Missouri
Department of
Natural Resources

MARMATON RIVER TMDL
EPA COMMENTS

TMDL submitted to EPA
September 28, 2010

Marmaton River
WBID # 1308

Vernon County, Mo.

Missouri Department of Natural Resources
Water Protection Program
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Whipps, Bill

From: Adkins.Tabatha@epamail.epa.gov
Sent: Wednesday, October 13, 2010 1:52 PM
To: Hoke, John
Cc: Whipps, Bill
Subject: Marmaton River Comments

John,

Marmaton River comments are below. I may have a few more (not quite done) but wanted to get these to you. If you don't receive any more from me by COB Friday count these as it. Thanks.

TJ

1. Page 27 1st paragraph. It is not clear how the flow at the watershed outlet was generated. It appears it was generated by extrapolating the flow per unit area of the gage data from the Marmaton River near Nevada. Need to describe this section of the TMDL or in Appendix B.

2. Page 30-32 Tables 12, 14 & 16. It is recommended to list the percentile flow at the outlet in these tables instead of the contributing area flows (MO portion). Use the flows in Tables 11, 13 & 15.

3. Appendix B.
   a. Clarify how the synthetic flows for Marmaton River were generated, don't think it was following the method described on page 59. Flows at the watershed outlet were derived from the unit flows from the Marmaton River near Nevada gage. The method outlined in the appendix only applies to an ungaged stream.

   b. Page 61. The TSS target load duration was estimated following a similar procedure as in TN and TP. The TSS target concentration is the 25th percentile of the pooled TSS data from the EDU of the Marmaton River. The distribution of the pooled TSS data was adjusted such that the median is equal to the 25th percentile of the pooled data. Then, an EDU load vs discharge relationship is developed.

4. Please clarify this discrepancy from page ii:
   The EPA approved Table H (and the 2008 303(d) list) indicates the length for Marmaton as 49.5 miles and the segment description as S19, T38N, R29W to KS state line. An explanation is in the footnote but for approval will need the current EPA approved location and mileage on page ii or some clarification.

5. Add MOS for TN and TP to section 9, page 33.

6. Add to appendix the info sheet on "Development of Nutrient Targets Using Ecoregion Nutrient Criteria with LDCs". Explanation in TMDL and reference on this development for nutrient targets needs to be clearer.
There is no mention of what EDU or ecoregion that Marmaton River is located in.

7. Add to the appendix the USGS gaging sites for flow development.
8. Pg 20, section 4.1 refers to Marmaton River water body ID as 3652. Please change to 1308.
9. Pg 25, section 5.2, Table 9 refers to Wilcock 1982 reference - reference section refers to 1992. Please clarify.
10. Pg 26, section 5.3, refers to reference Nijboer and Verdonschot 2004. Please add to reference section.
11. Pg 28, section 7, indicate that no allocations were made for KS.

12. Pg 29, section 8, along with statement that this TMDL does not set allocations to point sources in KS, could a clarifying statement be added that the modeling assumption was made that the water meets WQS at the KS/MO state line.
13. Pg 42, reference section, MoDNR, 2008 doesn't appear to be referenced anywhere in the document.
14. Pg 42, reference section, Stiles, 2009 doesn't appear to be reference anywhere in the document.
15. No indication that CAFOs are assigned a WLA of zero. Please include in Section 7.

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Department Responses to EPA comments on Marmaton River TMDL

1. Page 27 1st paragraph. It is not clear how the flow at the watershed outlet was generated. It appears it was generated by extrapolating the flow per unit area of the gage data from the Marmaton River near Nevada. Need to describe this section of the TMDL or in Appendix B.

Flow at the watershed outlet was generated using synthetic flow estimation, which is now described in the "Methodology" Section of Appendix B (see the response to comment #3 below for more information).

2. Page 30-32 Tables 12, 14 & 16. It is recommended to list the percentile flow at the outlet in these tables instead of the contributing area flows (MO portion). Use the flows in Tables 11, 13 & 15.

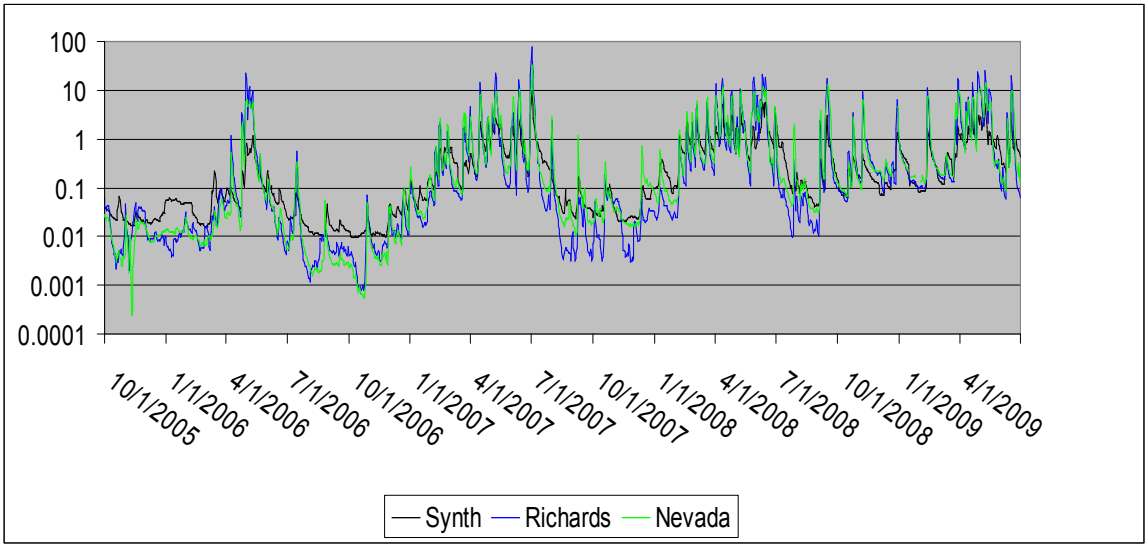
Tables 12, 14 and 16 have been updated with the percentile flow at the outlet for each flow exceedance.

3. Appendix B.

a. Clarify how the synthetic flows for Marmaton River were generated, don't think it was following the method described on page 59. Flows at the watershed outlet were derived from the unit flows from the Marmaton River near Nevada gage. The method outlined in the appendix only applies to an ungaged stream.

The calculations and data used to develop the synthetic flow duration curve for the Marmaton River watershed were provided to the Department by EPA Region 7. Review of the spreadsheet shows that a period of record from October 2, 1989 through June 30, 2009 was used to derive the synthetic flow duration curve. This extended period of time allows the flow record to be of sufficient length to calculate reliable percentiles of flow (typically 20 years or more).

The period of record for daily discharge data from the Marmaton River gage near Nevada is October 1, 2003 through July 7, 2010. Using this shorter period of record would have yielded results that were less robust and contained greater uncertainty. A graph depicting comparisons between synthetic flow and flow from the Marmaton River gages at Nevada and Richards, Mo. is shown below. This plot suggests the synthetic flow duration curve is a reasonable approximation of flow within the Marmaton River watershed.



b. Page 61. The TSS target load duration was estimated following a similar procedure as in TN and TP. The TSS target concentration is the 25th percentile of the pooled TSS data from the EDU of the Marmaton River. The distribution of the pooled TSS data was adjusted such that the median is equal to the 25th percentile of the pooled data. Then, an EDU load vs. discharge relationship is developed.

Appendix B has been revised to reflect the current methodology for generation of TSS targets.

4. Please clarify this discrepancy from page ii: The EPA approved Table H (and the 2008 303(d) list) indicates the length for Marmaton as 49.5 miles and the segment description as S19, T38N, R29W to KS state line. An explanation is in the footnote but for approval will need the current EPA approved location and mileage on page ii or some clarification.

Page *ii* (including footnote #2) has been revised to reflect stream mileage and location as it appears on the Missouri 2008 303(d) List.

5. Add MOS for TN and TP to section 9, page 33.

Section 9 has been revised to include a more detailed and accurate discussion of the margins of safety for TN and TP.

6. Add to appendix the info sheet on "Development of Nutrient Targets Using Ecoregion Nutrient Criteria with LDCs". Explanation in TMDL and reference on this development

for nutrient targets needs to be clearer. There is no mention of what EDU or ecoregion that Marmaton River is located in.

Appendix B has been amended to address development of nutrient targets as requested in the comment. References to this appendix have also been added to Section 5.3 of the TMDL document. Additionally, the Central Plains/Osage/ South Grand EDU and Central Irregular Plains Ecoregion have been added to the appendix and document to identify these regions as where the Marmaton River is located.

7. Add to the appendix the USGS gaging sites for flow development.

Tables identifying USGS gaging stations used to develop synthetic flow and collect water quality data have been added to Appendix B (Tables B.1 and B.2).

8. Pg 20, section 4.1 refers to Marmaton River water body ID as 3652. Please change to 1308.

The Water Body ID in Section 4.1 has been corrected. Thank you for bringing this typo to our attention.

9. Pg 25, section 5.2, Table 9 refers to Wilcock 1982 reference - reference section refers to 1992. Please clarify.

The 1992 Wilcock reference in the "References" section has been corrected to 1982. Thank you for bringing this typo to our attention.

10. Pg 26, section 5.3, refers to reference Nijboer and Verdonschot 2004. Please add to reference section.

The Nijboer and Verdonschot reference has been added to the "References" section of the document.

11. Pg 28, section 7, indicate that no allocations were made for KS.

A statement has been added to Section 7 to clarify that no allocations were made for the Kansas portion of the watershed.

12. Pg 29, section 8, along with statement that this TMDL does not set allocations to point sources in KS, could a clarifying statement be added that the modeling assumption was made that the water meets WQS at the KS/MO state line.

A statement has been added to Section 8 indicating that it is assumed that applicable water quality standards are met at the Kansas-Missouri state line.

13. Pg 42, reference section, MoDNR, 2008 doesn't appear to be referenced anywhere in the document.

The reference for 'MoDNR 2008' has been removed from the "References" section of the document.

14. Pg 42, reference section, Stiles, 2009 doesn't appear to be reference anywhere in the document.

The reference for 'Stiles 2009' has been removed from the "References" section of the document.

15. No indication that CAFOs are assigned a WLA of zero. Please include in Section 7.

Section 8 of the TMDL addresses point source waste load allocations. Additional language has been added to this section to clarify why CAFOs are not assigned WLAs in this TMDL.