Missouri
Department of
Natural Resources

DRAFT DOUGER BRANCH TMDL
PUBLIC COMMENTS

Public Notice
April 28 – May 28, 2006

Douger Branch
WBID # 3168

Lawrence County, Mo.

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

Ann C.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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

MAY 22 2006

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

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WATER PROTECTION PROGRAM

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.

STATE OF MISSOURI
Matt Blunt, Governor • Doyle Childers, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

August 4, 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 Douger Branch Total Maximum Daily Load

Dear Mr. DeLashmit:

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

> *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.*

Response to Comment 1:
The sentence EPA is referring to "Expressed as total recoverable zinc, the target is 145 µg/L", may seem misleading if the target were determined from observed data. This is not the case. The 145 µg/L is the result of total zinc formula at the specified hardness [Kansas's acute and chronic criteria = WER[EXP[(0.8473*(ln(hardness)))+0.884]] = µg /L total zinc. The water effect ratio (WER) equals to 1]. The TMDL is expressed in terms of dissolved zinc and only dissolved zinc observations are plotted on this graph. There is no translation of observed load from one form to the other. Total zinc target is important because zinc effluent limits are set as total recoverable in Missouri.

Comment 2 -- On page 6 of the TMDL, the flow data, for the duration analysis, was based on watershed areas to a United State Geological Survey gauge at the mouth of Douger Branch. The TMDL does not clearly state that the water quality data used in the Load Duration was 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.

Response to Comment 2:
About 60 percent (18/30) of the water quality data did not have the corresponding flow. Although assigning mouth flow to these sites would be more protective because it would yield higher loads, thus requiring larger reduction, site flows were assigned a fraction of the Douger Branch outlet flow on the day the sample was collected. Every sampling site was assigned this fraction based on its drainage area in relation to that of the Douger Branch watershed. Thus the flow at a site on a particular day equals the area of the watershed of the site divided by the area of the Douger Branch watershed multiplied by the flow at the mouth on the same day. Three subsections were added to the Load Capacity (LC) section to clarify this.

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 (LA). Based on the last sentence of the first paragraph on Page 9, there seems to be confusion that the 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.

Response to Comment 3:
The department defines LA as that portion of the LC that is not attributable to point sources. The LA may come from runoff and/or seepage or other non-point source. The department generally uses seepage to describe any LA at or below base flow. Changes to the wording in the TMDL have been made to both the LA and Waste Load Allocation (WLA) sections of the TMDL to clarify this issue.

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.

Response to Comment 4:
The effluent limit of 172 μg /L (total recoverable zinc) was carried over from the previous permit because it was lower than the then-current water quality standards. At the next permit renewal or modification, zinc limits will be added that reflect the new water quality standards. Wording to this effect has been included in the Implementation Plans section of the TMDL.

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.

Response to Comment 5:
The objective was to represent all observed loads within a range of flow probabilities (at or below base flow) as one value. This load is then used as the value that corresponds to the flow at lower probability end of the range. In the case of this TMDL, the representative value is the 95th percentile of data points within a percentile range. Again, note the changes to the LC section of the TMDL.

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.

Response to Comment 6:
All calculations and supporting documents (spreadsheets) are included in the Administration Record and are available for public review. This material has recently been sent to EPA via e-mail.

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

Sincerely,

WATER PROTECTION PROGRAM

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

PS:apl