

Missouri  
Department of  
Natural Resources

DRAFT SPRING FORK LAKE TMDL  
PUBLIC COMMENTS

Public Notice  
May 19 – June 18, 2006

**Spring Fork Lake**  
**WBID #7187**

Pettis County, Mo.

Missouri Department of Natural Resources  
Water Protection Program  
PO Box 176  
Jefferson City, MO 65102-0176  
800-361-4827 / 573-751-1300



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII  
901 NORTH 5TH STREET  
KANSAS CITY, KANSAS 66101

MAY 22 2006

2006 MAY 22 11:06 AM  
MAIL ROOM

Mr. Edward Galbraith, Director  
Water Pollution Control Program  
Water Protection and Soil Conservation Division  
Missouri Department of Natural Resources  
P.O. Box 176  
Jefferson City, Missouri 65102

RE: Comments on Draft TMDLs public noticed on the MDNR website: Dougar Branch and Spring Fork Lake.

Dear Mr. Galbraith:

The U.S. Environmental Protection Agency (EPA) is providing these comments on the proposed final Total Maximum Daily Loads (TMDLs) public noticed on the Missouri Department of Natural Resources (MDNRs) website; <http://www.dnr.mo.gov/env/wpp/wpcp-pn.htm>.

Dougar Branch TMDL public notice period April 28, 2006 to May 28, 2006, comments are in enclosure A.

Spring Fork Lake TMDL public notice period May 12, 2006 to June 11, 2006, comments are in enclosure B.

EPA has completed its review of the draft TMDLs on public notice. By this letter, EPA is submitting comments concerning the draft TMDLs as listed in enclosures A and B. EPA appreciates the opportunity to comment and the thoughtful effort that MDNR has put into these draft TMDLs. EPA will continue to cooperate with and assist, as appropriate, in future efforts by MDNR to develop TMDLs.

If you have any questions or concerns in regards to this matter, please do not hesitate to contact Jack Generaux, TMDL Team Leader, at (913)551-7690, or Tabatha Adkins, TMDL Team, at (913)551-7128.

Sincerely,

John DeLashmit  
Chief  
Water Quality Management Branch

cc: Ann Crawford, TMDL Chief, MO Dept of Natural Resources, Jefferson City, MO  
Phil Schroeder, Missouri Department of Natural Resources, Jefferson City, MO



Enclosure A

Regarding: Draft TMDL for Douger Branch Zinc Impairment.

EPA has reviewed the draft document and has the following comments which need to be addressed in the final TMDL:

Comment 1 -- The last sentence on Page 5 of the TMDL mistakenly implies that a translator exists between dissolved and total metals. The EPA translator described previously in the TMDL relates to the toxicity data set used in criteria development. No universal relationship exists to relate dissolved to total metals in specific waters and flow conditions. These relationships depend on the amount of unfilterable solids, the mass fraction of the contaminant in the solids, and the partitioning mechanisms between the solid and dissolved phases in the specific situation. The following excerpt from 2001 Update of Ambient Water Quality Criteria for Cadmium (EPA-822-R-01-001 April 2001) may help to explain the concept:

*“Conversion Factors*

*Although past water quality criteria for cadmium (and other metals) have been established upon the loosely defined term of “acid soluble metals,” U.S. EPA made the decision to allow the expression of metal criteria on the basis of dissolved metal (U.S. EPA 1994a), operationally defined as that metal that passes through a 0.45 micron filter. Because most of the data in existing databases are from tests that were either nominal concentrations, or provided only total cadmium measurements, some procedure was required to estimate their dissolved equivalents. The approach taken by U.S. EPA involves the use of conversion factors (CF), that when applied to the total metal concentration, gives a dissolved metal concentration. Thus, the CF corresponds to the percent of the total recoverable metal that is dissolved. These CFs were determined by conducting a number of “simulation tests” using solutions simulating those used in the toxicity tests that were most important in the derivation of aquatic life criteria for each metal (static, flow-through, fed, and unfed conditions that typified standard acute and chronic toxicity tests from which criteria are derived). The intent was to mimic the way criteria would have been derived if dissolved metal had been measured in each of the toxicity tests (Lussier et al. 1995; Stephan 1995; Univ. of Wisconsin- Superior 1995). For certain metals like cadmium, these CFs are hardness dependent. The appropriate CFs were used only when determining the final cadmium criteria values, and are hardness dependent in freshwater.”*

While the use of the translator in this particular TMDL does not introduce a large error, it is a mistaken application of the concept and needs to be corrected. Because the dissolved fraction is always a subset to the total, the TMDL could assume a 1:1 relationship and count the difference as part of the MOS.

Comment 2 -- On page 6 of the TMDL, the flow data, for the duration analysis, was based on watershed areas to a USGS gage at the mouth of Douger Branch. The TMDL does not clearly state that the water quality data used in the Load Duration were collected at the mouth of Douger Branch; the Appendix C table would suggest otherwise. If the flows at the mouth were paired with data collected at other locations within the watershed, the resultant load calculations would be in error.

Comment 3 -- The TMDL is not defined in a manner consistent with the Clean Water Act and Federal Regulation. Specifically, the concept of “seepage” is introduced as something other than a load allocation. Based on the last sentence of the first paragraph on Page 9, there seems to be confusion that the Load Allocation (LA) is only related to “runoffs.” EPA does not view LA as only in response to rainfall. To be consistent with EPA guidance, “seepage” should be part of the LA and specific numeric targets should be assigned; the LA is not zero.

Comment 4 -- The TMDL should be more explicit that the permit limits, for future renewals, should include end-of-pipe criteria concentration limits to avoid a question of whether the facility is causing and contributing to the impairment. Otherwise, specific reasonable assurance language is required to ensure that the WLA limits will achieve water quality standards. The loads described for the WLA are those under maximum design flow.

Comment 5 -- On page 8, last paragraph, there is reference to the 95th percentile of loads. Comment 2, above, raised a concern on the data set used for this determination. The TMDL must clarify how the loading data were derived and why the assumptions used are valid.

Comment 6 -- On Page 11, the Administration Record should also include all supporting calculations, such as the detailed spreadsheets used to derive the Load Duration Curve. EPA requests these calculations be submitted along with the Final TMDL.

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Enclosure B

Regarding: Draft TMDL for Spring Fork Lake Nutrients Impairment.

EPA has reviewed the draft document and has the following comments which need to be addressed in the final TMDL:

Comment 1 - - On page 6, first full paragraph, in the reference lake approach, the TMDL states that the reference lake "must" be within 20 to 30 percent of the size and volume of the impaired lake. The reference lake in Table 1, Pape (Concordia) does not meet the criterion for size (area).

Comment 2 - - On page 7, last part of section 3, the load capacity (LC) calculation is calculated as  $LC = 36 * 8534 * 0.00272 = 355$  lb/yr, which is not mathematically correct. The next line states that LC is 836 lb/yr, which is inconsistent with the previous line.

Comment 3 - - On page 8, in section 7, the previously mentioned error in math is again used.  $LA = 355 - 10\% * 355 = 319$  lb/yr. It should read  $LA = 836 - 10\% * 836 = 752$ . This correct version of the calculation was used in equation 5 (on page 9) to calculate percentage reduction required.

Comment 4 - - Appendix E. TMDL Calculation: in step 2 a lake inflow volume is calculated of 5267 ac\*ft. In step 3 a mean annual inflow volume is calculated based on the residence time calculated in step 2 and a different lake volume of 1613 ac\*ft. If the volume from step 2 (997 ac\*ft) and the residence time are used in step 3 the inflow volume would be the same as in step 2. The use of 1613 ac\*ft, as the lake volume in step 3 is inconsistent with the 997 ac\*ft that was used in step 2. This change will also change all the TMDL calculations.

RECEIVED  
MAY 13 2003  
MAY 13 2003

June 22, 2006

Mr. John DeLashmit  
U.S. Environmental Protection Agency  
Region VII  
901 North Fifth Street  
Kansas City, KS 66101

RE: Response to Comments on the Spring Fork Lake Total Maximum Daily Load

Dear Mr. DeLashmit:

This letter responds to comments from the Environmental Protection Agency (EPA) on the draft Total Maximum Daily Load (TMDL) for Spring Fork Lake. This letter also indicates where the Department of Natural Resources (department) revised the TMDL document to address EPA's comments.

Comment 1 - The reference to "size" was intended to relate to the size of the lake's watershed. The watershed size is typically a more important factor (than the lake's surface area) in selecting a reference lake.

When making these comparisons, the department considers watershed size that is within 20 to 30 percent of each other as being sufficiently similar. In the case of Pape (Concordia) Lake, this value is 23%.

The sentence on page 6 of the TMDL document was corrected to read:

The second factor is that the size of the watersheds and the volumes of the reference lake and the impaired lake should be within 20 to 30 percent of each other.

Comment 2 - The department made a typographical error when transferring data from the draft TMDL report by Parsons into the draft TMDL document that was placed on public notice.

The department restored the numbers from the original calculation within the original draft prepared by Parsons so that the TMDL now reads:

$LC = 36 * 8,534 * 0.00272 = 836 \text{ lb/yr}$

Mr. John DeLashmit  
Page Two

Comment 3 - This is another typographical error. The numbers from the calculation in the original draft TMDL prepared by Parsons have been restored to the TMDL document so that it now shows:

$$LA = TMDL - MOS - WLA$$

$$LA = 836 - 10\% * 836 - 0 = 752 \text{ lb/yr}$$

Comment 4 - The "lake inflow volume" is a different phrase (with a different meaning) than "lake volume". Lake inflow volume is based on estimated surface runoff and lake watershed area.

The lake volume of 1613 ac/ft is from Table 1 on page 6 of the TMDL document. This number (1613 ac/ft) is provided by the department and is viewed as an accurate estimate. The number of 997 ac/ft is based on the following equation and is viewed as a gross estimate of lake volume.

$$\text{Lake Volume} = (1/4 \text{ Dam Height}) * \text{Lake Surface Area}$$

Therefore, lake volume of 1613 was used in the TMDL calculation.

Thank you for your comments and for EPA's support in the TMDL process. If you have other questions or wish to discuss this further, please contact Anne Peery at (573) 526-1426 or by mail at the Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

/signed/

Philip A. Schroeder, Chief  
Water Quality Monitoring and Assessment Section

PS:apl



# City of Independence

## WATER POLLUTION CONTROL DEPARTMENT

P.O. BOX 1019 • INDEPENDENCE, MISSOURI 64051-0519 • (816) 325-7711 • FAX (816) 325-7722

AN EQUAL OPPORTUNITY EMPLOYER

June 6, 2006

Mr. Phil Schroeder  
Water Quality Monitoring and Assessment Section  
Water Protection Program  
Department of Natural Resources  
P.O. Box 176  
Jefferson City, Missouri 65102

Re: Draft Spring Fork Lake and Lamar Lake TMDLs

Dear Mr. Schroeder:

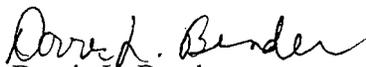
The City of Independence Water Pollution Control Department has reviewed the subject draft TMDLs and wishes to make the following comments. We are not directly affected by these TMDLs but are concerned about the precedent they may set for future TMDLs.

We question the way the "Reference Lake Approach" was used to derive nutrient targets. It appears that chlorophyll-a targets were set at the lower 25<sup>th</sup> percentile of the combined data for one non-impaired reference lake and the impaired lake. We consider this to be a misapplication of the reference lake approach described in U.S. EPA guidance. One alternative described in EPA's *Nutrient Criteria Technical Guidance Manual, Lakes and Reservoirs* (April, 2000) and *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Lakes and Reservoirs in Nutrient Ecoregion IX* (December, 2000) is calculating reference conditions from the lower 25<sup>th</sup> percentile from an entire population (such as the data for lake classes within an ecoregion or subecoregion.) We question the validity of using data from only two lakes to calculate the lower 25<sup>th</sup> percentile as appears to have been done in these draft TMDLs.

We appreciate the difficulty in calculating TMDLs without numeric state nutrient criteria and consider the draft TMDL implementation plans a reasonable approach for encouraging Best Management Practices for nonpoint sources.

If you have any questions about these comments, please feel free to contact me.

Sincerely,

  
Dorris L. Bender

Environmental Compliance Manager

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Matt Blunt, Governor • Doyle Childers, Director

[www.dnr.mo.gov](http://www.dnr.mo.gov)

June 21, 2006

Ms. Dorris L. Bender  
Environmental Compliance Manager  
City of Independence  
Water Pollution Control Department  
P.O. Box 1019  
Independence, MO 64051-0519

Dear Ms. Bender:

I am responding to your letter of June 6, 2006 concerning the draft Total Maximum Daily Loads (TMDLs) for Spring Fork Lake and Lamar Lake.

The use of reference lakes for the derivation of waste load allocations for nutrients in impaired lakes has some inherent uncertainties. The Environmental Protection Agency (EPA) guidelines require some assumptions and there are risks of error in each of the approaches. We determined that the use of neighboring lakes as references was the best option for this situation because of their similarity in hydrologic and watershed characteristics. The department prefers use of reference data gathered from nearby waters to the use of a broader base of data, such as from an ecoregion.

We have examined your suggested alternative of using a calculation of the 25<sup>th</sup> percentile of all the available data from lakes and reservoirs in the Osage Plain region. We found that this approach results in a total phosphorus concentration of 35 µg/L and a chlorophyll-a concentration of 11 µg/L. These figures would result in more restrictive target allocations for nutrient loading than what was recommended by the draft TMDLs. We would want to be more certain of the accuracy of this approach to avoid requiring overly restrictive TMDLs.

Furthermore, the reference condition that is cited in the EPA guidance for Nutrient Ecoregion IX is based on data from all seasons, whereas the TMDL is based on data restricted to the warm season, when the lake systems are under the greatest stress from nutrients. The reference lake concentrations for Level III Ecoregion 40, in which both the lakes in question are located, are applied to a relatively broad geographic area and may not be sufficiently site specific.

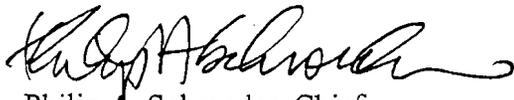
Ms. Dorris L. Bender  
Page Two

It is probable that the target concentrations for total phosphorus in these TMDLs will be subject to change once nutrient criteria for lakes and reservoirs go into effect. As you know, calculation of these criteria is still under consideration.

Thank you for your comments. If you have other questions or wish to discuss this further, please contact Anne Peery of my staff at P.O. Box 176, Jefferson City, Missouri 65102 or (573) 526-1426.

Sincerely,

WATER PROTECTION PROGRAM



Philip A. Schroeder, Chief  
Water Quality Monitoring and Assessment Section

PS:apl