\* Upstream boundary condition =  $\sum$ WLA + LA for the upstream impaired reach (AUID09030005-510).

<sup>§</sup> Includes upland sources + stream bank, near bank, and stream bed erosion within the watershed, excluding areas included in the upstream boundary condition.