UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Planning Division

Ref: 8EPR-EP

Art Compton, Division Administrator
Planning, Prevention & Assistance Division
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: TMDL Approvals
Flathead Lake (nutrients)

Dear Mr. Compton:

We have completed our review of the total maximum daily load (TMDL) as submitted by your office for the Flathead Lake. The TMDL is included in the document entitled Nutrient Management Plan and Total Maximum Daily Load for Flathead Lake, Montana (December 28, 2001; Montana Department of Environmental Quality). This document was initially sent to us in correspondence dated December 31, 2001 signed by Ron Steg of your staff and subsequently transmitted to us for review and approval in correspondence dated February 21, 2002 and signed by you. In accordance with the Clean Water Act (33 U.S.C. 1251 *et. seq.*), we approve all aspects of the TMDL as developed for the water quality limited waterbody as described in Section 303(d)(1). Enclosure 1 to this letter provides a summary of the elements of the TMDL and Enclosure 2 provides details of our review of the TMDL.

Based on our review, we feel the separate TMDL elements listed in Enclosure 2 adequately address the pollutants of concern, taking into consideration seasonal variation and a margin of safety. In approving this TMDL, EPA affirms that the TMDL has been established at a level necessary to attain and maintain the applicable water quality standards and has the necessary components of an approvable TMDL.

Flathead Lake is within the jurisdictional boundaries of the State of Montana and the Flathead Reservation of the Confederated Salish and Kootenai Tribes (CSKT). As such, this TMDL implements both the water quality standards established by both the State and the Tribes. Further, we wish to acknowledge the efforts of both the State and the CSKT in development of this TMDL. We also wish to acknowledge the intent of the CSKT to participate in the implementation of the Flathead Lake TMDL as indicated in the "Memorandum of Understanding between the U.S. Environmental Protection Agency, the Confederated Salish and Kootenai Tribes and the State of Montana, Relating to Total Maximum Daily Wasteload Allocation (TMDL) for Flathead Lake". This memorandum was sent to us by the CSKT in correspondence dated February 22, 2002 and is currently being circulated for signature.

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We also wish to acknowledge the role of the Flathead Basin Commission in the TMDL development process. In its December 2001 meeting, the Commission voted unanimously to endorse the Flathead Lake TMDL.

Finally, we wish to inform you that our office has received concurrence from the U.S. Fish and Wildlife Service regarding our biological evaluations of the approval of the Flathead Lake TMDL. Our biological evaluations were submitted to the Service in accordance with Section 7 of the Endangered Species Act. In our evaluations, we assessed the effects of our approval on the threatened, endangered, proposed, and candidate species in the area of the TMDL. Our conclusion was that the TMDL approval would either have no effect or would not likely have an adverse effect on the species of concern. Any effect of the TMDL approval was seen as either insignificant or beneficial to the species.

Thank you for your submittal. If you have any questions concerning this approval, feel free to contact Bruce Zander of my staff at 303/312-6846.

Sincerely,

Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection and Remediation

Enclosures

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closure 1

Summary of Flathead Lake TMDL

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	Section 303(d)(1) or 303(d)(3) TMDL	Supporting Documentation *(a partial list of supporting documents)*
Flathead Lake* *MT76LJ006-1* (ID # 1996 List) *MT76O003-010* (ID # 2000 List) *HUC 17010208*	nitrogen phosphorus	▪ 80 g Carbon/m^2/yr ▪ no declining trend in hypolimnionic dissolved oxygen ▪ no measurable blooms of *Anabaena* or other pollution algae ▪ 1.0 ug/l chlorophyll *a* ▪ maintaining or decreasing near-shore algal growth on rocks ▪ 5.0 ug/l total phosphorus ▪ < 0.5 ug/l soluble reactive phosphorus ▪ 95 ug/l total nitrogen ▪ 30 ug/l nitrite + nitrate ▪ < 1.0 ug/l ammonia	▪ 25% reduction in long term nitrogen and phosphorus loads	Section 303(d)(1)	▪ Nutrient Management Plan and Total Maximum Daily Load for Flathead Lake, Montana (Montana DEQ; December 28, 2001) ▪ *"Water quality data and analyses to aid in the development of revised water quality targets for Flathead Lake, Montana; Phase I of a cooperative study to determine total maximum daily loads of nitrogen and phosphorus."* Open File Report 142-97. Flathead Lake Biological Station, University of Montana, Polson, MT.

* An asterisk indicates the waterbody has been included on the State's Section 303(d) list of waterbodies in need of TMDLs.

Enclosure 2

Flathead Lake TMDL Review Table

The following table provides a summary of EPA's review of TMDLs submitted to it from Montana Department of Environmental Quality in correspondence dated February 21, 2002. This TMDL was reviewed using the EPA Region VIII's criteria which include the following provisions:

A. Water Quality Standards	■ **TMDLs result in maintaining and attaining water quality standards** *(including the numeric, narrative, use classification, and antidegradation components of the standards; the "phased" TMDL can be used where there is a level of uncertainty; in addition, TMDLs can rely on either regulatory or voluntary approaches to attain standards);*
B. Water Quality Targets	■ **TMDLs have a quantified target or endpoint** *(a numeric water quality standard often serves as the target, but any indicator or set of indicators which represent the desired condition would suffice);*
C. Significant Sources	■ **TMDLs must consider all significant sources of the stressor of concern** *(all sources or causes of the stressor must be identified or accounted for in some manner; this accounting can lump several sources of unknown origin together; the TMDL need only address the control of a subset of these sources as long as the water quality standards are expected to be met);*
D. Technical Analysis	■ **TMDLs are supported by an appropriate level of technical analysis** *(allocations for nonpoint sources are often best professional estimates whereas waste load allocations for point sources are often based on a more detailed analysis);*
E. Margin of Safety/Seasonality	■ **TMDLs must contain a margin of safety and consider seasonality** *(a margin of safety can be either explicit or implicit in the analysis or assessment);*
F. TMDL	■ **TMDLs include a quantified pollutant reduction target, but this target can be expressed in any appropriate manner** *(According to EPA reg (see 40 C.F.R. 130.2(i)) TMDLs need not be expressed in pounds per day or concentration when alternative means of expression are better suited to the waterbody problem; TMDLs can be expressed as mass per unit of time, toxicity, % reduction in sediment or nutrients, or other measure);*
G. Allocation	■ **TMDLs apportion responsibility for taking actions** *(allocations may be expressed in a variety of ways such as by individual discharger, by tributary watershed, by source or land use category, by land parcel, or other appropriate scale or dividing responsibility);*
H. Public Participation	■ **TMDLs involve some level of public involvement or review** *(public participation should fit the needs of the particular TMDL).*

Flathead Lake Nutrient TMDL Review (see Nutrient Management Plan and Total Maximum Daily Load for Flathead Lake, Montana (MT DEQ; 2001))	
A. Water Quality Standards	The State's submittal provides a good description of the geographic scope of the TMDL as well as information on the watershed and land use characteristics of Flathead Lake. Flathead Lake is classified by the Confederated Salish and Kootenai Tribes (CSKT) as an A-1 waterbody. The CSKT has identified Flathead Lake as a water that is intended to support a range of designated uses including drinking, culinary, and food processing uses; bathing, swimming, and recreation uses; wildlife uses; growth and propagation of salmonid fishes and associated life; and agricultural and industrial supply uses. The narrative standard being implemented in this TMDL is "'*Reservation waters must be free from substance that are or may become injurious to public health, safety, welfare or any of the designated or existing beneficial uses. Such substance may or will create conditions that produce undesirable aquatic life.*" (See CSKT Water Quality Standards §1.3.13) The Montana DEQ has also classified Flathead Lake as an A-1 waterbody. This means the Lake should be suitable for bathing, swimming and recreation, growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers, and agricultural and industrial water supply. (See ARM 17.30.622{1-2}). The narrative standard being implemented in this TMDL is "*State surface waters must be free from substances attributable to municipal, industrial, agricultural practices or other discharges that will; ...(e) create conditions which produce undesirable aquatic life*". (See ARM 17.30.637(l))
B. Water Quality Standards Targets	Water quality targets for this TMDL are based on interpretation of narrative provisions found in State and Tribal water quality standards. The following are the targets used in this TMDL: ▪ 80 g Carbon/m^2/yr ▪ no declining trend in hypolimnionic dissolved oxygen ▪ no measureable blooms of *Anabaena* or other pollution algae ▪ 1.0 ug/l chlorophyll *a* ▪ maintaing or decreasing near-shore algal growth on rocks ▪ 5.0 ug/l total phosphorus ▪ < 0.5 ug/l soluble reactive phosphorus ▪ 95 ug/l total nitrogen ▪ 30 ug/l nitrite + nitrate ▪ < 1.0 ug/l ammonia

Flathead Lake Nutrient TMDL Review (see Nutrient Management Plan and Total Maximum Daily Load for Flathead Lake, Montana (MT DEQ; 2001))	
C. Significant Sources	The TMDL identifies the major sources of nutrients as coming from nonpoint sources, point sources, atmospheric deposition, and natural background sources. In particular, a loading analysis is done for various nutrient forms on a sub-basin by sub-basin based and on a source-type analysis including agricultural/urban developed land, groundwater, forests (managed and unmanaged), point source municipal treatment facilities, septic tanks, and atmospheric deposition.
D. Technical Analysis	The first level of technical analysis addresses the needed reduction of a pollutant to achieve the desired water quality. The TMDL recommends a 15% reduction in nutrients to Flathead Lake to achieve the desired results (there is an additional 10% reduction in the final TMDL as a margin of safety). This reduction is based in large part on mathematical modeling of the Lake and its predicted response to nutrient load reductions. The model simulates the biology of the lake, considering numerous factors of the lake ecosystem and the changing dynamics over time. The next level of analysis addresses how the 15% (plus 10% margin of safety) reductions could be achieved. The analysis of which nutrient loading sources were in need of control was based on a risk analysis. In particular, the closer nutrient sources are the lake, the higher the risk. The higher the unit loading of nutrients (i.e., pounds of nutrients per acre of land), the higher the risk. The land use with the highest risk, using these factors, is the urban and agricultural lands near the Lake since they have the highest per acre load of nutrients. This conclusion was corroborated by water quality monitoring data collected during a storm event in which the largest nutrients loads came from the developed urban/agricultural lands near the Lake. The initial load reductions under this TMDL will be achieved through controls on the high risk areas within the basin. The second phase of reductions will be from a collection of other sources once it is determined which of those sources have the greatest affect on Lake quality.
E. Margin of Safety & Seasonality	To address uncertainty related to the effectiveness of this TMDL, an explicit margin of safety was incorporated into the TMDL. In particular, an additional 10% reduction in nutrients is called for in this TMDL to address uncertainties. There are other safeguards included in the TMDL that address uncertainties, including the adaptive management approach that identifies shortcomings of the nutrient control programs through time. As those shortcomings are identified, water quality controls are adjusted where needed. Finally, the TMDL incorporates a plan to continue monitoring the response of the Lake to controls to verify assumptions that were made as part of the TMDL.
F. TMDL	The TMDL established for Flathead Lake is a 25% reduction in annual loading of nitrogen and phosphorus. Since the annual loading varies from year-to-year, this TMDL is considered a long term average reduction in nutrient loading.

Flathead Lake Nutrient TMDL Review (see Nutrient Management Plan and Total Maximum Daily Load for Flathead Lake, Montana (MT DEQ; 2001))	
G. Allocation	Many of the sources of nutrient that have been identified as part of this TMDL have already been controlled to a great degree. For example, the municipal wastewater treatment facilities have increased removal of nutrients in their discharge by investing in tertiary effluent treatment, septic tanks have been controlled by hooking them up to centralized treatment systems, a ban on domestic use of phosphorus detergents was put in place, best management practices have been put in place in forested areas of the basin, and educational efforts have been put in place throughout the basin. This TMDL addresses the need to achieve further reductions in nutrients to attain and maintain water quality goals in Flathead Lake. There is a desire to move forward with controls in the areas of the basin where there is confidence that nutrients need to be controlled (i.e., the developed urban and agricultural areas). The allocation to these areas (i.e., 25% reduction in nutrient loads) is the first phase of a phased allocation approach. The second phase of allocation will come once there is a better understanding of how the remaining sources affect lake quality. Source under this category include municipal point source facilities, atmospheric deposition, septic tanks, and other nonpoint sources. Studies have already begun to support phase II of the TMDL allocation scheme. These studies include airborne source assessments, groundwater studies, development of a cause/effect model for the Lake, synoptic sampling of the tributaries to the lake, and ongoing development of TMDLs in sub-basin areas.
H. Public Participation	The State's submittal includes a good summary of the public participation process that has occurred which describes the ways the public has been given an opportunity to be involved in the TMDL development process. In particular, the State has encouraged participation through public meetings in the watershed, education brochures, and widespread solicitation of comments on the draft TMDL. The State also employed the Internet to post the draft TMDL and to solicit comments. The level of public participation is found to be adequate.