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

APR 25 2011

REPLY TO THE ATTENTION OF:
WW-16J

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

Dear Ms. Flood:

The U.S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Loads (TMDL) for the Minnehaha Creek Watershed Lakes, including support documentation and follow up information. Lake Nokomis (ID 27-0019) is located in central Minnesota in Hennepin County. Lake Virginia (ID 10-0015), Parley Lake (ID 10-0042) and Wasserman Lake (ID 10-0048) are located in central Minnesota in Carver County. The TMDLs address the Aquatic Recreation Use impairments due to excessive nutrients.

EPA has determined that the Minnehaha Creek Watershed Lakes Nutrient TMDLs meet the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations set forth at 40 C.F.R. Part 130. Therefore, EPA approves Minnesota's four phosphorus TMDLs, addressing excess nutrients. 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 efforts in submitting these TMDLs 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,

Tinka G. Hyde
Director, Water Division

Enclosure

cc: Dave L. Johnson, MPCA
Chris Zadak, MPCA

wq-iw11-09g

TMDL: Minnehaha Creek Watershed Lakes TMDL, Hennepin & Carver Counties, MN
Date: April 25, 2011

DECISION DOCUMENT FOR THE APPROVAL OF THE MINNEHAHA CREEK WATERSHED LAKES (LAKE NOKOMIS, LAKE VIRGINIA, PARLEY LAKE, WASSERMANN LAKE), MINNESOTA, TMDL

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 Minnehaha Creek Watershed (MCW) is location in Hennepin County and a portion of northern Carver County. The MCW lies within the boundaries of the North Central Hardwood Forest (NCHF) ecoregion in the state of Minnesota. The MCW drains approximately 181 square miles (approximately 115,840 acres) of largely suburban land south of the City of Minneapolis. The western portion of the MCW drains to Lake Minnetonka, including waters from Lake Virginia, Parley Lake and Wassermann Lake. Lake Minnetonka's outlet into Minnehaha Creek is via the Grays Bay Dam in the northeastern portion of Lake Minnetonka. Minnehaha Creek flows eastward for 22 miles before emptying into the Mississippi River south of downtown Minneapolis. Lake Nokomis lies in the eastern portion of the MCW and drains directly into Minnehaha Creek.

Lake Nokomis: Lake Nokomis is located in the City of Minneapolis and its subwatershed (approximately 4.1 square miles) includes areas within the City of Minneapolis, the City of Richfield, Fort Snelling and the Minneapolis-St. Paul (MSP) International Airport. The Lake Nokomis subwatershed is located in the eastern portion of the MCW. Lake Nokomis lies in the northern portion of the Lake Nokomis subwatershed (see Figure 2 of the TMDL document, page 8). Minnehaha Creek lies to the north of Lake Nokomis. Waters from Lake Nokomis flow into Minnehaha Creek. Prior to 2003, large storm events caused flow into Lake Nokomis from Minnehaha Creek. An inflatable weir was installed in 2003 to prevent flow from Minnehaha Creek into Lake Nokomis. The Minnehaha Creek Watershed District (MCWD) is responsible for the operation and maintenance of the weir. Surface water drainage patterns in the Lake Nokomis subwatershed generally flow in a northeasterly direction into Lake Nokomis.

Lake Virginia: Lake Virginia is located within the City of Victoria and its subwatershed (approximately 6.2 square miles) includes areas within the City of Victoria, the City of Shorewood, the City of Chanhassen, and the City of Chaska. Lake Virginia is located in the southern portion of the MCW. Lake Virginia lies in the northwestern portion of the Lake Virginia subwatershed (see Figure 10 of the TMDL document, page 20). In the center of the Lake Virginia subwatershed is Lake Minnewashta. Water from the Lake Virginia subwatershed flows in a northwesterly direction, from Lake Minnewashta to Lake Virginia. Waters from the Lake Virginia subwatershed eventually drain into Lake Minnetonka, which is to the northwest of Lake Virginia. Water levels in Lake Virginia are significantly influenced by water levels in Lake Minnewashta

Parley Lake: Parley Lake is located in Laketown Township and is a part of the Six Mile Creek (SMC) subwatershed. The Six Mile Creek watershed is approximately 27 square miles. The

Parley Lake subwatershed is located in the City of Victoria, the City of Minnetrista, and Laketown Township. The SMC subwatershed is located in the southwestern portion of the MCW (see Figure 5 of the TMDL document, page 13). Wassermann Lake also is a part of the SMC subwatershed and is southeast of Parley Lake. Wassermann Lake is nearer to the headwaters of the SMC subwatershed. Waters from the Wassermann Lake area of the subwatershed flow through Parley Lake on their way to Lake Minnetonka. Surface water drainage patterns in the SMC subwatershed generally flow in a northerly-northeasterly direction toward Lake Minnetonka.

Wassermann Lake: Wassermann Lake is located in Laketown Township and is a part of the SMC subwatershed. Wassermann Lake is located in the southwestern portion of the MCW (see Figure 5 of the TMDL document, page 13). Wassermann and Parley Lakes both lie in the SMC subwatershed. Wassermann is nearer to the headwaters of the subwatershed and is southeast of Parley Lake. Surface water drainage patterns in the SMC subwatershed generally flow in a northerly-northeasterly direction toward Lake Minnetonka.

Land Use:
Lake Nokomis subwatershed: Land use in the Lake Nokomis subwatershed is highly urbanized, and composed mostly of single family residential units, and commercial and industrial properties. There is limited park land and small lakes within the Lake Nokomis subwatershed. The Lake Nokomis subwatershed also contains portions of the MSP Airport in the eastern part of the subwatershed. The land use of the MSP Airport increases the impervious land area in the eastern half of the Lake Nokomis subwatershed. The Lake Nokomis subwatershed is considered completely developed and city populations within the subwatershed are projected to grow by 16% by 2030 (Table 2 of the final TMDL document, page 7).

Lake Virginia subwatershed: The area surrounding Lake Virginia is mainly single family residential units. Areas east and south of Lake Minnewashta are park lands composed of forest/woodlands, wetlands and grasslands. Overall, approximately 35% of the subwatershed is suburban/urban in use. The Lake Virginia subwatershed is projected to convert some of the undeveloped lands within the subwatershed to single family residential land use by 2020. Population is expected to increase dramatically by 2030 in the Lake Virginia subwatershed (Table 4 of the TMDL document, page 19).

Parley Lake subwatershed: Land use in the Parley Lake subwatershed is principally composed of park and recreation lands, undeveloped lands, and agricultural lands (greater than 70 percent of the total land use within the Parley Lake subwatershed). Residential and commercial land use areas, within the Parley Lake subwatershed, are primarily found in the City of Victoria. The cities of Victoria and Waconia are anticipated to annex land from the Laketown Township by 2020-2030. Projected land uses for this annexed land include large increases in single family residential land use which is projected to be the dominant land use. Consequently, substantial population changes are forecast for the cities of Victoria, Waconia and Minnestrista (Table 3 of the TMDL document, page 12).

Wassermann Lake subwatershed: Land use in the Wassermann Lake subwatershed is similar to the land use of the Parley Lake subwatershed. Wassermann Lake and Parley Lake lie within the

same subwatershed. The Wassermann Lake land use is composed of parks and recreation lands, undeveloped lands, and agricultural lands (greater than 70 percent of the total land use within the Wassermann Lake subwatershed). Residential and commercial land use areas, within the Wassermann Lake subwatershed, are primarily found in the City of Victoria. The cities of Victoria and Waconia are anticipated to annex land from the Laketown Township by 2020-2030. Projected land uses for this annexed land include large increases in single family residential land use. Subsequently, substantial population changes are forecast for the cities of Victoria, Waconia and Minnestrista (Table 3 of the TMDL document, page 12).

Problem Identification:
Lake Nokomis was originally listed on the 2002 Minnesota 303(d) list for excessive nutrients (phosphorus). Excess nutrients can lead to frequent algal overgrowth in lake environments and hinder aquatic recreation activities (swimming, fishing, boating, etc.). Lake Virginia was originally listed on the 2004 Minnesota 303(d) list for excessive nutrients. Parley Lake and Wassermann Lake were both originally listed on the 2002 303(d) list for excessive nutrients. Lake Nokomis, Lake Virginia, Parley Lake and Wassermann Lake all had targeted TMDL starting dates in 2003 and projected completion dates by 2010. All four lakes are currently on the draft 2010 Minnesota 303(d) list for excessive nutrients and impaired aquatic recreation.

Priority Ranking:
The MCW was 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 resources, the likelihood of completing TMDLs in an expedient manner, the inclusion of a strong base of existing data, the restorability of the waterbody, and the technical capability and the willingness of local partners to assist with TMDLs. Lakes within the MCW are a popular location for aquatic recreation: aesthetic viewing, boating, fishing, and swimming. Water quality degradation within the MCW has lead to efforts to improve the water quality, and to the development of TMDLs for Lake Nokomis, Lake Virginia, Parley Lake and Wassermann Lake.

Pollutant of Concern:
The pollutant of concern is phosphorus.

Source Identification (point and nonpoint sources):
Point Source Identification: The potential point sources to the MCW are:

Regulated stormwater runoff from Municipal Separate Storm Sewer Systems (MS4): Stormwater can transport phosphorus to surface water bodies via: decaying vegetation (leaves, grass clippings, etc.), domestic and wild animal waste, eroded soil particles, deposited phosphorus particulates from the air, phosphorus bound to oil and grease particles, and phosphorus-containing fertilizer. The MCW contains MS4 permits classified as Phase I, Phase II designated and Phase II mandatory permits.

Phase I MS4 permit(s):
- City of Minneapolis (MN0061018)

Phase II designated MS4 permit(s):
- City of Waconia (MS400232)

Phase II mandatory MS4 permit(s):

- Carver County (MS400070)
- City of Chanhassen (MS400079)
- City of Chaska (MS400080)
- Hennepin County (MS4000138)
- Laketown Township (MS400142)
- Minnehaha Creek Watershed District (MS400182)
- City of Minnestrista (MS400106)
- Minnesota Department Of Transportation (MN-DOT) Metro District (MS400170)
- City of Richfield (MS400045)
- City of Shorewood (MS400122)
- City of Victoria City (MS400126)

Laketown Township will ultimately be annexed by the Cities of Chaska, Waconia, and Victoria and will not exist under future/ultimate conditions. The City of Waconia is not currently within the MCW boundaries, but after it has annexed portions of Laketown Township, portions of the City of Waconia will be within the boundaries of the Parley Lake subwatershed. Fort Snelling, within the Lake Nokomis subwatershed, is not a regulated MS4 community.

Minneapolis-St. Paul International Airport Discharges: Discharges from this facility are regulated under a National Pollutant Discharge Elimination System (NPDES) permit (MN0002101). The discharges from this facility are classified as waste/stormwater and phosphorus inputs could be from decaying vegetation, eroded soil particles, deposited phosphorus particulates, and phosphorus bound to oil and grease particles. The discharges from the MSP areas drain to Mother Lake, which is south of Lake Nokomis. Water from Mother Lake eventually makes its way to Lake Nokomis (see Figure 2 of the TMDL document, page 8).

Permitted Construction and Industrial Areas: Construction and industrial sites may contribute phosphorus via sediment runoff during stormwater events. These areas within the MCW must comply with the requirements of the 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.

Nonpoint Source Identification: The potential nonpoint sources to the MCW are:

Internal loading: The release of phosphorus from sediment, the release of phosphorus via physical disturbance from benthic fish (rough fish, ex. carp), the release of phosphorus from wind mixing the water column, and the release of phosphorus from decaying pondweeds, can all contribute internal phosphorus loading to the lakes in the MCW. Phosphorus can build up in the bottom waters of the lake and can be resuspended or mixed into the water column.

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

Groundwater discharge: Phosphorus can be added to the lake's water column through groundwater discharge. Phosphorus concentrations in groundwater are usually below the water quality standards for phosphorus. In those instances where significant groundwater discharge into lake environments is occurring, phosphorus inputs can impact the phosphorus budgeting of the waterbody.

Non-regulated stormwater runoff: Non-regulated stormwater runoff can add phosphorus to the watershed. The sources of phosphorus in stormwater include: decaying vegetation (leaves, grass clippings, etc.), domestic and wild animal wastes, soil particles, atmospheric deposited particles, and phosphorus containing fertilizers. Runoff from agriculture, open space, rural and residential areas that lie outside of MS4 permits may contribute nonpoint derived phosphorus inputs to the MCW.

Future Growth:
The Future Growth/Reserve Capacity section is found on pages 44-45 of the final TMDL document. For the Minnehaha Creek Watershed District Lakes (MCWDL) TMDLs future land use scenarios were incorporated into water quality modeling efforts. The modeling efforts tied to Lake Virginia, Parley Lake and Wassermann Lake utilized growth projections for 2020 to set event mean concentrations (EMC) for these subwatersheds. The event mean concentrations impact the determination of the volume of runoff in each subwatershed under modeled ultimate land use conditions. Each TMDL received a wasteload allocation (WLA) or load allocation (LA) based on the area of the subwatershed and how much the area of that subwatershed can develop in the future. The WLA and LA per subwatershed were calculated for all current and future sources. Any expansion of point or nonpoint sources, within each subwatershed, will need to comply with the respective WLA and LA values in the TMDL.

The U.S. 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:

The designated use for Lake Nokomis, Lake Virginia, Parley Lake and Wassermann Lake is for aquatic recreation (swimming, fishing, boating, etc.). The four lakes are classified as Class 2B, 3C, 4A, 4B, 5, and 6 waters for the state of Minnesota.

Standards:

The assessment for eutrophic conditions includes a numeric water quality standard and assessment factors from Minnesota Rule 7050. The lakes identified in the MCWDL TMDL are within the boundaries of the NCHF ecoregion. The MPCA assumes that by meeting the loading capacity values set by the WLA and LA, the total phosphorus (TP), the chlorophyll-a (chl-a) and the Secchi Disc (SD) depth water quality criteria will be attained.

Parley Lake is the only lake in this TMDL study to be considered as a shallow lake (see Table 1 of this Decision Document). According to the MPCA, a lake is considered as a shallow lake if the lake's maximum depth is less than 15 feet, or the lake's littoral zone coverage is at least 80% of the lake's surface area. A request was made by the MPCA to set site specific eutrophication standards for Lake Nokomis. The request is being considered by the MPCA and U.S. EPA. For the purposes of this TMDL, the U.S. EPA approval is based upon the calculated NCHF eutrophication standard for the "general" conditions for Lake Nokomis.

Table 1: Minnesota Eutrophication Standards, North Central Hardwood Forests Ecoregion

Parameter	Eutrophication Standard	Eutrophication Standard
	Shallow Lakes	General
Total Phosphorus (ug/L)	TP < 40	TP < 40
Chlorophyll-a (ug/L)	chl-a < 20	chl-a < 14
Secchi Depth (m)	SD > 1.0	SD > 1.4
Lakes the Standards Apply To	Parley Lake	Lake Nokomis, Lake Virginia, Wassermann Lake

The U.S. 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:

Loading Capacity Calculations:

The approach to estimating the Loading Capacity is described in Section 3.0 (page 36 of the final TMDL document) and in Appendix A and B. The pollutant sources were identified (stormwater runoff, internal loading, and atmospheric deposition) and estimated based on monitoring data and modeling efforts. The loading capacity of each lake was estimated using an in-lake phosphorus model (BATHTUB) and then the loading capacity was divided among the WLA and LA.

The Simple Method calculation model was used to calculate a subwatershed pollutant load based on a subwatershed runoff estimate. These subwatershed runoff estimates were then used as inputs to the BATHTUB lake response model. The Simple Method may be used to estimate pollutant concentration runoff from urban drainage areas and is based on storm event calculations. Runoff is estimated using runoff coefficients for the fraction of rainfall converted to runoff. A correction factor is used to account for those storms that do not produce runoff. Pollutant concentrations in runoff depend on the land use activity.

The phosphorus loads for the MCWDL TMDLs were calculated from storm event mean concentrations of total phosphorus. Individual event mean concentrations were summed to determine the total pollutant load. The EMCs for Lake Virginia, Parley Lake and Wassermann Lake were calculated differently than the EMCs for Lake Nokomis. For Lake Virginia, Parley Lake and Wassermann Lakes, land use projects (2020 land use projections) were employed to assign EMC. The ultimate condition, or the 2020 land use scenario, was used to approximate watershed runoff volume and load estimates.

The Lake Nokomis EMCs were set based on empirical runoff data collected from sites within Minneapolis and St. Paul. No land use projections were used to calculate watershed runoff

volumes for the Lake Nokomis subwatershed. The land use within the Lake Nokomis subwatershed is not expected to change and is characterized as highly urbanized. Due to the urbanized nature of the Lake Nokomis subwatershed, a substantial amount of storm event runoff does not reach Lake Nokomis as stormwater runoff. These considerations were taken into account when adjusting the Simple Model to characterize runoff volumes to the Lake Nokomis subwatershed.

In the Lake Nokomis subwatershed, stormwater loads were approximated for the land area of the Metropolitan Airports Commission (MAC) at the Minneapolis-St. Paul Airport. The MAC was considered as a point source (NPDES #MN0002101) and stormwater loads were approximated based on the same methodology used in assigning stormwater loads to other MS4 communities. The areas covered by Fort Snelling, within the Lake Nokomis subwatershed, are not covered by an MS4 permit. The contributions from Fort Snelling were combined with other non-regulated TP loads and assigned to the loading allocation for the Lake Nokomis subwatershed.

The percent distribution of areas covered under an MS4 permit was used to assign TP loads to individual MS4 communities within the subwatersheds of Lake Nokomis, Lake Virginia, Parley Lake and Wassermann Lake. TP loads were assigned to individual MS4s and in some cases, the TP load was further subdivided according to the MS4 permit. These subdivisions included loading estimates assigned to road authorities (MN-DOT, Hennepin County, and Carver County), water district jurisdictional areas (coverage for judicial ditches), and municipal areas.

The BATHTUB model was utilized to link phosphorus loads with in-lake water quality and to calculate a loading capacity value (TMDL) for each lake. Phosphorus loads generated from the Simple Model were used as watershed inputs for the BATHTUB model. The BATHTUB model used the phosphorus loads to determine the in-lake concentrations of phosphorus and to calculate the TMDL. The BATHTUB model applied a series of empirical equations derived from assessments of lake data and performed steady state water and nutrient calculations based on lake morphometry and tributary inputs. The BATHTUB model required fairly simple inputs to predict phosphorus loading. The model accounted for pollutant transport, sedimentation, and nutrient cycling.

Nutrient inputs into BATHTUB were comprised of the stormwater runoff estimates (from the Simple Method), atmospheric deposition, and internal loading estimates. Atmospheric deposition was set at the default loading rate of 30 kg/km^2 per year. Internal loading estimates were approximated through mass balance calculations that are internal to the BATHTUB modeling platform. In those situations where the default internal loading values are over or under estimates, the internal loading values in BATHTUB were altered to reflect the empirical internal loading values.

BATHTUB modeling results were calibrated to 10-year growing season averages of TP, chl-a and SD. The 10-year period utilized was 1998-2007 and the growing season was set at June through September. The BATHTUB model determined loading capacities for all of the lakes of the MCWDL TMDL. The loading capacities for each lake were determined on an annual basis before the annual loads were transformed into daily loads by dividing the annual loads by 365. Loading capacity values were separated into WLA and LA for each lake.

The WLA for each lake was calculated by multiplying a target phosphorus runoff estimate by the estimated subwatershed runoff volume. The subwatershed runoff volume was set by the Simple Method. The MPCA deemed that the target TP runoff value would be sufficient for the lake to meet its in-lake water quality goals. The target phosphorus runoff estimate was adjusted accordingly so the lakes would meet their water quality goals.

A TP concentration of 150 µg/L was the default target runoff estimate. This value was set by the MPCA based on what has been shown to be achieved with current technology for stormwater treated with Best Management Practices, specifically stormwater ponds and wetlands. Selecting a target concentration of 150 µg/L was supported by TP runoff ranges from studies and data reviewed by the MPCA (page 41 of the final TMDL document). The TP value of 150 µg/L was a concentration target utilized by the MPCA to calculate WLA for each subwatershed addressed in this study. It should be noted that the U.S. EPA is approving the load-based WLA of Tables 2-5 within this decision document and not the concentration targets used to derive those WLA.

Load allocations were calculated and included the following nonpoint sources: non-regulated stormwater runoff, internal loading, atmospheric deposition, and other unidentified loads. Unidentified loads may include loads from animal agriculture, channel erosion, and lake shoreline erosion. The components of the LA components were summed for a lumped LA.

The Lake Nokomis TMDL:

Table 2: Lake Nokomis TMDL

Lake Nokomis TMDL Allocations, based on the shallow lake NCHF state eutrophication standards

Source		**TMDL**	
		lbs/yr	*lbs/day*
Load Allocation (internal load, atmospheric deposition, non-MS4 stormwater runoff)		160	0.437
Wasteload Allocation (regulated stormwater runoff)		330	0.904
MS4 or other source	***NPDES Permit #***		
City of Minneapolis	MN0061018	188	0.516
City of Richfield	MS400045	103	0.281
Hennepin County	MS400138	8.1	0.0223
MN-DOT Metro District	MS400170	10	0.0277
Metropolitan Airports Commission (MAC)	MN0002101	17	0.0467
Construction stormwater	Various	2.0	0.00542
Industrial site stormwater	No current regulated sources	1.6	0.00452
Total TMDL		**490**	**1.34**

The Lake Virginia TMDL:

Table 3: Lake Virginia TMDL
Lake Virginia TMDL Allocations, based on the NCHF state eutrophication standards

Source		**TMDL**	
		lbs/yr	*lbs/day*
Load Allocation (internal load, atmospheric deposition, non-MS4 stormwater runoff)		173	0.47
Wasteload Allocation (regulated stormwater runoff)		133	0.366
MS4 or other source	***NPDES Permit #***		
City of Chanhassen	MS400079	59	0.16
City of Shorewood	MS400122	18.3	0.05
City of Victoria	MS400126	46	0.13
MN-DOT Metro District	MS400170	7.6	0.021
Construction stormwater	Various	1.3	0.0036
Industrial site stormwater	No current regulated sources	0.59	0.00160
Total TMDL		**306**	**0.84**

The Parley Lake TMDL:

Table 4: Parley Lake TMDL
Parley Lake TMDL Allocations, based on the NCHF state eutrophication standards

Source		**TMDL**	
		lbs/yr	*lbs/day*
Load Allocation (internal load, atmospheric deposition, non-MS4 stormwater runoff)		1,097	3
Wasteload Allocation (regulated stormwater runoff)		175	0.479
MS4 or other source	***NPDES Permit #***		
City of Victoria	MS400126	103	0.282
City of Minnetrista	MS400106	0.54	0.00148
Laketown Township	MS400142	61	0.167
Carver County	MS400070	4.6	0.0126
MN-DOT Metro District	MS400170	1.6	0.00442
MCWD	MS400182	0.54	0.00148
Construction stormwater	Various	2.8	0.00765
Industrial site stormwater	No current regulated sources	0.87	0.00240
Total TMDL		**1,272**	**3.48**

The Wassermann Lake TMDL:

Table 5: Wassermann Lake TMDL
Wassermann Lake TMDL Allocations, based on the NCHF state eutrophication standards

Source		TMDL	
		lbs/yr	*lbs/day*
Load Allocation (internal load, atmospheric deposition, non-MS4 stormwater runoff)		158	0.43
Wasteload Allocation (regulated stormwater runoff)		125	0.34
MS4 or other source	***NPDES Permit #***		
City of Victoria	MS400126	65	0.177
Laketown Township	MS400142	57	0.157
Carver County	MS400070	1.23	0.00337
Construction stormwater	Various	2.13	0.00584
Industrial site stormwater	No current regulated sources	0.0125	0.00034
Total TMDL		**283**	**0.77**

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

4. Load Allocations (LAs)

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

Comment:
Load allocations were calculated for each lake and included the following nonpoint sources: non-regulated stormwater runoff, internal loading, atmospheric deposition, and other unidentified loads. Unidentified loads may include loads from animal agriculture, channel erosion, and lake shoreline erosion. The components of the LA were added together to one LA value for each TMDL. The LA for each lake can be found in Tables 2-5 of this decision document.

The U.S. 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:

The WLA for each lake was calculated by multiplying a target phosphorus runoff estimate by the estimated subwatershed runoff volume. The subwatershed runoff volume was set by the Simple Method. The MPCA deemed that the target TP runoff value would be sufficient for the lake to meet its in-lake water quality goals. The target phosphorus runoff estimate was adjusted accordingly so the lakes would meet their water quality goals.

A TP concentration of 150 µg/L was the default target runoff estimate. This value was set by the MPCA based on what has been shown to be achieved with current technology for stormwater treated with Best Management Practices, specifically stormwater ponds and wetlands. Selecting a target concentration of 150 µg/L was supported by TP runoff ranges from studies and data reviewed by the MPCA (page 41 of the final TMDL document). The TP value of 150 µg/L was a concentration target utilized by the MPCA to calculate WLA for each subwatershed addressed in this study. It should be noted that the U.S. EPA is approving the load based WLA of Tables 2-5 within this decision document and not the concentration targets used to derive those WLA.

WLA in the MCWDL TMDLs were subdivided and attributed to MS4 communities, construction site stormwater, and industrial site stormwater, based on the areal coverage of these land uses within the subwatershed. Certain lakes within the MCWDL TMDL project had portions of their WLA assigned to sources other than MS4 communities and construction and industrial stormwater. Road authorities, such as the MN-DOT, Hennepin County, and Carver County, received a portion of the WLA in all four subwatersheds. The Minnehaha Creek Watershed District received a WLA to account for stormwater in judicial ditches under their jurisdiction in the Parley Lake subwatershed. The MAC received a portion of the WLA to account for stormwater in the Lake Nokomis subwatershed.

Construction stormwater WLA were based on the area of the subwatershed under permitted construction activity over the period of 2003-2008. Areas in each subwatershed, which were

covered by construction permits, were identified and an average percentage of municipal areal coverage was calculated. The average percentages were multiplied by the total WLA to determine the construction stormwater WLA for each subwatershed. The construction areal coverage ranged from 1.7% of the subwatershed area for the Wassermann Lake subwatershed to 0.6% for the Lake Nokomis subwatershed.

Industrial stormwater permits for each subwatershed were given a small portion of the loading capacity. The industrial stormwater WLA was calculated based on land area zoned for industrial land use. The industrial areal coverage ranged from 1.0% of the subwatershed area for the Lake Nokomis subwatershed to 0.1% for the Wassermann Lake subwatershed.

Lake Nokomis Subwatershed WLA:
The permitted entities in the Lake Nokomis subwatershed are: the City of Minneapolis (MN0061018), the City of Richfield (MS400045), Hennepin County (MS400138), MN-DOT Metro District (MS400170), and the MAC (MN0002101). The portion of the MSP Airport that lies within the boundaries of the Lake Nokomis is regulated under the MAC NPDES permit. The MAC area within the Lake Nokomis subwatershed is in transition from an individual NPDES permit to a NPDES general permit. Once this change is complete, the WLA assigned to the MAC will be transferred to the industrial stormwater WLA for the Lake Nokomis subwatershed. The area covered under the boundaries of Fort Snelling is not regulated by a MS4 permit. The MS4 regulated areas within these municipal areas were set based upon land use areas. The Hennepin County and the MN-DOT road areas were calculated based on urbanized area boundaries.

Lake Virginia Subwatershed WLA:
The permitted entities within the Lake Virginia subwatershed include: the City Chanhassen (MS400079), the City of Chaska (MS400 the City of Shorewood (MS400122), the City of Victoria (MS400126), and the MN-DOT Metro District (MS400170). The City of Chaska is not included in the WLA set for the Lake Virginia subwatershed. The City of Chaska does not have MS4 regulated acreage within the Lake Virginia subwatershed. The City of Chaska does have non-regulated MS4 acreage within the Lake Minnewashta subwatershed. The Lake Minnewashta subwatershed is adjacent to the Lake Virginia subwatershed. The MPCA determined that the non-regulated MS4 acreage of the City of Chaska would not be given a WLA for the Lake Virginia subwatershed. This decision was based on the small amount of acreage the City of Chaska occupies within the Lake Minnewashta subwatershed (see Figure 44 on page 81 of the final TMDL document). The MS4 regulated areas within these municipal areas were set based upon land use areas. The MN-DOT road areas were calculated based on urbanized area boundaries.

Parley Lake Subwatershed WLA:
The permitted entities within the Parley Lake subwatershed include: the City of Victoria (MS400126), the City of Minnetrista (MS400106), Laketown Township (MS400142), Carver County (MS400070), MN-DOT Metro District (MS400170), and the MCWD (MS400182). It is expected that portions of Laketown Township will become annexed to the City of Victoria and also to the City of Waconia. The WLA apportioned to Laketown Township in Table 4 will be transferred to the City of Victoria and the City of Waconia at that time. The City of Waconia

does not have a WLA assigned to it at this time. The WLA from Laketown Township expected to be added to the City of Victoria is based on the rate of 0.036 lbs/acre per year. The expected addition to the City of Waconia is based on the rate of 0.086 lbs/acre per year. The MS4 regulated areas within these municipal areas were set based upon land use areas. The Carver County and MN-DOT road areas were calculated based on urbanized area boundaries.

Wassermann Lake Subwatershed WLA:
The permitted entities within the Wassermann Lake subwatershed include: the City of Victoria (MS400126), Laketown Township (MS400142), and Carver County (MS400070). It is expected that portions of Laketown Township will become annexed to the City of Victoria. The WLA apportioned to Laketown Township in Table 5 will be transferred to the City of Victoria at that time. The WLA from Laketown Township expected to be added to the City of Victoria is based on the rate of 0.072 lbs/acre per year. The MS4 regulated areas within these municipal areas were set based upon land use areas. The Carver County road areas were calculated based on urbanized area boundaries.

The U.S. 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 Margin of Safety (MOS) section (page 40 of the TMDL document) outlines how the MOS was determined. The MOS accounts for the inability of the MPCA to precisely describe the water quality conditions in the lakes of the MCWDL TMDL. The MCWDL TMDLs utilize an implicit MOS based on a series of conservative assumptions made during the lake response modeling. The MPCA believes that the model assumptions made for shallow lake systems were conservative with respect to the loading capacities.

In this study, Parley Lake was determined to be a shallow lake. Lake Nokomis, Lake Virginia, Wassermann Lake do not meet the MPCA definition of shallow lakes but were determined to be similar enough to shallow lakes, based on their littoral zone areas. The MPCA believes that all of the lakes of this study behave in an ecologically similar manner (i.e. they function in the same manner with respect to mixing and phosphorus response). The implicit MOS for the MCWDL TMDLs were based on the following conservative assumptions:

- Shallow lakes which are impaired by nutrients, can assume to be in a turbid-water state, not a clear-water state.
- A lake water quality model calibrated for a shallow lake which is in a turbid-water state, will calculate loading capacities that reflect a turbid-water state.
- The lake water quality model assumed that a shallow lake's water quality "state" (i.e. whether the lake is in a clear-water state or turbid-water state) will switch from turbid to clear when its phosphorus load is reduced to the loading capacity estimate. The loading capacity estimate was determined via the BATHTUB model
- Shallow lakes can tolerate larger phosphorus loads in a clear-water state, while still meeting the state's water quality standards for chl-a and SD, than the same lake system can assimilate in a turbid-water state. This is related to biological interactions within lake environments. The MPCA believes that zooplankton graze phytoplankton (algae) more efficiently in lake environments which are in a clear-water state. Increased zooplankton grazing reduces algae and chl-a concentrations, and improves SD measurements.

The U.S. 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:

Seasonal variation was considered in this TMDL as described in section 5 (on page 93). The water quality modeling efforts utilized annual load calculations to account for long term changes to Lake Nokomis, Lake Virginia, Parley Lake and Wassermann Lake. The MPCA determined that the water quality in the lakes of the MCWDL TMDL respond to long term changes, such as changes in annual loads. The MPCA therefore used annual load calculations. The nutrient targets employed in the MCWDL TMDL were developed for average nutrient values of the growing season (June to September). The water quality targets for the MCWDL TMDL were designed to meet the state eutrophication standards during the period of the year where the frequency and severity of algal growth is the greatest. This period has historically been during the growing season, June to September.

The growing season was determined to be the critical period for the lakes of the MCWDL TMDL. The critical period corresponds to conditions when phosphorus concentrations peak and state water quality standards are violated. The lake response modeling focused on meeting the water quality standards during the critical period. By meeting the water quality standards during the critical period, it was assumed that the loading capacity values would be protective of water quality during the remainder of the calendar year (October through May).

The U.S. EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of the seventh criterion.

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.

Comment:

The MCWDL TMDL outlines reasonable assurance activities in Section 6.0 (page 94 of the TMDL document). The MCWDL TMDL implementation efforts will be achieved through federal, state and local action. Federal funding, via the Section 319 grants program, can provide money to implement voluntary nonpoint source programs within the MCW. State efforts will be via NPDES stormwater permit enforcement, Clean Water Legacy Act grant money, and the Clean Water Partnership program.

The MCWD is an active local partner in the Minnehaha Creek watershed. The MCWD has updated the Minnehaha Creek District's watershed management plan (the Minnehaha Creek Watershed District Comprehensive Water Management Plan) and is able to update implementation efforts in this plan with recommendations from the TMDL study. The MCWD also has cost-sharing and grant programs to aid in supporting local water quality improvement efforts. Other municipalities, identified in the MCWDL TMDL report, may use the implementation recommendations of the MCWDL TMDL report to update their own water management plans and reevaluate their nutrient reduction strategies.

Under the MPCA's Stormwater General Permit, municipal managers in charge of Phase II MS4 communities must review the adequacy of local SWPPPs to ensure that each plan meets WLA set by the MCWDL TMDLs. If the SWPPP does not meet the WLA, the SWPPP will need to be modified within 18 months of the approval of the TMDL by the U.S. EPA. The City of Minneapolis and the Minneapolis Parks and Recreation Board (MPRB) are also in the process of reevaluating their local surface water management plans to reduce nutrient inputs to lakes and

surfaces waters. WLA developed via the MCWDL TMDL efforts will be incorporated into these revised surface water management plans.

The U.S. 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:
Section 9.0 (on pages 102-106) of the TMDL submittal outlines the planned water quality monitoring efforts in the MCW. A water quality monitoring program will be undertaken to assess water quality improvements in the Minnehaha Creek Watershed District lakes of this TMDL study. Water quality monitoring efforts will measure the effectiveness of various implementation strategies to mitigate nutrient influxes into these waterbodies. Water quality monitoring will be completed by several entities within the watershed.

Lake Nokomis: Water quality is currently monitored annually by the MPRB. Water quality measurements include: dissolved oxygen (DO), temperature, pH, conductivity, Secchi disc transparency, and surface water chemical sampling. The MPRB will continue to measure the water quality in Lake Nokomis on an annual basis. The MPCA recommends that plankton sampling, macrophyte surveys and fish surveys be completed in Lake Nokomis. The MN-DNR has completed fish surveys in Lake Nokomis. The last fish survey was completed in 2007 and the MN-DNR re-samples lakes every six years. Information from these biological sampling activities would be useful for lake managers to understand the biological interactions within the lake, which often impact the water quality in Lake Nokomis.

Lake Virginia: Water quality is currently monitored annually by members of the MCWD. Water quality measurements include: DO, temperature, pH, conductivity, Secchi disc transparency, and surface water chemical sampling. The MCWD will continue to measure the water quality in Lake Virginia on an annual basis. The MPCA recommends that plankton sampling, macrophyte surveys and fish surveys be completed in Lake Virginia.

The MN-DNR has completed fish surveys in Lake Virginia. The last fish survey was completed in 2009 and the MN-DNR re-samples lakes every six years. Information from these biological sampling activities would be useful for lake managers to understand the biological interactions within the lake, which often impact the water quality in Lake Virginia.

Parley Lake: Water quality is currently monitored annually by members of the MCWD. Water quality measurements include: DO, temperature, pH, conductivity, Secchi disc transparency, and surface water chemical sampling. The MCWD will continue to measure the water quality in Parley Lake on an annual basis. The MPCA recommends that plankton sampling, macrophyte surveys and fish surveys be completed in Parley Lake. Flow and water quality monitoring has been completed at nearby streams to estimate external phosphorus loads to Parley Lake. The Lunsten Lake contribution and inputs from tributaries to Parley Lake have been monitored in the past. The MPCA recommends that these locations continue to be monitored to gain a more complete understanding of nutrient inputs into Parley Lake.

The MN-DNR has completed fish surveys in Parley Lake. The last fish survey was completed in 2004 and the MN-DNR re-samples lakes every six years. The final TMDL document did not include information on the status of fish sampling in Parley Lake for 2010. Information from these biological sampling activities would be useful for lake managers to understand the biological interactions within the lake, which often impact the water quality in Parley Lake.

Wassermann Lake: Water quality is currently monitored annually by members of the MCWD. Water quality measurements include: DO, temperature, pH, conductivity, Secchi disc transparency, and surface water chemical sampling. The MCWD will continue to measure the water quality in Wassermann Lake on an annual basis. The MPCA recommends that plankton sampling, macrophyte surveys and fish surveys be completed in Wassermann Lake. Flow and water quality monitoring has been completed at nearby streams to estimate external phosphorus loads to Wassermann Lake. Flow and water quality monitoring has been completed at nearby streams to estimate external phosphorus loads to Wassermann Lake. The Six Mile Creek contribution and inputs from tributaries to Wassermann Lake have been monitored in the past. The MPCA recommends that these locations continue to be monitored to gain a more complete understanding of nutrient inputs into Wassermann Lake.

The MN-DNR has completed fish surveys in Wassermann Lake. The last fish survey was completed in 2005 and the MN-DNR re-samples lakes every six years. Information from these biological sampling activities would be useful for lake managers to understand the biological interactions within the lake, which often impact the water quality in Wassermann Lake.

Phytoplankton (microscopic plant organisms), macrophyte (rooted aquatic plants) and fish surveys were recommended by the MPCA to monitor water quality in the MCWD lakes. These surveys will aid watershed managers in their understanding how BMP phosphorus removal efforts are impacting the ecological community in these lakes. The MPCA recommends that macrophyte surveys be conducted twice during the growing season, once at the beginning of the season to characterize invasive species, and the second at the end of the growing season to characterize the native species. This information will provide insight into the biological and chemical interactions of the MCW and help watershed managers make sound implementation decisions.

The U.S. 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 8.0 (pages 97-101 of the TMDL document). The MCWL TMDL implementation efforts will be in agreement with the recommendations made in the MCWD Comprehensive Watershed Management Plan (MCMW Plan), which was approved by MCWD Board of Managers in 2007. In general, the Lake Virginia, Parley Lake and Wassermann Lake implementation efforts focus on newly installed BMPs (ex. wetland restoration, detention ponds, infiltration projects, etc.) and rural BMPs (ex. stream corridor restoration, precision fertilizer applications, manure management, conservation tillage, etc.). The Lake Nokomis implementation efforts focus on redeveloping BMPs and retrofitting BMPs to reduce phosphorus from more urbanized areas. The BMPs that are designed to be placed in a more urban environment include: the installation of rain gardens/neighborhood water quality ponds, the installation of rain barrels, infiltration swales, curb cuts, the installation of pervious pavement, and additional street sweeping efforts.

The MCWDL TMDL outlines phosphorus reduction goals for the MCW, goals for municipalities within the watershed, and individual goals for Lake Nokomis, Lake Virginia, Parley Lake and Wassermann Lake. Localized pollution reduction strategies include:

Lake Nokomis: Street sweeping, the installation of rain gardens/neighborhood water quality ponds, the installation of rain barrels, the creation of infiltration swales, the installation of curb cuts, the installation of pervious pavement, and educational programs throughout the subwatershed.

Lake Virginia: Retrofitting BMPs in urban areas, wetland restoration projects, lake shoreline restoration projects, stream restoration and stabilization projects, internal load reduction projects, and educational programs throughout the subwatershed.

Parley Lake: Internal load management projects, tributary wetland restoration projects, wet detention pond installation, internal load management projects, stream restoration and stabilization projects, aquatic vegetation management projects, and educational programs throughout the subwatershed.

Wassermann Lake: Internal load management projects, aquatic vegetation management projects, wetland restoration projects, stream restoration and stabilization projects, regional infiltration projects, and educational programs throughout the subwatershed.

Additional watershed efforts to reduce nutrient introduction into surface waters include: "Rule N" which designates that facilities within the MCW reduce phosphorus loading in stormwater, BMP (i.e. wet detention ponds) treatment areas to remove phosphorus from stormwater, fertilizer restrictions (only phosphorus free fertilizers are approved in the City of Minneapolis), and educational programs. Educational outreach programs will provide residents with information on the overall health of the surface waters in their neighborhood and what they can do to protect these resources. Adaptive management strategies will also be implemented in the MCW. Assessments of BMP efficiency will be monitored and changes to nutrient reduction efforts will be made where deemed appropriate.

The U.S. EPA finds that this criterion has been adequately addressed. The U.S. 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 7.0 (page 95). A series of meetings was held in the Minnehaha Creek watershed to solicit input from the public on background information and suggested implementation practices. Various representatives from cities, townships, counties, Minnesota Department of Natural Resources (MN-DNR), Minnesota Department of Transportation (MN-DOT), Minneapolis Park & Recreation Board, and other stakeholders were invited to provide input during the TMDL development process. A public meeting was held in September 2009 in Carver County (covering Lake Virginia, Parley Lake and Wassermann Lake). This meeting presented the process behind the development of the TMDL and TMDL project progress. The meeting allowed stakeholders and municipal officials, in the Lake Virginia, Parley Lake and Wassermann Lake subwatersheds, to comment on the TMDL project and to ask questions related to the TMDL efforts. In September and October 2009, a similar meeting was held in the Lake Nokomis subwatershed. Stakeholders and municipal officials were given the opportunity to comment on the TMDL project and to ask questions related to the TMDL efforts in the Lake Nokomis subwatershed.

The draft TMDL was posted online by the MPCA at (http://www.pca.state.mn.us/water/tmdl). The 30-day public comment period was started on September 27, 2010 and ended on October 27, 2010. The MPCA received four public comments and adequately addressed these comments. The MPCA submitted all of the public comments and responses in the final TMDL submittal packet received by the U.S. EPA on March 21, 2011.

The U.S. 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 U.S. EPA received the final Minnehaha Creek Watershed Lakes Nutrient TMDL document, submittal letter and accompanying documentation from the MPCA on March 21, 2011. The transmittal letter stated that the final TMDLs for Lake Nokomis (ID 27-0019), Lake Virginia (ID 10-0015), Parley Lake (ID 10-0042), and Wassermann Lake (ID 10-0048) for excess nutrients, was being submitted to U.S. EPA pursuant to Section 303(d) of the Clean Water Act for U.S. EPA review and approval. The submittal 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 the 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 U.S. EPA finds that the TMDL transmittal letter submitted for the Minnehaha Creek Watershed Lakes by the MPCA satisfies the requirements of this twelfth element.

13. Conclusion

After a full and complete review, the U.S. EPA finds that the TMDLs for Lake Nokomis, Lake Virginia, Parley Lake, and Wassermann Lake satisfy all of the elements of an approvable TMDL. This approval is for four TMDLs, Lake Nokomis (ID 27-0019), Lake Virginia (ID 10-0015), Parley Lake (ID 10-0042), and Wassermann Lake (ID 10-0048), addressing each waterbody for recreational use impairments.

The U.S. EPA's approval of this TMDL extends to the water bodies which are identified as: Lake Nokomis (ID 27-0019), Lake Virginia (ID 10-0015), Parley Lake (ID 10-0042), and

Wassermann Lake (ID 10-0048), 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 U.S. EPA is taking no action to approve or disapprove TMDLs for those waters at this time. The U.S. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under the CWA Section 303(d) for those waters.