



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

AUG 04 2016

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 Load (TMDL) for St. Clair Lake in the Pelican River watershed, including supporting documentation and follow up information. St. Clair Lake is located in Becker County. The TMDL was calculated for total phosphorus. The TMDL addresses the impairment of aquatic recreational use.

EPA has determined that this TMDL 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 TMDL for St. Clair Lake. 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 addressing aquatic recreational use, 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 blue ink that reads "Tinka G. Hyde".

Tinka G. Hyde
Director, Water Division

Enclosure

cc: Celine Lyman, MPCA
Tim James, MPCA

wq-iw5-07g

TMDL: St. Clair Lake TMDL, Becker County, MN

Date:

DECISION DOCUMENT FOR THE ST. CLAIR LAKE TMDL, BECKER COUNTY, 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:

St. Clair Lake is located in Becker County, Minnesota, in the City of Detroit Lakes in the northwest portion of the state. St. Clair Lake is located within the Pelican River watershed. Long Lake is upstream of St. Clair Lake and drains into St. Clair Lake. St. Clair Lake discharges southwest into Muskrat Lake, and eventually into the Pelican River (Figure 1 of the TMDL).

St. Clair Lake is 160 acres in size, and has a total watershed area of 7,380 acres. The lake has an average depth of 5 feet, and a maximum depth of 9 feet. Due to the shallow depth, it is classified as a shallow lake by MPCA. St. Clair Lake was placed on the MPCA 303(d) list of impaired waters in 2008 due to exceedences of the phosphorus criteria. Table 1 contains the 303(d) list information for St. Clair lake.

Table 1: 303(d) List information for St. Clair Lake

Waterbody	AUID #	Pollutant	Impairment	Impaired use	HUC Code
St. Clair Lake	03-0382-00	phosphorus	Nutrient/eutrophication biological indicators	Aquatic Recreation	090201030705

Land Use:

The St. Clair Lake watershed is a mixture of urban and agricultural land, with some forest land in the watershed. The overall land use for the watershed is in Table 2 below. MPCA expects significant growth in the watershed.

Table 2: Land Use in the St. Clair Lake Watershed

Land Use	Area (acres)	Percent
Open water/wetlands	935	11
Urban	1798	25
Forest	1533	21
Grassland	205	3
Pasture	1152	16
Agriculture	1188	16
St. Clair Lake surface area	160	2
Long lake surface area	409	6
Total	7380	100

Problem Identification:

St. Clair Lake was added to the 2008 303(d) list for being impaired due to high levels of phosphorus. MPCA reviewed 10 years of data (2002-2011) and determined that the lake had slightly elevated total phosphorus (TP) average concentrations (68 µg/L) based upon the growing season, as well as elevated chlorophyll-a (chl-a) concentrations (25 µg/L). Secchi disc transparency was attaining the criteria (1.1 m).

Pollutants of Concern:

The pollutant of concern is total phosphorus (TP).

Pollutant:

While TP is an essential nutrient for aquatic life, elevated concentrations of TP can lead to nuisance algal blooms that negatively impact aquatic life and recreation (swimming, boating, fishing, etc.). Algal decomposition depletes oxygen levels which stresses benthic macroinvertebrates and fish. Excess algae can shade the water column which limits the distribution of aquatic vegetation. Aquatic vegetation stabilizes bottom sediments, and also is an important habitat for macroinvertebrates and fish. Furthermore, depletion of oxygen can cause phosphorus release from bottom sediments (i.e. internal loading).

Degradations in aquatic habitats or water quality (ex. low dissolved oxygen) can negatively impact aquatic life use. Increased turbidity, brought on by elevated levels of nutrients within the water column, can reduce dissolved oxygen in the water column, and cause large shifts in dissolved oxygen and pH throughout the day. Shifting chemical conditions within the water column may stress aquatic biota (fish and macroinvertebrate species). In some instances, degradations in aquatic habitats or water quality have reduced fish populations or altered fish communities from those communities supporting sport fish species to communities which support more tolerant rough fish species.

Priority Ranking:

The watershed were given priority for TMDL development due to the impairment impacts on public health, 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 and 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.

Source Identification (point and nonpoint sources):

Point Source Identification: For the St. Clair Lake phosphorus TMDL, MPCA identified two potential point sources, the City of Detroit Lakes wastewater treatment facility (WWTF) and Central Specialties, Inc. a sand and gravel operation (Table 7 of the TMDL). MPCA determined that Central Specialties, Inc. is not a source of TP to St. Clair Lake, as the facility discharges to Long Lake. Since Long Lake is attaining water quality standards, MPCA determined that Central Specialties, Inc. does not affect St. Clair Lake, and therefore is not a source of TP. (Section 3 of the TMDL). MPCA also identified the City of Detroit Lakes Municipal Separate Storm Sewer System (MS4) as a source of TP in the watershed (Table 3 of this Decision Document). Stormwater from MS4s can transport phosphorus to surface water bodies during or shortly after storm events.

Table 3: Regulated Permittees in the St. Clair Lake watershed

Permittee	NPDES Permit ID	MS4 area (acres)
City of Detroit Lakes WWTF	MN0020192	NA
City of Detroit Lakes MS4	MNR040000	2918

Permitted Construction and Industrial Areas: Construction and industrial sites may contribute phosphorus via sediment runoff during stormwater events. These areas within the St. Clair Lake watershed must comply with the requirements of the MPCA's NPDES Stormwater Program. The NPDES program requires construction and industrial sites to create Stormwater Pollution

Prevention Plans (SWPPPs) which summarize how stormwater pollutant discharges will be minimized from construction and industrial sites.

Combined Sewer Overflows (CSOs): There are no CSO communities in the St. Clair Lake watershed.

Concentrated Animal Feeding Operations (CAFOs): There are no CAFOs within the St. Clair Lake watershed.

Nonpoint Source Identification: The potential nonpoint sources for the St. Clair Lake phosphorus TMDL are:

Non-regulated stormwater runoff: Non-regulated stormwater runoff can add phosphorus to the lake. The sources of phosphorus in stormwater include organic material such as leaves, animal/pet wastes, fertilizers, etc.

Failing septic systems: MPCA noted that failing septic systems, where waste material can pond at the surface and eventually flow into surface waters or be washed in during precipitation events, are potential sources of phosphorus. MPCA noted that little of the area is on septic systems, and therefore septic systems are considered a very limited source.

Atmospheric deposition: Phosphorus may be added via particulate deposition. Particles from the atmosphere may fall onto lake surfaces or other surfaces within the St. Clair Lake watershed. Phosphorus can be bound to these particles which may add to the phosphorus inputs to surface water environments.

Groundwater: The Detroit Lakes WWTF uses several processes to discharge wastewater. The facility uses rapid infiltration basins and spray irrigation to discharge effluent to the ground surface. These practices do not directly discharge to surface waters, but do increase the TP concentration in groundwater, which connect hydrologically to St. Clair Lake. In addition, other TP applications (e.g. fertilizer application) contribute TP to the groundwater, which flows to St. Clair Lake.

Upstream loading: A portion of the St. Clair Lake watershed discharges to Long Lake, upstream of St. Clair Lake. Long Lake is not listed as impaired by MPCA, and the in-lake water quality is relatively high. The in-lake TP average concentration is 17 µg/L, and MPCA determined the lake contributes a small amount of TP to St. Clair Lake (Section 3 of the TMDL).

Internal loading: The release of phosphorus from lake sediments via physical disturbance from benthic fish (rough fish, ex. carp), from wind mixing the water column, and from decaying curly-leaf pondweed may all contribute internal phosphorus loading to St. Clair Lake. Phosphorus may build up in the bottom waters of the lake and may be resuspended or mixed into the water column when the thermocline decreases and the lake water mixes. MPCA noted that St. Clair Lake underwent an alum treatment in 1998. Data from before 1998 indicated a significant internal loading of TP (336 lbs/yr). The modeling effort for this TMDL project demonstrated that the alum treatment had been effective in controlling TP, and only a small amount of additional TP internal load (22 lbs/yr) needed to be accounted for in the model.

Future Growth:

MPCA expects significant growth in the St. Clair Lake watershed. Appendix C of the TMDL lists the lands that have been annexed since 2012, and the watershed model (Simple Method) has incorporated the annexations into the calculations for the MS4 loads. MPCA also developed a Water Quality-Based Effluent Limit (WQBEL) study in 2012 that considered the future growth in the watershed (Appendix B of the TMDL). To account for this growth, the Detroit Lakes Treatment Facility was modeled at a slightly higher discharge flow consistent with the WQBEL study. Any changes in allocations will need to comply with the respective WLA and LA values calculated in the TMDLs.

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. St. Clair Lake is designated as Class 2B water for aquatic life and recreation use (boating, swimming, fishing, etc.). The Class 2B aquatic life and recreation designated use is described in Minnesota Rule 7050.0140 (3):

“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 phosphorus criteria:

Numeric criteria for total phosphorus, chlorophyll-a (chl-a), and Secchi Disk (SD) depth are set forth in Minnesota Rules 7050.0222. These three parameters are the eutrophication standards that

must be achieved to attain the aquatic recreation designated use. The numeric eutrophication standards which are applicable to St. Clair Lake are those set forth for Class 2B shallow lakes in the North Central Hardwood Forest (NCHF) Ecoregion (Table 4 of this Decision Document). In developing the lake nutrient standards for Minnesota lakes, the MPCA evaluated data from a large cross-section of lakes within each of the State's ecoregions. Clear relationships were established between the causal factor, TP, and the response variables, chl-a and SD (Section 2.1 of the TMDL).

Table 4: MPCA Eutrophication Criteria for shallow lakes in the NCHF Ecoregion

Parameter	Eutrophication Standard
Total Phosphorus (µg/L)	TP ≤ 60
Chlorophyll-a (µg/L)	chl-a ≤ 20
Secchi Depth (m)	SD ≥ 1.0

Target:

MPCA selected a target of 60 µg/L of TP to develop the lake nutrient TMDL. MPCA selected total phosphorus as the appropriate parameter to address eutrophication problems in the lakes because of the interrelationships between TP and chl-a, as well as SD. Algal abundance is measured by chl-a, which is a pigment found in algal cells. As more phosphorus becomes available, algae growth can increase. Increased algae in the water column will decrease water clarity that is measured by SD.

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:

The approach utilized by the MPCA to calculate the loading capacity for St. Clair Lake for phosphorus is described in Section 4.1 of the final TMDL document.

Watershed modeling: To develop the TMDL for St. Clair Lake, MPCA utilized the Simple Method. The Simple Method is a modeling process that calculates stormwater runoff volumes and TP loads. Using precipitation, runoff coefficients, land use area, impervious cover, and runoff TP concentrations, stormwater flow and TP loads can be calculated for a watershed. By varying the runoff coefficients and impervious cover values, the effects of various Best Management Practices (BMPs) can be determined.

MPCA compared the runoff volumes and TP loads from the Simple Method to previous work performed as part of the 2012 WQBEL project. Table 9 of the TMDL indicates the close agreement of both processes. MPCA also included several major stormwater BMPs that are present in the watershed. Table 12 of the TMDL shows the BMPs, the removal rate of TP, and the TP load reductions that result.

Upstream loads from Long Lake were accounted for by calculating the load being discharged from the lake. This was based upon the average in-lake TP concentration multiplied by the flow discharging from Long Lake. An estimated 45 lbs/yr of TP was calculated as being discharged from Long Lake. Atmospheric deposition was estimated to be 30 lbs/yr.

MPCA also accounted for groundwater impacts in St. Clair Lake, and estimated the amount of groundwater inflow into the lake (Section 3.2 of the TMDL). MPCA used data from a groundwater study from 1998 to calculate that groundwater was 17% of the watershed flow and 1.6% of TP loads. This results in a TP load of 13 lbs/yr attributed to groundwater.

In-Lake modeling: Once the watershed loading calculations were developed for the lake, MPCA used BATHTUB to determine the water quality based upon the TP loading. The BATHTUB model applies a series of empirical equations derived from assessments of lake data and performs steady state water and nutrient calculations based on lake morphometry and tributary inputs. The BATHTUB model requires fairly simple inputs to predict phosphorus loading. The model accounts for pollutant transport, sedimentation, and nutrient cycling. The model was used to determine both the current load (Appendix A of the TMDL) and the load needed to meet or maintain water quality standards for each lake (Section 4.1 of the TMDL).

The Canfield-Bachmann subroutine was used in the BATHTUB model to determine how the lake responded to the TP loading. The model parameters were adjusted until the model predictions fit the sample data. Once the data were calibrated, the source loads were reduced until the in-lake concentration met the appropriate water quality standard (WQS) (Section 4.2 of the TMDL). To account for internal loading of TP, MPCA added a small amount of internal loading into the model. The lake underwent an alum treatment in 1998, and the relatively small amount of extra internal loading (22 lbs/yr) needed to calibrate the model indicates to MPCA that the treatment has been successful.

MPCA subdivided the loading capacity among the WLA, LA and MOS components of the TMDL (Table 5 of this Decision Document). These calculations were based on the critical condition, the summer growing season, which is typically when the water quality in the lake is degraded and phosphorus loading impacts are the greatest. Modeling results showed that the current load of TP is slightly above the WQS. Table 7 of this Decision Document shows the TMDL summary for St. Clair Lake. EPA notes that the table below differs slightly from Table 16 of the TMDL. During the final review process, it was determined by MPCA and EPA that the original table in the TMDL had two numbers incorrectly placed. The “Loading Capacity” (WLA + LA) and the “Total” (TMDL) values were switched. A corrected table was sent from MPCA, and Table 5 below contains the correct TMDL value (email from Tim James, MPCA, June 30, 2016).

Table 5: TMDL summary for St. Clair Lake

			Existing TP Load	Allowable TP load		Load Reduction		
			lbs/yr	lbs/yr	lbs/day	Lbs/yr	%	
Wasteload Allocation	Detroit Lakes	Direct	21	12	0.033	9	42	
	Drainage	Ditch 1	272	137	0.375	135	50	
	MS4	Ditch 14	267	134	0.368	133	50	
		<i>Subtotal</i>	<i>560</i>	<i>283</i>	<i>0.776</i>	<i>277</i>	<i>49</i>	
		Detroit Lakes WWTF*	342	437	1.197	+95*	+28**	
		Construction SW		8	0.022			
		Industrial SW		8	0.022			
	Total WLA		902	736	2.018			
Load Allocation		Long Lake outflow	45	45	0.123	0	0	
		Atmospheric deposition	30	30	0	0	0	
		Groundwater	13	8	0.022	5	38	
		Internal load	22	0	0.082	22	100	
		Detroit Lakes	Direct	29	14	0.043	15	42
		unregulated	Ditch 1	147	70	0.191	77	50
		drainage	Ditch 14	2	1	0.002	1	50
		<i>Subtotal</i>	<i>178</i>	<i>85</i>	<i>0.233</i>	<i>93</i>	<i>49</i>	
	Total LA		288	168	0.461			
	MOS (10%)			101	0.275			
Total Maximum Daily Load				1005	2.753			

* - includes reserve capacity

** - increase from existing load to account for increased service area

EPA supports the data analysis and modeling approach utilized by MPCA in their calculation of wasteload allocations, load allocations and the margin of safety for the St. Clair Lake TMDL. EPA finds MPCA’s approach for calculating the loading capacities to be reasonable and consistent with EPA guidance.

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 LA for St. Clair Lake is in Table 5 of this Decision Document. The LA was subdivided based upon source. Two ditches, Ditch 1 and Ditch 14, drain into St. Clair Lake. Ditch 1 is a drainage ditch north of St. Clair Lake, and includes both MS4 and unregulated stormwater runoff. Drain 14 drains the area east of St. Clair Lake, and is predominantly MS4 drainage with some unregulated stormwater (Figure 10 and Table 14 of the TMDL). The LA calculations are based upon the unregulated drainage area. MPCA also calculated loads from the direct drainage area surrounding St. Clair Lake, and split the load between unregulated flow (LA) and regulated flow (WLA). The load from Long Lake is considered unregulated load, and assigned to the LA. Overall, MPCA determined an approximately 52% reduction in the nonpoint source load is needed to attain the WQS.

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.

Comment:

MPCA determined individual WLAs for the permittees in the St. Clair Lake watershed (Table 5 of this Decision Document). For the Detroit Lakes WWTF, the WLA is based upon the most recently issued NPDES permit dated February 6, 2014. The Detroit Lakes WWTF discharges to St. Clair Lake mainly during the winter, and uses irrigation or rapid infiltration basins to accommodate discharges during the remainder of the year. Approximately 31% of the annual

effluent volume is discharged to the lake, based upon data from 2002-2011. The 2012 WQBEL study was used to determine the allowable loading into St. Clair Lake. The WLA for the Detroit Lakes WWTF is 437 lbs/yr (1.197 lbs/day), which assumes Detroit Lakes will continue to utilize land treatment. MPCA calculated 2002-2011 historical discharge to be 342 lbs/yr. The increase of 95 lbs/yr was calculated by MPCA to account for reserve capacity as additional lands have been annexed in the watershed, and the WWTF anticipates its customer base will increase as a result of the newly annexed lands.

The MS4 WLAs were based upon the land area under the jurisdiction of the MS4 permit as discussed in Section 4 of the TMDL. As discussed in Section 4 of this Decision Document, MPCA further refined the WLAs based upon the regulated land area in each subwatershed. There are no CSOs or CAFOs within the St. Clair Lake watershed, therefore, they were not given an allocation (WLA = 0).

MPCA set aside a portion of the total load capacity to account for TP loading from construction stormwater and from industrial stormwater. MPCA reviewed the areal coverage of construction permits issued in Becker County from 2007-2013, and calculated coverage to be 2.1%, or 8 lbs/yr (0.022 lbs/d). This was then doubled to account for industrial stormwater (8 lbs/yr or 0.022 lbs/d) (Section 4.3.2 of the TMDL).

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 those sites to limit the discharge of pollutants of concern. BMPs and other stormwater control measures which should be implemented at the industrial sites 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 St. Clair Lake TMDL incorporated an explicit MOS of 10% of the TMDL (Table 5 of this Decision Document). MPCA noted that the 10% is reasonable due to the results of the generally good calibration of the Simple Method model for hydrology and pollutant loading (Section 4 of the TMDL) as well as the BATHTUB model (Appendix A of the TMDL). The calibration results indicate the models adequately characterize the lake, 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:

Nutrient influxes to St. Clair Lake typically occur during wet weather events. Critical conditions that impact the response of the lake to nutrient inputs occur during periods of low flow in the summer. During low flow periods, nutrients accumulate, there is less assimilative capacity within the water body, water temperatures increase, and algae thrives. Increased algal growth during low flow periods can deplete dissolved oxygen within the water column.

The nutrient targets employed in the St. Clair Lake nutrient TMDL were based on the average nutrient values collected during the growing season (June 1 to September 30). The water quality criteria were designed to meet the period of the year where the frequency and severity of algal growth is the greatest, the mid-late summer. The mid-late summer time period is typically when eutrophication standards are exceeded and water quality in the lakes is deficient. By calibrating the TMDL development efforts to protect water bodies during the worst water quality conditions of the year, MPCA assumes that the loading capacity established by the TMDL will be protective of water quality during the remainder of the calendar year (October through May).

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:

Nutrients: The St. Clair Lake TMDL discusses reasonable assurance activities in Sections 5 and 7 of the TMDL. The main entities responsible for overseeing the pollutant reduction activities will be the MPCA and the Pelican River Watershed District (PRWD).

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.

The Detroit Lakes WWTF’s most recent NPDES permit contains significant reductions in TP discharges. As discussed in Section 5 of this Decision Document, the WLA is 437 lbs/yr. Prior to the 2014 permit issuance, the permitted loading for the facility was 6,149 lbs/yr. This represents a reduction of 5,712 lbs/yr (93%). As part of the 2014 permit, the facility has a compliance schedule that requires attainment of the WLA (437 lbs/yr) by October 1, 2022.

All regulated MS4 communities are required to satisfy the requirements of the MS4 general permit. The MS4 general permit requires the permittee to develop a SWPPP which addresses all permit requirements, including the following six minimum control measures:

- Public education and outreach;
- Public participation;
- Illicit Discharge Detection and Elimination (IDDE) Program;
- Construction-site runoff controls;
- Post-construction runoff controls; and
- Pollution prevention and municipal good housekeeping measures.

A SWPPP is a management plan that describes the MS4 permittee's activities for managing stormwater within their jurisdiction or regulated area. In the event a TMDL study has been completed, approved by EPA prior to the effective date of the general permit, and assigned a wasteload allocation to an MS4 permittee, that permittee must document the WLA in its application and provide an outline of the best management practices to be implemented in the current permit term to address any needed reduction in loading from a MS4 community.

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 watershed 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.

The PRWD has developed a 2005-2014 Watershed Management Plan (WMP), which details the authorities and responsibilities of the PRWD (PRWD Revised Management Plan, 2005). The WMP discusses the water quality of St. Clair Lake, the improvements that have been made recently to the watersheds, and the improvements scheduled for the watershed. The PRWD has also announced that they are beginning the process to update the plan in 2016. The PRWD has recently been granted \$1.5 million for wetlands restoration in the Detroit Lakes area (including St. Clair Lake)(MPCA press release, May 25, 2016).

Clean Water Legacy Act: The CWLA was passed in Minnesota in 2006 for the purposes of protecting, restoring, and preserving Minnesota water. The CWLA provides the protocols and practices to be followed in order to protect, enhance, and restore water quality in Minnesota. The CWLA outlines how MPCA, public agencies and private entities should coordinate in their efforts toward improving land use management practices and water management. The CWLA anticipates that all agencies (i.e., MPCA, public agencies, local authorities and private entities, etc.) will cooperate regarding planning and restoration efforts. Cooperative efforts would likely include informal and formal agreements to jointly use technical, educational, and financial resources.

The CWLA also provides details on public and stakeholder participation, and how the funding will be used. In part to attain these goals, the CWLA requires MPCA to develop Watershed Restoration and Protection Strategies (WRAPS). The WRAPS are required to contain such elements as the identification of impaired waters, watershed modeling outputs, point and nonpoint sources, load reductions, etc. (Chapter 114D.26; CWLA). The WRAPS also contain an implementation table of strategies and actions that are capable of achieving the needed load reductions, for both point and nonpoint sources (Chapter 114D.26, Subd. 1(8); CWLA). Implementation plans developed for the TMDLs are included in the table, and are considered "priority areas" under the WRAPS process (Watershed Restoration and Protection Strategy Report Template, MPCA). This table includes not only needed actions but a timeline for achieving water quality targets, the reductions needed from both point and nonpoint sources, the governmental units responsible, and interim milestones for achieving the actions. MPCA has developed guidance on what is required in the WRAPS (Watershed Restoration and Protection Strategy Report Template, MPCA). St. Clair Lake (and the Pelican River) are part of the Otter Tail River watershed, and are included in the Otter Tail River WRAPS. The Otter Tail River WRAPS is in development and is scheduled to be completed in 2020.

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 St. Clair Lake watershed (Section 6 of the TMDL). Water quality monitoring is a critical component of the adaptive management strategy employed as part of the implementation planning efforts for 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 phosphorus TMDL targets, routine monitoring of the lakes will continue to be a part of the PRWD annual monitoring program. The PRWD currently monitors St. Clair Lake at regular intervals for both surface and bottom samples and plans on continuing this monitoring in the future (Section 6 of the TMDL; PRWD Watershed Management Workplan, 2015).

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 7 of the final TMDL document. The MPCA presented a variety of possible implementation activities which could be undertaken within the watershed.

Urban/residential stormwater reduction strategies: The land use in the St. Clair Lake watershed is composed of mainly urbanized land with small amounts of agricultural areas. MPCA determined that stormwater runoff, both regulated and unregulated are the main source of TP outside of the Detroit Lakes WWTF (Section 7 of the TMDL). MPCA discussed the potential Minimal Impact Design Studies (MIDS) practices that could be implemented in the watershed. The MIDS process follows the Low Impact Development (LID) goals, where development is pursued to mimic a site's natural hydrology.

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 8 of the TMDL. Throughout the development of the St. Clair Lake TMDL 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.

The MPCA held kickoff meetings on October 9 and 25, 2012, to present the existing data. A follow-up meeting was held on April 16, 2013, with the City of Detroit Lakes officials to review city loadings and urban stormwater loads. Additional meetings were held on April 30, 2014, and August 13, 2014 to review details of the TMDL. A public meeting was held on October 23, 2014 to present the final TMDL before the public notice.

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 January 20, 2015 and ended on February 19, 2015.

The MPCA received one public comment letter, from the Minnesota Department of Agriculture (MDA), and adequately addressed the comments expressed in the letter.

The comments from the MDA focused on the strength of the Simple Method model, and raised concern over how appropriate the model was for the watershed. MPCA responded that the model was sufficient given the small size of the watershed and the relatively small amount of agricultural land in the area. MPCA noted that the Otter Tail WRAPS project will be beginning shortly, and will be looking at a much larger area and utilizing a more robust model, the Hydrological Simulation Program – Fortran (HSPF). MPCA noted there will be numerous opportunities to provide input during that process.

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 St. Clair Lake TMDL document, submittal letter and accompanying documentation from the MPCA on May 19, 2016. The transmittal letter explicitly stated that the final St. Clair Lake TMDL for phosphorus was 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 St. Clair Lake watershed by the MPCA satisfies the requirements of this twelfth element.

13. Conclusion

After a full and complete review, the EPA finds that the TMDL for the St. Clair Lake for phosphorus satisfies all of the elements of an approvable TMDL. This approval is for 1 TMDL, addressing aquatic recreational use impairments due to phosphorus.

The EPA's approval of this TMDLs extend 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.