



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

SEP 26 2012

REPLY TO THE ATTENTION OF:
WW-16J

Rebecca J. Flood, Assistant Commissioner
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Dear Ms. Flood,

The U.S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Load (TMDL) for Carver Creek, including supporting documentation and follow up information. Carver Creek is on the western edge of the Twin Cities Metropolitan Area. The watershed covers the entire city of Waconia and portions of the cities of Cologne and Carver. The TMDL was calculated for Total Suspended Solids (TSS) to address the aquatic life use impairment due to turbidity.

The TMDL meets 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 one TMDL for TSS Carver Creek. 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 this TMDL and look forward to future TMDL submissions by the State of Minnesota. If you have any questions, please contact Mr. Peter Swenson, Chief of the Watersheds and Wetlands Branch, at 312-886-0236.

Sincerely,

A handwritten signature in black ink, appearing to read "Tinka G. Hyde".

Tinka G. Hyde
Director, Water Division

Enclosure

cc: Dave Johnson, MPCA
Chris Zadak, MPCA

wq-iw7-34g

TMDL: Carver Creek, Minnesota
Effective Date: September 26, 2012

Decision Document for Approval of Carver Creek TMDL Report

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

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

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

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

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

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

and;

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

Comment:

Location/Description/Spatial Extent: The Carver Creek watershed is located in Carver County, Minnesota, part of the Twin Cities Metropolitan Area (see Figure 2.1 of the TMDL Report). The watershed is within the Lower Minnesota River Basin. The creek starts in Benton Township and flows through the Townships of Waconia, Laketown and Dahlgren before discharging into the Minnesota River. The watershed covers the entire city of Waconia and portions of the cities of Cologne and Carver. The total area of the watershed is approximately 52,923 acres. There are 15 lakes and approximately 89 miles of streams in the watershed. The entire length of Carver Creek (segment 07020012-516) is listed from the headwaters to the Minnesota River. Carver Creek has been on the impaired waters list since 2002, due to turbidity.

Most of Carver County and all of the Carver Creek Watershed is in the North Central Hardwoods Forest (NCHF) ecoregion. Land uses in the Carver Creek watershed are primarily agricultural (66.7 percent) with the remaining land cover divided between open water and wetlands (18.8 percent), forests (6.9 percent), and developed land (5 percent). Further maps and tables can be found in Section 2.2 of the TMDL Report.

Problem Identification/Pollutant of Concern: As stated in the TMDL Report Carver Creek was placed on the Section 303(d) list based on the impairment of aquatic life use due to turbidity levels in exceedence of the Water Quality Standard (WQS) of 25 Nephelometric Turbidity Units (NTU) for Class 2B waters. This TMDL will address the aquatic life use impairment due to turbidity using Total Suspended Solid (TSS) loadings as a surrogate pollutant for Carver Creek.

Turbidity is an expression of the optical properties in a water sample that cause light to be scattered or absorbed. Turbidity may be caused by suspended matter, such as clay, silt, finely divided organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms (Standard Methods 1999). The scattering of light in the water column makes the water appear cloudy and the cloudiness increases with greater suspended loads. Turbidity limits light penetration which further inhibits healthy plant growth on the river bottom.

Turbidity is commonly measured in Nephelometric Turbidity Units (NTU). NTU is a unit of measurement quantifying the degree to which light traveling through a water column is scattered by the suspended particles. Because turbidity is dimensionless TSS was chosen as a surrogate to develop a loading capacity and determine allocations.

Source Identification: Section 5.2 of the TMDL Report identifies potential sources of TSS. Based on observations by Carver County staff it is believed that bank erosion is a chief contributor to in-stream TSS load. Studies by the St. Croix Watershed Research Station for nearby streams in the lower part of the Minnesota River basin using sediment isotope

methodology were considered. These studies distinguished sediment derived from the surface (referred to as “field”) versus sediment derived from deeper than 12 inches (or “non-field”). The latter category is assumed to represent sediment from stream banks or gullies. These studies conclude that approximately 30 percent of the in-stream TSS load is from the surface and 70 percent is from subsurface-derived sediment. The majority of subsurface sediment erosion in the watershed is assumed to be bank erosion.

The Soil and Water Assessment Tool (SWAT) model was used to evaluate field erosion. SWAT is a watershed scale model that is able to simulate natural, agricultural and urban ecological systems relevant to the hydrologic cycle, TSS yields and movements in the watershed. A full modeling study for Carver Creek is included within Appendix A of the TMDL Report.

The majority of TSS loads in the Carver Creek Watershed are contributed from nonpoint sources. MPCA determined that urban land use areas have significantly higher surface runoff, followed by soybean and corn fields. Forest has the lowest surface runoff. However significantly higher TSS loads are found from the soybean and corn fields (4.76 t/ha and 4.69 t/ha, respectively). While urban land uses have the highest runoff, the TSS exports from the urban land use are relatively low (0.16 t/ha). The high TSS loading from the agricultural land uses are due to the relatively large land areas and TSS export rates. The surface runoff and TSS loads for the different land use types are compared in Figure 5.1 of the TMDL Report.

There are three facilities that hold National Pollutant Discharge Elimination System (NPDES) permits, five municipal separate storm sewer systems (MS4) permittees, and construction and industrial stormwater dischargers in the Carver Creek Watershed. Further information on these dischargers is discussed in Section 5 below and Section 4.6.2 of the TMDL Report.

Priority Ranking: Minnesota does not include separate priority rankings for its waters in the TMDL. However, it prioritizes waters based on its five-year rotating watershed assessment approach during the listing cycle. Ranking criteria for scheduling TMDL projects include, but are not limited to: impairment impacts on public health and aquatic life; public value of the impaired water resource; likelihood of completing the TMDL in an expedient manner, including a strong base of existing data and restorability of the water body; technical capability and willingness locally to assist with the TMDL; and appropriate sequencing of TMDLs within a watershed or basin. The Minnesota Pollution Control Agency (MPCA) projected schedule for TMDL completions, as indicated on Minnesota’s 303(d) impaired waters list, implicitly reflects Minnesota’s priority ranking of this TMDL.

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

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

The TMDL submittal must include a description of the applicable State/Tribal water quality standard, including the designated use(s) of the water body, the applicable numeric or narrative water quality criterion, and the antidegradation policy. (40 C.F.R. §130.7(c)(1)). EPA needs this

information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

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

Comment:

Designated Use of Waterbody: Carver Creek is classified as a 2B water. Class 2B refers to those State waters identified to support aquatic (warm and cool water fisheries and associated biota) and recreation (all water recreation activities including bathing).

Water Quality Standard (WQS): The applicable water body classifications and water quality standards are specified in Minnesota Rules Chapter 7050. Minnesota Rules Chapter 7050.0407 list water body classifications and Chapter 7050.0222 subp. 5 list applicable water quality standards for the impaired segments. For Class 2B waters the WQS for turbidity is 25 NTUs.

Target: Turbidity is not a pollutant, so MPCA determined that TSS was an appropriate surrogate for turbidity. To achieve a load based value, a surrogate of **100mg/L TSS** is being used based on the correlation between turbidity and TSS concentration instreams. Metropolitan Council Environmental Services (MCES) performed a statistical analysis of the relationship between turbidity and TSS using monitoring data collected from streams in the Twin Cities Metropolitan Area. A simple linear regression equation was fit to turbidity and TSS data. The equation used and graph relationship can be found on Pages 9 and 10 of the TMDL Report.

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

3. Loading Capacity - Linking Water Quality and Pollutant Sources

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

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the

cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

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

TMDLs must take into account *critical conditions* for 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:

Loading Capacity: As stated earlier the WQS for turbidity is 25 NTUs. MPCA has determined the loading capacity for the impaired waterbodies using a surrogate of **100 mg/L TSS** value for turbidity.

A load duration curve method was used in developing the loading capacity of the segments. The TSS load duration curve represents instantaneous loading capacities that vary as a function of flow. Because this method uses a long-term record of daily flow volumes virtually the full spectrum of allowable loading capacities is represented by the resulting curve.

- Load duration analysis method:
 - A flow duration curve was developed using the full range of hydrological conditions from data collected between 1990 to 2007 at the MCES monitoring station, located at 14025 County Road 40, Carver County, MN, which is about 1.7 miles upstream from the creek's confluence with the Minnesota River. The resultant curve shows flow values and the frequency that the flow is exceeded. Both flood conditions and low flow are represented.
 - The load duration curve was developed using the flow multiplied by the target concentration. The curve in figure 4.3 of the TMDL Report represents the concentrations meeting standards, and the points above the curve are pollutant exceedences. Review of the Load Duration Curve indicates that more exceedences occur under high flows and moist conditions. High flow exceedences more often occur from precipitation-related sources (stormwater, overland run-off) on the left portion of the plot and non-precipitation related (failing septs, cattle in the stream, wastewater discharge) exceedences more often occur under low flow conditions on the right portion of the plot. The TMDL for each flow regime was established by using the midpoint flow condition multiplied by the concentration target.

Because this method uses a long-term record of daily flow volumes virtually the full spectrum of allowable loading capacities is represented by the resulting curve. In the TMDL equation table of

the TMDL Report (Table 4.1) only five points on the entire loading capacity curve are depicted (the midpoints of the designated flow zones). However, it should be understood that the components of the TMDL equation could be illustrated for any point on the entire curve. The load duration curve method can be used to display collected TSS monitoring data and allows for estimation of load reductions necessary for attainment of the turbidity water quality standard. The Loading Capacity can be found in Table 1 below.

Table 1 TMDL TSS Load Allocations for Carver Creek AUID 07020012-516 in kg/day.

TMDL Allocation	High Flow	Moist Conditions	Mid Range	Dry Conditions	Low Flow
Total Loading Capacity (TMDL)	32,360.0	10,580.0	4,030.0	1,840.0	650.0
Wasteload Allocation (WLA)	2,343.0	1,043.4	652.6	521.9	466.0
NPDES permitted discharges					
Bongards' Creamery	379.2	379.2	379.2	379.2	379.2
Cologne WWTP	36.9	36.9	36.9	36.9	36.9
Carver WWTP	41.5	41.5	41.5	41.5	41.5
MS4 Discharges					
Laketown Township	534.6	166.1	55.3	18.2	2.4
City of Waconia	1237.0	384.3	127.9	42.2	5.5
City of Minnetista	8.5	2.7	0.9	0.3	0.04
City of Carver	39.8	12.4	4.1	1.4	0.2
Carver County	14.2	4.4	1.5	0.5	0.1
Construction Stormwater WLA	25.6	8.0	2.6	0.9	0.1
Industrial Stormwater WLA	25.6	8.0	2.6	0.9	0.1
Reserve Capacity (RC)	228.8	228.8	228.8	228.8	*
Margin of Safety (MOS)	3,236.0	1,058.0	403.0	184.0	65.0
Load Allocation (LA)	26,552.2	8,249.8	2,745.6	905.3	119.0

*See Section 4.8 for potential future use of reserve capacity

Critical Condition:

The load duration curve shows that the majority of the exceedences occur at the high flow and moist conditions zones when flows are greater than 22.4 cubic feet per second (cfs). The critical condition is determined to be during wet weather which occurs during snow melt and rain events. EPA concurs with the data analysis and LDC approach utilized by MPCA in their calculation of the wasteload allocations, load allocations and the margin of safety for Carver Creek TMDL. The method used for determining this TMDL is consistent with EPA technical memos.¹

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

¹ See 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-07-2006, Washington, D.C.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future non-point 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 non-point sources.

Comments:

The load allocation is discussed in Sections 4.6.3 and 5.1 of the TMDL Report. MPCA determined available LAs by determining the loading capacity and subtracting out the wasteload allocations (including a reserved capacity) and a margin of safety. The load allocation includes nonpoint pollution sources that are not subject to an NPDES permit as well as “natural background”. Although there are numeric loads for each flow regime in the table the value will change as the flow changes within each flow regime. Table 1 of this document identifies the load allocation associated for each flow regime for this TMDL.

EPA finds MPCA’s approach for calculating the loading capacity to be reasonable with EPA Guidance. EPA finds that the TMDL document submitted by MPCA satisfies all requirements of this fourth element.

5. Wasteload Allocations (WLAs)

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

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQs 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.

Comments:

As discussed earlier there are three permitted point sources that discharge into Carver Creek. There are also five entities that hold MS4 permits. Table 1 above, contains the WLAs for this TMDL, and Table 2 and 3 below identify these permits.

There are three wastewater sources of permitted discharges (non MS4) in the Carver Creek watershed: Bongards' Creamery, the Cologne WWTP and the Carver WWTP. The Bongards' Creamery and Cologne WWTP discharge to one of the upstream tributaries of Carver Creek above the MCES monitoring station while the Carver WWTP discharge is located downstream of the MCES monitoring station. Their daily mass limits are used as their WLAs for this TMDL. Table 2 below lists the TSS effluent limits for the wastewater treatment facilities in the Carver Creek watershed. Of the permitted outfalls at the Bongards' Creamery facility, SD-1 is not active, the design flow for SD-2 is 2 million gallons and permitted to discharge periodically from April 1 to June 15 and September 1 to December 15, and the design flow for SD-3 is 0.339 million gallons and discharges year around.

Table 2 NPDES (non MS4) permittees for Carver Creek Watershed

Name	Permit number	Discharges	Permit Limit (kg/day)	Concentration Limit (mg/L)	Measurement Frequency
Bongards' Creamery	MN002135 (SD-1)	Non-contract Cooling water		30.0	Monthly Average
				45.0	Daily Max
	MN002135 (SD-2)	Pond effluents from Process/sanitary wastes	341	45.0	Monthly Average
			460	65.0	Monthly Max
	MN002135 (SD-3)	Cooling water	38.5	30.0	Monthly Average
			-----	45.0	Daily Max
Cologne WWTP	MN0023108	Total Facility Discharge	36.9	-----	Monthly Average
			55.3	-----	Weekly Average
Carver WWTP	MN0053457	Total Facility Discharge	41.5	-----	Monthly Average
			61.5	-----	Weekly Average

The WLA for the MS4 permits were estimated based solely on the total area of urban land use for the MS4 communities. Table 3 below lists the five MS4 NPDES permits and total percentage of land within that MS4 community classified as urban land (urban area includes area classified as roads within the urban area) based on 2030 land use maps. The assumption was made that using the 2030 land use map allows for future development. The WLA for each MS4 is calculated by taking the remaining loading capacity within each flow regime after wastewater WLA, MOS and reserve capacity is subtracted and multiplying that amount by the percent of the land area it makes up in the watershed.

Table 2 MS4 Permits for Carver Creek Watershed

Name	Permit number	Land Area
Carver County	MS400070	0.05%
Laketown Township	MS400142	1.88%
City of Minnetrista	MS4001606	0.03%
City of Waconia	MS400232	4.35%
City of Carver	MS400077	0.14%

Construction stormwater discharges were grouped together into a categorical WLA based on the approximate land use areas covered by those activities. According to MPCA records, there were a total of 263 applications for construction permits over the last four years in Carver County. The area of those construction sizes ranged from 0.25 to 4,958 acres. The total area covered by the applications is approximately 0.09 percent of the watershed area subject to NPDES construction permits on a yearly basis. The WLA for construction was then calculated by taking the remaining loading capacity after wastewater WLA, MOS and reserve capacity was subtracted and multiplying that amount by 0.09 percent. MPCA set the industrial stormwater permit areas equal to NPDES construction permit areas in order to complete the TMDL allocation. The WLA for NPDES permitted industrial stormwater was established in addition to the WLA for permitted discharges from wastewater treatment and industrial facilities.

Minnesota also requires a reserve capacity (RC) component to the TMDL when there are authorized discharges. In this case a reserve capacity was added for future growth possibilities for any additional discharge including expansion of the NPDES permits. The RC for this TMDL can be found in Table 1 above.

To account for potential expansion of Bongards' Creamery and the WWTPs and other possible WLA increases a small amount of reserve capacity (equivalent to 50 percent of their current daily mass loading) has been accounted for in the TMDL for all flow regimes, except low flow. This additional allocation for potential future growth accounts for a small fraction of the overall loading capacity.

EPA finds MPCA's approach for calculating the loading capacity to be reasonable with EPA Guidance. EPA finds that the TMDL document submitted by MPCA satisfies all requirements of this fifth element.

6. Margin of Safety (MOS)

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

Comments:

The MOS for these TMDLs is an explicit 10% of the loading capacity. MPCA determined that this MOS is appropriate because of the very close agreement between the paired turbidity and TSS samples (Appendix A of the TMDL Report). The statistical analysis of the data determined that the r^2 values were greater than 0.56, indicating the turbidity values and TSS values were closely related. In addition, an implicit MOS is demonstrated by MPCA's assumption that the seasonal facilities (mainly pond systems) discharge on a daily basis. These systems are actually required by permit to discharge before June 15 or after September 15, when the water quality impacts are reduced. In addition, the wastewater treatment facilities are required by permit to discharge well below the in-stream target, allowing for assimilative capacity in the waterbodies.

EPA agrees that these measures provide sufficient MOS such that water quality standards will be achieved.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of this sixth element.

7. Seasonal Variation

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

Comments:

The TMDL submittal addresses the seasonal variation by using the duration curve method which depicts water quality data over the full range of expected flow conditions. For this TMDL 26 years of flow data was used. Most exceedences of the water quality standard for turbidity occur at the high- and moist-range flow conditions during the seasons with snow melt, rain and lack of a developed crop canopy.

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

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a National Pollutant Discharge Elimination System (NPDES) permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint

source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

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

Comments:

Section 5.2 of the TMDL Report identifies potential sources of TSS. MPCA has determined that the load allocation is the largest contributor of TSS to the Carver Creek. The Reasonable Assurance Section (Section 8 of the TMDL Report) discusses some mechanisms that give reasonable assurance that the TMDL can be met. These mechanisms are as follows:

Carver County is the water management authority for Carver Creek. The County is uniquely qualified through its zoning and land use powers to implement corrective actions to achieve TMDL goals. The County has stable funding for water management each year, and will continue its baseline-monitoring program. MPCA has indicated that Carver County is working to manage their resources to attain the following actions:

- Protect, preserve, and manage natural surface and groundwater storage and retention systems;
- Effectively and efficiently manage public capital expenditures needed to correct flooding and water quality problems;
- Identify and plan for means to effectively protect and improve surface and groundwater quality;
- Establish more uniform local policies and official controls for surface and groundwater management;
- Prevent erosion of soil into surface water systems;
- Promote groundwater recharge;
- Protect and enhance fish and wildlife habitat and water recreational facilities; and
- Secure the other benefits associated with the proper management of surface and groundwater.

The Carver County Board of Commissioners (County Board), acting as the water management authority for the former Bevens Creek (includes Silver Creek), Carver Creek, East and West Chaska Creeks, and South Fork Crow River watershed management organization areas, has established the "Carver County Water Management Organization (CCWMO)". The purpose of establishing the CCWMO is to fulfill the County's water management responsibilities under Minnesota Statute and Rule. Further information can be found in Section 8.2 of the TMDL Report.

The Clean Water Legacy Act (CWLA) is a statute passed in Minnesota in 2006 for the purposes of protecting, restoring, and preserving Minnesota water. The CWLA provides the process to be used in Minnesota to develop TMDL implementation plans, which detail the restoration activities needed to achieve the allocations in the TMDL. The TMDL implementation plans are required by the State to obtain funding from the Clean Water Fund. The Act discusses how MPCA and the involved public agencies and private entities will coordinate efforts regarding land use, land management, water management, etc. Cooperation is also expected between agencies and other entities regarding planning efforts, and various local authorities and responsibilities. This would also include informal and formal agreements and to jointly utilize technical educational, and financial resources. MPCA expects the implementation plans to be developed within a year of TMDL approval.

The CWLA also provides details on public and stakeholder participation, and how the funding will be used. The implementation plans are required to contain ranges of cost estimates for both, point and nonpoint source load reductions, as well as monitoring efforts to determine effectiveness. MPCA has developed guidance on what is required in the implementation plans (Implementation Plan Review Combined Checklist and Comment, MPCA), which includes cost estimates, general timelines for implementation, and interim milestones and measures. 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 '11 Clean Water Fund Competitive Grants Policy; Minnesota Board of Soil and Water Resources, 2011)

EPA finds that the TMDL document submitted by MPCA adequately addresses this eighth element.

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.

Comments:

As discussed in the Monitoring Section (Section 6) of the TMDL Report, monitoring will be continued by Carver County. Carver County currently monitors five automated stream sampling stations throughout Craver Creek Watershed. A detailed monitoring plan will be developed in the final implementation plan.

EPA finds that the TMDL document submitted by MPCA adequately addresses this ninth element.

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:

This TMDL does not contain a formal implementation plan. Section 7 of the TMDL Report lays out an implementation strategy. The final Implementation Plan will be developed within a year of the final approval of the TMDL report by the EPA. MPCA and Carver County plan to list what and where BMPs will be applied in the watershed and identify the cost and funding sources for their application. To reach the reduction goals Carver County will rely largely on its current Water Management Plan, which identifies the Carver SWCD as the local agency for implementing best management practices. Implementation goals not covered in the Water Management Plan will be identified and amended to the implementation plan.

EPA is not required to and does not approve TMDL implementation plans.

EPA finds that the TMDL document submitted by MPCA adequately addresses this tenth element.

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.

Comments:

The availability of the draft TMDL was on public notice in the State Register from November 14, 2011-December 14, 2011. On December 29, 2011, Carver County Staff held a public meeting to present this TMDL to local stakeholders and the public. Additional public involvement was also provided through stakeholder meetings, citizen surveys, workshops and

permanent citizen advisory committees to gather input from the public and help guide implementation activities held by Carver County.

The County established the Water, Environment, & Natural Resource Committee (WENR) as a permanent advisory committee. The WENR is operated under the County's standard procedures for advisory committees. WENR works with staff to make recommendations to the County Board on matters relating to watershed planning.

MPCA received comments from Minnesota Center for Environmental Advocacy in support of the TMDL.

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

12. Submittal Letter

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

Comment:

The transmittal letter is dated June 18, 2012 from Rebecca J. Flood, Assistant Commissioner, to Tinka Hyde, Director, Water Division, Region 5 EPA. The letter stated that this is a TMDL submittal for final approval under Section 303(d) of the CWA. The letter also contains the name of the watershed, and the pollutant of concern.

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

13. Conclusion

After a full and complete review, EPA finds that the TMDL for Carver Creek satisfies all of the elements of an approvable TMDL. This approval document is for one water body segment impaired for the aquatic life use impairment due to turbidity, for a total of one TMDL, addressing one impairment, from the 2010 Minnesota 303(d) list. EPA's approval of this document does not extend to those waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove TMDLs for those waters at this time. EPA or eligible Indian Tribes as appropriate will retain responsibilities under CWA Section 303(d) for those waters.