

**STATE OF MINNESOTA
POLLUTION CONTROL AGENCY**

**In the Matter of the Decision to Deny the Petitions
For a Contested Case Hearing and to Submit the
Draft Cottonwood River and Redwood River Fecal
Coliform Total Maximum Daily Loads to the U.S.
Environmental Protection Agency For Approval**

**FINDINGS OF FACT,
CONCLUSIONS OF LAW
AND ORDER**

Pursuant to the federal Clean Water Act (33 U.S. Code Sec. 1251-1387) the Minnesota Pollution Control Agency (MPCA) staff prepared the draft Cottonwood River and Redwood River Fecal Coliform Total Maximum Daily Loads (TMDLs) for submission to the U.S. Environmental Protection Agency (EPA) for approval. After affording all interested persons the opportunity to present written and oral data, statements, and arguments to the MPCA, and after considering all of the evidence in the records, files, and proceedings herein, the MPCA Commissioner, being fully advised, hereby adopts the following Findings of Fact, Conclusions of Law and Order.

I. FINDINGS OF FACT

A. *Jurisdiction*

1. The MPCA is authorized and required to administer and enforce all laws relating to the pollution of any waters of the state. Minn. Stat. § 115.03, subd. 1(a).
2. The MPCA is also authorized “to investigate the extent, character, and effect of the pollution of the waters of this state and to gather data and information necessary or desirable in the administration or enforcement of pollution laws, and to make such classification of the waters of the state as it may deem advisable.” Minn. Stat. § 115.03, subd. 1(b).
3. The MPCA Commissioner is authorized to decide on behalf of the MPCA whether to grant or deny the petitioners request for a Contested Case Hearing in this matter. Minn. Stat. § 116.03, subd. 1(c) (2012).
4. Similarly, the MPCA Commissioner is authorized to order TMDLs be submitted to EPA. *Id.*

B. *Background/ Overview of TMDL Process*

5. Congress passed the Clean Water Act in 1972 to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” 33 U.S.C. § 1251. To achieve this, Congress sought to eliminate the discharge of pollutants into the navigable waters.” *Id.*

6. The Clean Water Act focuses on two possible sources of pollution: point sources and nonpoint sources. In addition, the Clean Water Act includes two basic types of pollution control requirements; technology-based effluent limits and water-quality effluent limits. 40 C.F.R. § 130.
7. Point sources are defined as “any discernible, confined, and discrete conveyance,” including pipes, ditches, conduits or vessels “from which pollutants are or may be discharged.” 33 U.S.C. §1362(14).
8. Nonpoint sources includes any non-discrete source, such as runoff from agriculture, silviculture, forestry, and construction activities.
9. The Clean Water Act requires that states establish water quality standards, based on the designated use for that particular body of water. 33 U.S.C. §1313 (a)-(c). Nonpoint sources are not regulated by permits due to the difficulty involved in tracing the pollution back to a particular point, measuring it and setting an acceptable level for that point. *Sierra Club v. Meiburg*, 296 F.3d 1021, 1025 (11th Cir. 2002).
10. Point source pollution is subject to technology-based controls imposed by the National Pollution Discharge Elimination System (NPDES) permit process. The NPDES permit process sets quantitative limits on the amount of pollutants released from each point source. The EPA delegated its duties to establish and operate its NPDES permit programming authority to the State of Minnesota, which operates the program through the MPCA. 33 U.S.C. §1342 (b).
11. NPDES permits include technology-based effluent limits and also may include water quality effluent limits to meet water quality standards.
12. Technology-based controls are minimum pollution control requirements that must be met regardless of the potential impact a discharge may have on a receiving water. Technology-based controls are discharge limitations based on the capabilities of an industry or class of dischargers to treat influent by using pollution control technology. Technology-based controls consider technological feasibility and cost and specify the quality of effluent a discharger may release to surface waters.
13. Water quality based effluent limits consider the impact a discharge will have on the receiving water. When water quality effluent limits are developed, technical feasibility and economic reasonableness are not factors considered.
14. Achieving the specific water quality standard applied to a body of water may require more stringent limitations on point-source discharges, due to the contribution of pollutants from nonpoint sources. *Id.* Individual discharge permits will be adjusted and

other measures taken, to reduce the amount of a pollutant in a waterbody to the level specified in the applicable TMDL.

15. Section 303(d) of the Clean Water Act establishes the TMDL program, a water-quality based approach to regulating waters that fail to meet water quality standards despite the application of effluent limits and other pollution control requirements to those waters. 33 U.S.C. § 1313(d)(1)(A)-(C).
16. TMDLs are water-quality based controls. They are used to supplement technology-based controls where necessary. If technology-based effluent limits are, for some reason, failing to ensure that a given water is meeting all applicable water quality standards, then more stringent requirements based on the actual quality of the receiving water may be imposed. 33 U.S.C. § 1313(d)(1)(A)-(C).
17. A TMDL expresses the maximum amount of a particular pollutant that can pass through a waterbody each day without violating water quality standards. 33 U.S.C. § 1313(d)(1)(C) and (D).
18. Section 303(d)(1) requires each state provide the EPA a list of all waters within the state boundaries that do not comply with applicable water quality standards despite the application of effluent limits to those waters. 33 U.S.C. § 1313(d)(1)(A) and (B). This list is known as the “303(d) list.”
19. Each body of water where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required is known as a “reach” or “water quality limited segment” (WQLS or “limited segment”). 40 C.F.R. § 130.2(j).
20. Minnesota must set a TMDL for every pollutant in each reach preventing or impeding compliance with applicable water quality standards. 33 U.S.C. § 1313(d)(1)(C); 40 CFR 130.7(c) (ii)(1)(ii).
21. A TMDL is the sum of the allocated loads of pollutants set at a level necessary to meet the applicable water quality standards. A TMDL includes wasteload allocations from point sources, load allocations from nonpoint sources and natural background conditions, a margin of safety, and in some cases a reserve capacity if determined to be necessary for future growth. A TMDL must also consider seasonal variations. 33 U.S.C. § 1313(d)(1)(C) and (d)(1)(D)(3); 40 C.F.R. § 130.7 (6)(c)(1). (*See also*, U.S. Environmental Protection Agency, “Guidance for Water Quality-Based Decisions: The TMDL Process,” Office of Water, *WH-S53*, Washington D.C., April 1991). 40 C.F.R. § 130.2(i). This process was followed by MPCA in developing the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

22. A Wasteload Allocation (WLA) is the portion of a TMDL allocated to existing and/or future point sources. 40 C.F.R. § 130.2(h).
23. A Load Allocation (LA) refers to the portion of a receiving water's loading capacity attributed to nonpoint sources of pollution and natural background sources. Load allocations are best estimates of the loading, which can range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loads should be distinguished. 40 CFR § 130.2 (g).
24. The EPA defines "natural background level" as "chemical, physical, and biological levels representing conditions that would result from natural processes, such as weathering and dissolution." U.S. E.P.A., *Clean Water Act, Total Maximum Daily Loads (303d): Glossary*, <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/glossary.cfm>
25. Minnesota Rule 7050.0150, subp. 4 defines "Natural causes" as the multiplicity of factors that determine the physical, chemical, or biological conditions that would exist in a waterbody in the absence of measurable impacts from human activity or influence. Minn. R. 7050.0150, subp. 4 (2011).
26. Minnesota Statute § 114D.15, subd. 10, the Clean Water Legacy Act, defines "natural background" as meaning "characteristics of the water body resulting from the multiplicity of factors in nature, including climate and ecosystem dynamics, that affect the physical, chemical, or biological conditions in a water body, but does not include measurable and distinguishable pollution that is attributable to human activity or influence." Minn. Stat. § 114D.15, subd. 10 (2012).
27. Based on the definitions provided by EPA and in Minnesota Statute and Rule, the MPCA hereby finds that "natural background" is the condition that occurs outside of human influence.
28. A Margin of Safety (MOS) accounts for the uncertainty about the relationship between the pollutant loads and the quality of the receiving waterbody. The MOS is normally "implicit" and incorporated into the conservative assumptions used to develop TMDLs (generally within the calculations or models). This is particularly true where the pollution is largely by nonpoint sources. If the MOS needs to be larger than the "implicit" levels, additional MOS can be added explicitly as a separate component of the TMDL. U.S. E.P.A., Office of Water, *Protocol for Developing Pathogen TMDLs*, EPA 841-R-00-002 (2001), available at http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/2003_07_03_tmdl_pathogen_all.pdf

29. Reserve Capacity (RC) is that portion of the TMDL that accommodates future loads. The MPCA's policy on reserve capacity is that it be considered by all TMDL projects, and the TMDL should clearly describe the rationale for a decision regarding this issue.
30. Inclusion of an allocation for reserve capacity in the TMDL is strongly encouraged. Reserve capacity can be ascribed singly to the WLA, the LA or both; e.g. new and expanding Wastewater Treatment Facilities (WWTF's), Municipal Separate Storm Sewer Systems (MS4s) that will be covered by a permit in the future or that are permitted now and may expand, and/or land use changes. If an allocation for reserve capacity is not included, either no new future loads are anticipated or allowed, or increased loads must be accommodated by pollutant trading.
31. A TMDL may be expressed as the equation: $WLA + LA + MOS + RC = TMDL$ (note: seasonal flow variations are considered throughout the TMDL development).
32. An important distinction must be made between a waterbody impaired due to natural or anthropogenic factors. If a waterbody is determined not to meet water quality standards due to natural conditions, a TMDL is not required and the natural background condition becomes the standard (U.S. E.P.A., Office of Wetlands, Oceans, and Watersheds, *Consolidated Assessment and Listing Methodology, Toward a Compendium of Best Practices* (2002); Minn. R. 7050.0170). Natural background standards have consequences for future sources since loading increases that result in a "discernable impact from point or nonpoint source pollutants attributable to human activity" are not permissible.
33. In June 2009, MPCA formed a "Natural Background for Streams workgroup" to develop an approach for considering natural background conditions when assessing streams for dissolved oxygen.
34. In June 2010, MPCA formed a workgroup to develop a process to assess lakes for eutrophication.
35. The MPCA developed two guidance documents related to the assessment of natural background in water quality: Minnesota Pollution Control Agency, *Natural Background and Water Quality: Guidance Document for Assessment of Aquatic Life Use Support*, Doc. No. wq-s1-62 (2009), available at <http://www.pca.state.mn.us/index.php/view-document.html?gid=8603>; Minnesota Pollution Control Agency, *Guidance for Considering Natural Background When Assessing Lakes for Eutrophication* available at <http://www.pca.state.mn.us/index.php/view-document.html?gid=16325>.
36. The EPA promulgated guidance for the individual states to follow as they develop their proposed TMDLs. The proposed TMDL that is at issue in this case is consistent with EPA guidance as set forth below. U.S. E.P.A., Office of Water, *Protocol for Developing*

Pathogen TMDLs, EPA 841-R-00-002 (2001), available at http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/2003_07_03_tmdl_pathogen_all.pdf

37. In addition to EPA guidance the MPCA developed a “Bacteria TMDL Protocols and Submittal Requirements” guidance document to further aid local entities in the development of TMDLs. Minnesota Pollution Control Agency, *Bacteria TMDL Protocols and Submittal Requirements*, (2009), available at http://www.pca.state.mn.us/index.php?option=com_docman&task=doc_view&gid=8526.

C. *The draft Cottonwood River and Redwood River Fecal Coliform TMDLs / Stakeholder Involvement, Public Notice and Comment Period*

38. The proposed TMDLs at issue in this case are the draft Cottonwood River and Redwood River Fecal Coliform TMDLs. The draft Cottonwood River Fecal Coliform TMDL encompasses eight (8) impaired reaches within the draft Cottonwood River watershed. The draft Redwood River Fecal Coliform TMDL encompasses nine (9) impaired reaches within the Redwood River watershed.
39. The specific objective, in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs, is to determine the type and degree of pollutant source reductions needed to achieve the water quality standard of 200 fecal coliform (126 *E. coli*) organisms /100 mL at each of the impaired reaches listed on the 303(d) list.
40. The draft Cottonwood River and Redwood River Fecal Coliform TMDLs were developed by Redwood-Cottonwood Rivers Control Area (RCRCA), a local joint powers organization, in a manner consistent with EPA guidance, MPCA protocol, and previously EPA approved bacteria TMDLs.
41. In its Protocol for Developing Pathogen TMDLs, EPA advised that “Analysts should be resourceful and creative in selecting TMDL approaches. Decisions regarding the extent of the analysis should always be made on a site-specific basis as part of a comprehensive, problem-solving approach.” U.S. E.P.A., Office of Water, *Protocol for Developing Pathogen TMDLs*, EPA 841-R-00-002 (2001), available at http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/2003_07_03_tmdl_pathogen_all.pdf
42. A Stakeholder/Technical Advisory Group was established and utilized in the development of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs. A collaboration of local, state, and federal agencies, interest groups, organizations, and citizens were invited and participated in this process to provide input for the development of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

43. Stakeholder/Technical Advisory Group meetings were held February 2008, April 2008, May 2008 and June 2008 in Redwood Falls. The draft Cottonwood River and Redwood River Fecal Coliform TMDLs were sent to EPA for preliminary review and comment in March 2010.
44. An electronic mail message was sent August 2010 from RCRCRA to the Stakeholder/Technical Advisory Group to request review and provide comments on the final draft Cottonwood River and Redwood River Fecal Coliform TMDLs prior to the public notice comment period. No comments were received from the Stakeholder/Technical Advisory Group. The draft Cottonwood River and Redwood River Fecal Coliform TMDLs were revised based on EPA comments and a response was sent to EPA in November 2010.
45. The public notice comment period for the draft Cottonwood River and Redwood River Fecal Coliform TMDLs was April 25, 2011 to May 25, 2011. The draft Cottonwood River and Redwood River Fecal Coliform TMDLs were posted on the MPCA web site along with a press release and a copy of the mailing sent to interested parties.
46. The MPCA received a total of four essentially identical petition(s) for a Contested Case Hearing on the draft Cottonwood River and Redwood River Fecal Coliform TMDLs. Two petitions were received for a Contested Case Hearing on the draft Cottonwood River Fecal Coliform TMDL and the other two petitions were received for Contested Case Hearing on the draft Redwood River Fecal Coliform TMDL. The Petitions for Contested Case Hearing are hereby incorporated by reference as Appendix A to these findings.
47. A total of six (6) written comment letters from three (3) producer groups were received as email attachments during the comment period. Each producer group submitted two essentially identical copies of its letter; one for the draft Cottonwood River Fecal Coliform TMDL and one for the draft Redwood River Fecal Coliform TMDL. One (1) written comment was received by email from a citizen on the draft Cottonwood River Fecal Coliform TMDL. The MPCA's Response to Comments received is hereby incorporated by reference as Appendix B to these findings.
48. Comments and contested case hearing requests were timely.

D. Petitions for a Contested Case Hearing

49. Minn. R. 7000.1800, subp. 2, Contested case petition contents, subp. A, requires that a petition include:
 - (1) a statement of reasons or proposed findings supporting the board or commissioner decision to hold a contested case hearing pursuant to the criteria in Minn. R. 7000.1900, subpart 1; and

- (2) a statement of the issues proposed to be addressed by a contested case hearing and the specific relief requested or resolution of the matter.
50. The MPCA's decision whether to grant the petitions for a Contested Case Hearing is governed by Minn. R. 7000.1900, Criteria To Hold Contested Case Hearing, subp. 1, which states:
- Subpart 1. Board or commissioner decision to hold Contested Case Hearing. The board or commissioner must grant the petition to hold a contested case hearing or order upon its own motion that a contested case hearing be held if it finds that:
- A. there is a material issue of fact in dispute concerning the matter pending before the board or commissioner;
 - B. the board or commissioner has the jurisdiction to make a determination on the disputed material issue of fact; and
 - C. there is a reasonable basis underlying the disputed material issue of fact or facts such that the holding of a contested case hearing would allow the introduction of information that would aid the board or commissioner in resolving the disputed facts in making a final decision on the matter.
51. In order to satisfy the first requirement, Minn. R. 7000.1900, subp. 1(A), the hearing requester must show there is a material issue of fact in dispute as opposed to a disputed issue of law or policy. A fact is material if its resolution will affect the outcome of a case. *O'Malley v. Ulland Brothers*, 540 N.W.2d 889, 892 (Minn. 1996).
52. In order to satisfy the second requirement, Minn. R. 7000.1900, subp. 1(B), the petitioner(s) must show that the MPCA has jurisdiction or authority to make a determination on the disputed issues of material fact. "Agencies are not permitted to act outside the jurisdictional boundaries of their enabling act." *Cable Communications Board v. Nor-West Cable*, 356 N.W.2d 658, 668 (Minn. 1984). Therefore, each issue in the contested case request has to be such that it is within the MPCA's authority to resolve.
53. Finally, under Minn. R. 7000.1900, subp. 1(C), the petitioner(s) has the burden of demonstrating there is a reasonable basis underlying the disputed material issue of fact or facts such that the holding of a contested case hearing would allow the introduction of information that would aid the MPCA in making a final decision on the matter. *In the Matter of Solid Waste Permit for the NSP Red Wing Ash Disposal Facility*, 421 N.W.2d 398, 404 (Minn. App. 1988). To do so, the petitioner(s) may provide the MPCA with

specific expert's names, and with any indication of what specific *new facts* an expert might testify to at a contested case hearing. The Minnesota Supreme Court has recognized that to meet this test, "it is simply not enough to raise questions or pose alternatives without some showing that evidence can be produced which is contrary to the action proposed by the MPCA" (*See In the Matter of Amendment No. 4 to Air Emission Facility Permit*, 454 N.W.2d 427, 430 (Minn. 1990)).

54. All three criteria of Minn. R. 7000.1900, subp. 1 must be satisfied for the MPCA to grant a petition for a contested case hearing.

E. Evaluation of Petitions for Contested Case Hearing "Matters of Concern" and "Issues To Be Addressed by Contested Case Hearing"

55. The petitions contained the following identical language of the "matter of concern" and "issues to be addressed by contested case hearing":

a. Matters of Concern

"The undersigned petitioners find that the draft TMDL report fails to recognize natural background considerations as required by the Clean Water Legacy Act (MS 114D.15, subdivision 10). The draft report discussion of Natural Background Sources includes only wildlife populations. Research has shown that coliform bacteria, once believed to only originate and reproduce in the intestines of warm-blooded animals, can survive, even reproduce in soil and stream sediments (Sadowsky, 2010- available at: <http://www.mda.state.mn.us/protecting/cleanwater/research/~media/Files/protecting/cwf/ecoliditch7milecreek.ashx>).

This important technical finding, discovered in research funded by the people of Minnesota through the Clean Water Fund, has not been included in the report."

b. Issues to be addressed by contested case hearing

"The undersigned petitioners request the MPCA address the legal requirements of Total Maximum Daily Load Reports under the Clean Water Act and the Clean Water Legacy Act, including the evaluation of natural background conditions."

56. The MPCA evaluated the petitions for a Contested Case Hearing to determine if the above stated "matters of concern" and "issues to be addressed" meet the three required criteria in Minn. R. 7000.1900, subp. 1. The MPCA makes the following specific Findings regarding the "matters of concern" and "issues to be addressed" raised by the

petitioner(s). The reasons for holding a contested case hearing fails to satisfy conditions of the requirements of Minn. R. 7000.1900, subpart. 1., for the following reasons:

a. ***“Matters of Concern” of the Sadowsky et al (2010) Report***

1. The MPCA finds this is not a disputed material issue of fact for the following reasons.
 - i. Petitioners raise a policy question or a question of law and fail to raise a disputed material issue of fact. Thus a contested case hearing is not appropriate.
 - ii. Petitioners fail to raise a disputed material issue of fact. The MPCA does not dispute that the Sadowsky study was not specifically cited in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs. The draft Cottonwood River and Redwood River Fecal Coliform TMDLs did include discussion, and cited other studies, acknowledging the survivability of bacteria in stream sediments.
 - iii. The four petitions for contested case hearing at issue in this matter are virtually identical. MPCA staff carefully reviewed and considered the Sadowsky study. In addition, MPCA staff discussed the Sadowsky study and specifically whether the natural background discussion contained within the proposed draft Cottonwood River and Redwood River Fecal Coliform TMDLs should be altered in light of the Sadowsky study findings.
 - iv. The MPCA staff also contacted and met with Dr. Sadowsky, the author of the study which the petitioner’s requested to be included in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs. The meeting focused entirely on the potential implications of Dr. Sadowsky’s study findings in light of the proposed draft Cottonwood River and Redwood River Fecal Coliform TMDLs.
 - v. The MPCA hereby incorporates the Sadowsky study, into the official record for the draft Cottonwood River and Redwood River Fecal Coliform TMDLs, as the Sadowsky study was considered before the draft Cottonwood River and Redwood River Fecal Coliform TMDLs were finalized.
 - vi. Although MPCA staff reconsidered its position regarding the natural background and specifically the weight to be given to the

Sadowsky study, ultimately MPCA staff declined to alter the expression of natural background in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

- vii. Based on the MPCA's incorporation and consideration of the Sadowsky study in relation to the natural background expression in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs, the MPCA finds Petitioners fail to establish criterion "A" of Minn. R. 7000.1900.
- b. ***“Issues to be addressed by a Contested Case Hearing”. Petitioners “request the MPCA address the legal requirements of the Total Maximum Daily Load Reports under the Clean Water Act and Clean Water Legacy Act, including the evaluation of natural background conditions.”***

2. The MPCA finds this is not a disputed material issue of fact for the following reasons.

- i. Both the draft Cottonwood River and Redwood River Fecal Coliform TMDLs contain general discussion of natural background sources of bacteria. The MPCA does not dispute that the draft Cottonwood River and Redwood River Fecal Coliform TMDLs do not include a separate, explicit load allocation for natural background sources. MPCA staff considered whether it was possible to differentiate natural background as a separate component of the load allocation. It was determined this was not reasonable and not practical based on the complexity of the problem, the time constraints, the availability of resources, monitoring data, and the management objectives under consideration. (U.S. E.P.A., Office of Water, *Protocol for Developing Pathogen TMDLs*, EPA 841-R-00-002 (2001), available at http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/2003_07_03_tmdl_pathogen_all.pdf). A separate, explicit load allocation for natural background sources is not required. The following definition of a TMDL contains the only references to “natural background” found in the Minnesota Statute Chapter 114D, the Clean Water Legacy Act: *Minn. Stat. § 114D.15, Subd. 10. Total maximum daily load or TMDL.*

“Total maximum daily load” or “TMDL” means a scientific study that contains a calculation of the maximum amount of a pollutant that may be introduced into a surface

water and still ensure that applicable water quality standards for that water are restored and maintained. A TMDL also is the sum of the pollutant load allocations for all sources of the pollutant, including a wasteload allocation for point sources, a load allocation for nonpoint sources and natural background, an allocation for future growth of point and nonpoint sources, and a margin of safety to account for uncertainty about the relationship between pollutant loads and the quality of the receiving surface water. "Natural background" means characteristics of the water body resulting from the multiplicity of factors in nature, including climate and ecosystem dynamics, that affect the physical, chemical, or biological conditions in a water body, but does not include measurable and distinguishable pollution that is attributable to human activity or influence. A TMDL must take into account seasonal variations.

- ii. This definition indicates nonpoint sources and natural background are part of the load allocation. The definition does not require a separate, explicit load allocation for natural background sources.
- iii. Federal Clean Water Act requirements for TMDLs are codified in the Water Quality Planning and Management Regulations at Title 40, Part 130 of the Code of Federal Regulations (CFR). Section 130.2 contains the following definitions:

(g) Load allocation (LA). The portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loads should be distinguished.

(i) Total maximum daily load (TMDL). The sum of the individual WLAs for point sources and LAs for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources,

tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. If Best Management Practices (BMPs) or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations can be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs.

- iv. The final sentence of the load allocation definition indicates that natural and nonpoint source loads should be distinguished “wherever possible.” In the case of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs, and other bacteria TMDLs completed by the MPCA and approved by EPA, MPCA staff examined whether it was possible to distinguish and separate out natural background loads from nonpoint source loads and determined that it was not possible to distinguish natural background loads clearly enough to support separate load allocations. Although the Sadowsky study was specifically considered by MPCA staff regarding its effects on whether the load allocation for natural background could be separated out, MPCA staff determined the Sadowsky study did not change that determination.

57. Petitioners fail to demonstrate a hearing would allow for the introduction of new information that would be helpful to the MPCA in reaching a decision in this matter.
 - a. Although the Sadowsky et al. (2008-2010) study was not cited in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs, the MPCA extensively considered the Sadowsky study after the petitions were received during the public comment period and before the draft Cottonwood River and Redwood River Fecal Coliform TMDLs were finalized.
 - b. Following the contested case hearing requests, MPCA staff met with Dr. Sadowsky specifically to discuss his findings on the particular work cited in light of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.
 - c. Dr. Sadowsky cautioned about translating the results of his work to wasteload allocations/load allocations, and about extrapolation of the results from the Seven Mile Creek watershed to the Cottonwood River and Redwood River watersheds.
 - d. MPCA staff worked with Dr. Sadowsky (the author of *The Growth, Survival, and Genetic Structure of E. coli found in Ditch Sediments and Water at the Seven Mile Creek Watershed Study*) and Dr. Adam Birr (Minnesota Department of Agriculture

Research Coordinator) to develop language additions and changes which were drafted for the draft Cottonwood River Fecal Coliform TMDL, but also apply to the draft Redwood River Fecal Coliform TMDL.

58. The MPCA staff propose and the MPCA hereby incorporates the following language to Section 4.1 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs:

Two Minnesota studies describe the presence and growth of “naturalized” or “indigenous” strains of E. coli in watershed soils (Ishii et al., 2006) and ditch sediment and water (Sadowsky et al., 2010). The latter study, supported with Clean Water Land and Legacy funding, was conducted in the Seven Mile Creek watershed, an agricultural landscape approximately 30 miles to the east of the mouth of the Cottonwood River. DNA fingerprinting of E. coli from sediment and water samples collected in Seven Mile Creek from 2008-2010 resulted in the identification of 1568 isolates comprised of 452 different E. coli strains. Of these strains, 63.5% were represented by a single isolate, suggesting new or transient sources of E. coli. The remaining 36.5% of strains were represented by multiple isolates, suggesting persistence of specific E. coli. Discussions with the primary author of the Seven Mile Creek study suggest that while 36% might be used as a rough indicator of “background” levels of bacteria at this site during the study period, this percentage is not directly transferable to the concentration and count data of E. coli used in water quality standards and TMDLs. Additionally, because the study is not definitive as to the ultimate origins of this bacteria, it would not be appropriate to consider it as “natural” background. Finally, the author cautioned about extrapolating results from the Seven Mile Creek watershed to other watersheds without further studies.

59. The MPCA staff propose and the MPCA hereby incorporates the following language to Section 4.2.4 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs and changes the title of these sections from “Wildlife Sources” to “Wildlife/Natural Background Sources.”

Section 4.1 discusses the potential of “naturalized” or “indigenous” bacteria in soils, ditch sediment, and water as an additional source. However, the studies cited are not definitive as to the magnitude of this contribution. Additionally, the studies are not definitive as to the ultimate origins of this bacteria, so it may not be appropriate to consider it as “natural” background.

60. In addition to the changes as outlined in Findings 58 and 59 immediately above, Dr. Adam Birr suggested MPCA include a statement of the pragmatic implications of the Sadowsky study:

From a pragmatic standpoint, this study suggests that there is a fraction of bacteria that may exist regardless of most traditional implementation strategies that are employed to control the sources of E. coli.

61. The MPCA hereby incorporates the language contained in Finding 60 above into Section 4 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.
62. In light of the above, and especially in light of the MPCA's inclusion of the Sadowsky study, MPCA finds there is no reasonable basis underlying "the disputed material issue of fact or facts such that the holding of a contested case hearing could allow the introduction of information that would aid the board or commissioner in resolving the disputed facts in making a final decision on the matter" as required by Minn. R. 7000.1900, criterion C.

II. CONCLUSIONS OF LAW

1. Based on Minn. R. 7000.1900, the MPCA has jurisdiction to decide whether a Contested Case Hearing should be granted or denied.
2. The requirements of Minn. R. 7000.1900 have not been met with respect to the issues raised by Petitioners in the request for a Contested Case Hearing and therefore, the petitions should be denied, based upon the reasons set forth in this document.
3. Due, adequate and timely public notice of the proposed draft Cottonwood River and Redwood River Fecal Coliform TMDLs was given in accordance with Minn. R. 7001.0100, subps. 4 and 5.
4. Petitions for a Contested Case Hearing were timely.
5. The MPCA determines the matter of concern and issues to be addressed by petitioners, of the Cottonwood River and Redwood River watersheds, on the draft Cottonwood River and Redwood River Fecal Coliform TMDLs do not meet the requirements for granting a Contested Case Hearing.
6. Any findings that might properly be termed conclusions and any conclusions that might properly be termed findings are hereby adopted as such.

III. ORDER

The four petitions for Contested Case Hearing are hereby denied in their entirety.

The draft Cottonwood River and Redwood River Fecal Coliform TMDLs shall be sent to U.S. EPA for approval.

IT IS SO ORDERED:



John Linc Stine
Commissioner
Minnesota Pollution Control Agency

10 / 1 / 13

Date

Appendix A – Petitions for Contested Case Hearing

mark.hanson@state.mn.us

Copy for reader

Mark Hanson, Project Manager
Minnesota Pollution Control Agency
504 Fairgrounds Road, Suite 200
Marshall, MN 56258

RE: THE DRAFT COTTONWOOD
RIVER FECAL COLIFORM
TOTAL MAXIMUM DAILY LOAD
REPORT

Mr. Hanson:

Sign official

The undersigned petitioners include residents, landowners and farmers in the Cottonwood River Watershed. We support the long term objective of improving water quality, and are concerned that the process leading to the draft TMDL report fails to achieve this objective. Further, we are concerned that inadequate understanding of the cause and effect relationships between natural and man-induced water quality impacts will lead to misdirection of scarce resources. As local stakeholders, we have an interest in the protection and management of local soil and water resources, including the Cottonwood River and its tributaries.

Matters of Concern

The undersigned petitioners find that the draft TMDL report fails to recognize natural background considerations as required by the Clean Water Legacy Act (MS 114D.15, subdivision 10). The draft report discussion of Natural Background Sources includes only wildlife populations. Research has shown that coliform bacteria, once believed to only originate and reproduce in the intestines of warm-blooded animals, can survive, even reproduce in soil and stream sediments (Sadowsky, 2010- available at <http://www.mda.state.mn.us/protecting/cleanwater/research/~media/Files/protecting/cwf/ecoliditch7milecreek.ashx>). This important technical finding, discovered in research funded by the people of Minnesota through the Clean Water Fund, has not been included in the report.

Proposed Actions

The undersigned petitioners request that MPCA hold contested case hearing in this matter.

The MPCA must grant a party's petition to hold a contested case hearing if it finds that:

- A. There is a material issue of fact in dispute concerning the matter pending before the agency;
- B. The agency has the jurisdiction to make a determination on the disputed material issue of fact; and
- C. There is a reasonable basis underlying the disputed material issue of fact or fact such that the holding of a contested case hearing would allow the introduction of information that would aid the agency in resolving the disputed facts in making a final decision on the matter. Minn. R. 7000.1900, subpart 1.

Issues to be addressed by contested case hearing

The undersigned petitioners request the MPCA address the legal requirements of Total Maximum Daily Load Reports under the Clean Water Act and the Clean Water Legacy Act, including the evaluation of natural background conditions.

MAY-24-2011 08:56 From: MN FARM BUREAU

6519052159

To: RWJURTZ

P. 2/2

Witnesses in this matter shall include the undersigned witnesses and other expert witnesses to be named later.

Publications, references and studies to be introduced include available data from US EPA Storet system and US EPA and MPCA TMDL protocols.

The undersigned petitioners estimate that it will require one full day to adequately address these matters.

Request for information

In preparing for contested case, and pursuant to the Minnesota Government Data Practices Act (MS 13.01) the undersigned petitioners request MPCA provide an opportunity at the earliest convenient date to inspect and review the following data connected with the development of the draft Turbidity Assessment for the Pomme de Terre River.

1. All documents, final or drafts, regarding scope of work for the TMDL.
2. All documents regarding the TMDL workplan, including final and draft documents.
3. All technical, scientific and monitoring data, including electronic data (e.g. spreadsheets and data stored in electronic media) compiled or used to arrive at the proposed standard, or compiled or used to support conclusions by others, but referred to in the TMDL.
4. Software utilized to analyze electronic data, including any software used to conduct modeling used in the TMDL.
5. Any and all documents including staff memorandums, emails or other correspondence relating to the TMDL at any stage.

In accordance with Minn. Stat. 13.03, Subdivision 3, the petitioners further request that the MPCA designate one or more individuals to explain the meaning of all data that is produced.

We respectfully request that the MPCA to provide the information herein requested at the earliest convenient opportunity. Please contact Steve Commerford at 507-327-8845 to make the necessary arrangements.

SPACE FOR NAMES AND ADDRESSES

Greg Bartz, 25455 State Hwy 4, Sleepy Eye, Mn 56085
Mary A. Bartz, 25455 State Highway 4
Sleepy Eye, MN 56085
Harley Vogel, 21538 Kc Rd New Ulm MN 56072

Mark Hanson, Project Manager
Minnesota Pollution Control Agency
504 Fairgrounds Road, Suite 200
Marshall, MN 56258

RE: THE DRAFT COTTONWOOD
RIVER FECAL COLIFORM
TOTAL MAXIMUM DAILY LOAD
REPORT

Mr. Hanson:

The undersigned petitioners include residents, landowners and farmers in the Cottonwood River Watershed. We support the long term objective of improving water quality, and are concerned that the process leading to the draft TMDL report fails to achieve this objective. Further, we are concerned that inadequate understanding of the cause and effect relationships between natural and man-induced water quality impacts will lead to misdirection of scarce resources. As local stakeholders, we have an interest in the protection and management of local soil and water resources, including the Cottonwood River and its tributaries.

Matters of Concern

The undersigned petitioners find that the draft TMDL report fails to recognize natural background considerations as required by the Clean Water Legacy Act (MS 114D.15, subdivision 10). The draft report discussion of Natural Background Sources includes only wildlife populations. Research has shown that coliform bacteria, once believed to only originate and reproduce in the intestines of warm-blooded animals, can survive, even reproduce in soil and stream sediments (Sadovsky, 2010- available at <http://www.mda.state.mn.us/protecting/cleanwater/research/~/media/Files/protecting/cwlf/ecoliditch7milecreek.ashx>). This important technical finding, discovered in research funded by the people of Minnesota through the Clean Water Fund, has not been included in the report.

Proposed Actions

The undersigned petitioners request that MPCA hold contested case hearing in this matter.

The MPCA must grant a party's petition to hold a contested case hearing if it finds that:

- A. There is a material issue of fact in dispute concerning the matter pending before the agency;
- B. The agency has the jurisdiction to make a determination on the disputed material issue of fact;
- and
- C. There is a reasonable basis underlying the disputed material issue of fact or fact such that the holding of a contested case hearing would allow the introduction of information that would aid the agency in resolving the disputed facts in making a final decision on the matter. Minn. R. 7000.1900, subpart 1.

Issues to be addressed by contested case hearing

The undersigned petitioners request the MPCA address the legal requirements of Total Maximum Daily Load Reports under the Clean Water Act and the Clean Water Legacy Act, including the evaluation of natural background conditions.

Witnesses in this matter shall include the undersigned witnesses and other expert witnesses to be named later.

Publications, references and studies to be introduced include available data from US EPA Storet system and US EPA and MPCA TMDL protocols.

The undersigned petitioners estimate that it will require one full day to adequately address these matters.

Request for information

In preparing for contested case, and pursuant to the Minnesota Government Data Practices Act (MS 13.01) the undersigned petitioners request MPCA provide an opportunity at the earliest convenient date to inspect and review the following data connected with the development of the draft Cottonwood River Fecal Coliform Total Maximum Daily Load Report.

1. All documents, final or drafts, regarding scope of work for the TMDL.
2. All documents regarding the TMDL workplan, including final and draft documents.
3. All technical, scientific and monitoring data, including electronic data (e.g. spreadsheets and data stored in electronic media) compiled or used to arrive at the proposed standard, or compiled or used to support conclusions by others, but referred to in the TMDL.
4. Software utilized to analyze electronic data, including any software used to conduct modeling used in the TMDL.
5. Any and all documents including staff memorandums, emails or other correspondence relating to the TMDL at any stage.

In accordance with Minn. Stat. 13.03, Subdivision 3, the petitioners further request that the MPCA designate one or more individuals to explain the meaning of all data that is produced.

We respectfully request that the MPCA to provide the information herein requested at the earliest convenient opportunity. Please contact Steve Commerford at 507-327-8845 to make the necessary arrangements.

Richard Wurtzberger
17675 220th Ave
Sleepy Eye MN 56085

Richard Wurtzberger 17675 220 Ave Sleepy Eye

Signatures

Brian J. Selner

Dean M. Conner
Matt Kiser

Bandy J. Selner

Alvin Kymargyts

Geordie Elyse

Donald G. Walker

Francis Fromm

Paul A. Paul

Ed Oehl

Patricia Euchs

Mark Hanson, Project Manager
Minnesota Pollution Control Agency
504 Fairgrounds Road, Suite 200
Marshall, MN 56258

RE: THE DRAFT REDWOOD
RIVER FECAL COLIFORM
TOTAL MAXIMUM DAILY LOAD
REPORT

Mr. Hanson:

The undersigned petitioners include residents, landowners and farmers in the Redwood River Watershed. We support the long term objective of improving water quality, and are concerned that the process leading to the draft TMDL report fails to achieve this objective. Further, we are concerned that inadequate understanding of the cause and effect relationships between natural and man-induced water quality impacts will lead to misdirection of scarce resources. As local stakeholders, we have an interest in the protection and management of local soil and water resources, including the Redwood River and its tributaries.

Matters of Concern

The undersigned petitioners find that the draft TMDL report fails to recognize natural background considerations as required by the Clean Water Legacy Act (MS 114D.15, subdivision 10). The draft report discussion of Natural Background Sources includes only wildlife populations. Research has shown that coliform bacteria, once believed to only originate and reproduce in the intestines of warm-blooded animals, can survive, even reproduce in soil and stream sediments (Sadowsky, 2010- available at http://www.mda.state.mn.us/protecting/cleanwater/research/~~/media/Files/protecting/cwf/ecolidit_ch7milecreek.ashx). This important technical finding, discovered in research funded by the people of Minnesota through the Clean Water Fund, has not been included in the report.

Proposed Actions

The undersigned petitioners request that MPCA hold contested case hearing in this matter.

The MPCA must grant a party's petition to hold a contested case hearing if it finds that:

- A. There is a material issue of fact in dispute concerning the matter pending before the agency;
- B. The agency has the jurisdiction to make a determination on the disputed material issue of fact; and
- C. There is a reasonable basis underlying the disputed material issue of fact or fact such that the holding of a contested case hearing would allow the introduction of information that would aid the agency in resolving the disputed facts in making a final decision on the matter. Minn. R. 7000.1900, subpart 1.

Issues to be addressed by contested case hearing

The undersigned petitioners request the MPCA address the legal requirements of Total Maximum Daily Load Reports under the Clean Water Act and the Clean Water Legacy Act, including the evaluation of natural background conditions.

Witnesses in this matter shall include the undersigned witnesses and other expert witnesses to be named later.

Publications, references and studies to be introduced include available data from US EPA Storet system and US EPA and MPCA TMDL protocols.

The undersigned petitioners estimate that it will require one full day to adequately address these matters.

Request for information

In preparing for contested case, and pursuant to the Minnesota Government Data Practices Act (MS 13.01) the undersigned petitioners request MPCA provide an opportunity at the earliest convenient date to inspect and review the following data connected with the development of the draft Redwood River Fecal Coliform Total Maximum Daily Load Report.

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2. All documents regarding the TMDL workplan, including final and draft documents.
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In accordance with Minn. Stat. 13.03, Subdivision 3, the petitioners further request that the MPCA designate one or more individuals to explain the meaning of all data that is produced.

We respectfully request that the MPCA to provide the information herein requested at the earliest convenient opportunity. Please contact Steve Commerford at 507-327-8845 to make the necessary arrangements.

Joel Schreurs
2157 Co Hwy 8
Tyler Mn.56178

05/25/2011 12:13 5073425488

LANCE OTTO

PAGE 01/02

Mark Hanson, Project Manager
Minnesota Pollution Control Agency
504 Fairgrounds Road, Suite 200
Marshall, MN 56258

RE: THE DRAFT REDWOOD
RIVER FECAL COLIFORM
TOTAL MAXIMUM DAILY LOAD
REPORT



Mr. Hanson:

The undersigned petitioners include residents, landowners and farmers in the Redwood River Watershed. We support the long term objective of improving water quality, and are concerned that the process leading to the draft TMDL report fails to achieve this objective. Further, we are concerned that inadequate understanding of the cause and effect relationships between natural and man-induced water quality impacts will lead to misdirection of scarce resources. As local stakeholders, we have an interest in the protection and management of local soil and water resources, including the Redwood River and its tributaries.

Matters of Concern

The undersigned petitioners find that the draft TMDL report fails to recognize natural background considerations as required by the Clean Water Legacy Act (MS 114D.15, subdivision 10). The draft report discussion of Natural Background Sources includes only wildlife populations. Research has shown that coliform bacteria, once believed to only originate and reproduce in the intestines of warm-blooded animals, can survive, even reproduce in soil and stream sediments (Sadovsky, 2010- available at <http://www.mda.state.mn.us/protecting/cleanwater/research/~//media/Files/protecting/cwf/ecoliditch7milecreek.ashx>). This important technical finding, discovered in research funded by the people of Minnesota through the Clean Water Fund, has not been included in the report.

Proposed Actions

The undersigned petitioners request that MPCA hold contested case hearing in this matter.

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Issues to be addressed by contested case hearing

The undersigned petitioners request the MPCA address the legal requirements of Total Maximum Daily Load Reports under the Clean Water Act and the Clean Water Legacy Act, including the evaluation of natural background conditions.

05/25/2011 12:13 5073425488

LANCE OTTO

PAGE 02/02

Witnesses in this matter shall include the undersigned witnesses and other expert witnesses to be named later.

Publications, references and studies to be introduced include available data from US EPA Storet system and US EPA and MPCA TMDL protocols.

The undersigned petitioners estimate that it will require one full day to adequately address these matters.

Request for information

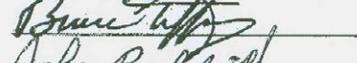
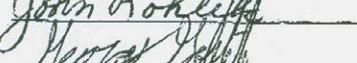
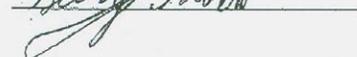
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2. All documents regarding the TMDL workplan, including final and draft documents.
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We respectfully request that the MPCA to provide the information herein requested at the earliest convenient opportunity. Please contact Steve Commerford at 507-327-8845 to make the necessary arrangements.

Lance Otto
30288 - 260th Street
Redwood Falls, MN 56283

APPENDIX B – MPCA’s Response to Comments

Compilation of comments received for the Cottonwood River Fecal Coliform Total Maximum Daily Load (TMDL) and the Redwood River Fecal Coliform TMDL. (Responses apply to both TMDLs because identical comments were received for each.)

The following comments were received from the Minnesota Corn Growers Association's (MCGA):

Concern #1-

“The description of seasonal variation offers one perspective based on water monitoring trends (“Monitoring data show an apparent relationship between season and fecal coliform bacteria concentrations. Typically the highest bacterial concentrations are found in the summer and early fall. In the spring, concentrations are typically lower, despite the fact that significant manure application occurs during this time and that fields have little crop canopy to protect against water erosion”). We would suggest that this seasonality be explained more completely, especially the general link between lower flows and higher temperature and bacteria concentrations. The water monitoring data suggests that there is a minimal association between manure applications and bacteria concentrations, as the majority of manure applications occur in the October-November and April-May timeframes, both periods of lower bacteria concentrations.”

MPCA response: The quotation cited is taken from the brief draft Cottonwood River Fecal Coliform and Redwood River Fecal Coliform TMDLs Summary Tables. More detail on the seasonality of bacteria is given in Section 7 (Seasonal Variation) of the draft Cottonwood River Fecal Coliform and Redwood River Fecal Coliform TMDLs.

Concern #2-

“The Executive Summary discussion of livestock manure suggests that a majority of livestock producers in the watersheds are “probably” handling manure and conducting land application consistent with current rules, guidelines, and University of Minnesota recommendations. A scientific assessment should not be based on “probably”. Was there an effort to quantify or characterize the manure management practices of farmers in the watersheds? Further, this section also suggests that “even if less than 1% of the land applied manure enters surface waters, it could account for violations of water quality standards. Again, this statement appears to be based on conjecture, not science. What if the correct estimate is 0.1%, or 0.01%? Will similar use of conjecture be applied equally to all sources and to resulting load allocations?”

MPCA response: There was not an effort to quantify or characterize manure management practices; rather the comment is intended to recognize the observation of local water quality professionals that in general, citizens of the watershed try to do the right thing. The statement “even if less than 1% of the land applied manure enters surface waters, it could account for violations of water quality standards” was not based on conjecture. It was a calculation based on the animal units of land applied manure known, calculated bacteria content per animal unit type applied to the watershed, and actual calculated TMDLs of the systems. At the low flow rates equal to the 90th percentile, historic flows on the Cottonwood River would be exceeded if only 0.74% of all land applied manure reached the river; the Redwood River would be exceeded under the same flow conditions (90th percentile) by only 0.53% of available manure reaching the river.

Concern #3-

“Land use values provided in section 2.3 seem to overstate the area of cultivated cropland. The Redwood River watershed is listed at 85.5% cultivated land. The Cottonwood River watershed is listed at 88% cultivated land. While it is a relatively small issue in these reports, it is important that methods and definitions be consistent. USDA data suggests that actual cultivated area is overstated by 6-8%. Please provide clarification of the data sources.”

MPCA Response: Data from the Land Management Information Center (LMIC 1993) was used, which was obtained from the DNR’s Minnesota Geospatial Data Office.

Concern #4-

“We are opposed to the wasteful use of taxpayer resources to addressing bacteria standards on Class 7 waters, which are highly unlikely to be used for aquatic recreation.”

MPCA response: Class seven (7) waters often flow into other classes of waterbodies and thus can have direct impacts to water quality and aquatic recreation downstream. Water quality standards are reviewed every three years and public comments are welcomed during this process. The following MPCA website has more detailed information about the triennial review process: <http://www.pca.state.mn.us/iryp1405>.

Concern #5-

“Section 4.1 of the draft reports provides an overview of fecal coliform sources, but does not include research conducted in the Minnesota River Basin by Dr. Michael Sadowsky, funded by the citizens of Minnesota through Clean Water Funds. This report, which is attached, reveals that fecal coliform bacteria may be living in and even reproducing outside of the intestines of warm blooded animals. This finding makes the TMDL statement “though the mechanisms cited above have a possible effect on the values of pollutant calculated in this report, they are not quantifiable at this time” even more ominous. The development of load allocations should be undertaken with great caution.”

MPCA response: Upon receipt of comments during the public comment period, MPCA staff carefully reviewed and considered the Sadowsky study. In addition, MPCA staff discussed the Sadowsky study and specifically whether the natural background discussion contained within the proposed draft Cottonwood River and Redwood River Fecal Coliform TMDLs should be altered in light of the Sadowsky study's findings.

The MPCA staff also contacted and met with Dr. Sadowsky, the author of the study. The meeting focused entirely on the potential implications of Dr. Sadowsky's findings in light of the proposed draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

Dr. Sadowsky cautioned about translating the results of his work to load allocations, and about the extrapolation of the results from the Seven Mile Creek watershed to the Cottonwood River and Redwood River watersheds.

MPCA staff worked with Dr. Sadowsky and Dr. Adam Birr (Minnesota Department of Agriculture Research Coordinator) to develop language additions and changes which were drafted for the draft Cottonwood River Fecal Coliform TMDL, but also apply to the draft Redwood River Fecal Coliform TMDL.

The MPCA staff propose and the MPCA hereby incorporates the following language to Section 4.1 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs:

"Two Minnesota studies describe the presence and growth of "naturalized" or "indigenous" strains of *E. coli* in watershed soils (Ishii et al., 2006) and ditch sediment and water (Sadowsky et al., 2010). The latter study, supported with Clean Water Land and Legacy funding, was conducted in the Seven Mile Creek watershed, an agricultural landscape approximately 30 miles to the east of the mouth of the Cottonwood River. DNA fingerprinting of *E. coli* from sediment and water samples collected in Seven Mile Creek from 2008-2010 resulted in the identification of 1568 isolates comprised of 452 different *E. coli* strains. Of these strains, 63.5% were represented by a single isolate, suggesting new or transient sources of *E. coli*. The remaining 36.5% of strains were represented by multiple isolates, suggesting persistence of specific *E. coli*. Discussions with the primary author of the Seven Mile Creek study suggest that while 36% might be used as a rough indicator of "background" levels of bacteria at this site during the study period, this percentage is not directly transferable to the concentration and count data of *E. coli* used in water quality standards and TMDLs. Additionally, because the study is not definitive as to the ultimate origins of this bacteria, it would not be appropriate to consider it as "natural" background. Finally, the author cautioned about extrapolating results from the Seven Mile Creek watershed to other watersheds without further studies."

The MPCA staff propose and the MPCA hereby incorporates the following language to Section 4.2.4 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs and changes the title of these sections from "Wildlife Sources" to "Wildlife/Natural Background Sources."

"Section 4.1 discusses the potential of "naturalized" or "indigenous" bacteria in soils, ditch sediment, and water as an additional source. However, the studies cited are not definitive as to the magnitude of this contribution. Additionally, the studies are not definitive as to the ultimate origins of this bacteria, so it may not be appropriate to consider it as "natural" background."

In addition to the changes as outlined immediately above, Dr. Adam Birr suggested MPCA include a statement of the pragmatic implications of the Sadowsky study:

"From a pragmatic standpoint, this study suggests that there is a fraction of bacteria that may exist regardless of most traditional implementation strategies that are employed to control the sources of *E. coli*."

The MPCA hereby incorporates the language contained above into Section 4 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

Concern #6-

"We find it curious that the discharge of partially or untreated human sewage would ever be described as "legal" (section 4.2.1)."

MPCA response: The word "legal" has been deleted and new language has been developed for this paragraph to clarify circumstances in which municipal wastewater bypasses occur. The new language is as follows:

"Municipal bypasses are emergency discharges of partially or untreated human sewage from waste water treatment facilities. Municipal wastewater facilities shall not allow an anticipated bypass to occur unless the bypass is unavoidable to prevent loss of life, personal injury, or severe damage to the facility or private property. Municipal bypasses sometimes occur during periods of heavy precipitation, when treatment facilities become hydraulically overloaded. Conditions for bypasses are detailed in the facility's NPDES permit and Minn. R. 7001.1090."

Concern #7-

"The discussion of urban stormwater in section 4.2.1 states that "Fecal coliform concentrations in urban runoff can be as great as or greater than those found in cropland runoff and feedlot runoff" citing a 2001 USEPA source. Did the authors attempt to determine actual fecal coliform concentrations and/or loads from urban runoff? The permit for cities falling under stormwater regulation are required to perform "a range of actions that will ultimately reduce the impact of stormwater", but monitoring to determine effectiveness is rarely conducted and would be extremely useful in both source identification and evaluating implementation effectiveness."

MPCA response: The authors of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs did not attempt to determine the actual loads from urban sources. Rather, estimates of urban loadings were taken from the Source Assessment section in the USEPAs 2001 Protocol for

Developing Pathogen TMDLs, which is cited as a reference in Section 11 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

The comment about effectiveness monitoring is acknowledged.

Concern #8-

"Did the authors attempt to determine the extent of manure handling and land application methods in the watershed beyond the stated analysis that "the majority of livestock producers in the watersheds are most likely handling their manure and conducting land application consistent with current rules, guidelines, and University recommendations"? A scientific assessment should not be based on "most likely". Was there an effort to quantify or characterize the manure management practices of farmers in the watersheds? Further, this section also suggests that "even if less than 1% of the land applied manure enters surface waters, it could account for violations of water quality standards. Again, this statement appears to be based on conjecture, not science. What if the correct estimate is 0.1%, or 0.01%? Will similar use of conjecture be applied equally to all sources and to resulting load allocations?"

MPCA response: There was not an effort to quantify or characterize manure management practices; rather the comment is intended to recognize the observation of local water quality professionals that in general citizens of the watershed try to do the right thing.

The statement "even if less than 1% of the land applied manure enters surface waters, it could account for violations of water quality standards" was not based on conjecture. It was a calculation based on the animal units of land applied manure known, calculated bacteria content per animal unit type applied to the watershed, and actual calculated TMDLs of the systems. At the low flow rates equal to the 90th percentile, historic flows on the Cottonwood River would be exceeded if only 0.74% of all land applied manure reached the river; the Redwood River would be exceeded under the same flow conditions (90th percentile) by only 0.53% of available manure reaching the river.

Concern #9-

"According to section 5.2.1 of the draft report, "As long as WWTFs discharge at or below their permit limit, they will not cause violations of the fecal coliform water quality standard." Is this always true, given that discharge could contain bacteria which settle into stream sediments, then be re-suspended by subsequent events? As stated in the report, under low flow conditions, waste water treatment facilities contribute as much as 1996%, of daily load capacity. Also as stated in the report, actual WWTF effluent concentration cannot exceed the stream concentration as stream flow must be at least 100% of WWTF discharge. However, this may allow for storage of excess bacteria in stream sediments."

MPCA response: The reference in the draft Redwood River Fecal Coliform TMDL to WWTF contributing 1996% has been clarified in all of the applicable loading capacity and allocation tables. The correct wasteload allocation for these low flow zones is calculated by multiplying the maximum daily flow of the WWTFs by 200 organisms per 100 mL.

The discharge of wastewater containing concentrations of fecal coliform bacteria that are less than or equal to 200 organisms/100 mL (or 126 *E. coli* organisms/100 mL) will not cause violations of the water quality standard. NPDES permit effluent limits for fecal coliform bacteria are based on the understanding that discharges in compliance with permit limits do not cause or contribute to violations of the applicable water quality standard. Also, wastewater effluent disinfection usually provides a nearly complete bacterial kill, particularly when chlorine is used and as a result effluent concentrations are usually well below the permitted effluent limitations. Questions relating to the deposition and re-suspension of viable fecal coliform or *E. coli* organisms in flowing waterbodies are the subject of ongoing research and discussion. The load duration analysis does not address bacteria re-growth in sediments, die-off, and natural background levels. Sampling of bottom sediment is not done to determine impairments. Only samples of the water column are taken, and bottom sediment is not part of the water column. The current bacteria standard is written to protect human health while swimming in water. The margin of safety helps to account for the variability associated with these conditions.

Concern #10-

"The reserve capacity discussion in section 5.2.4 includes a comment suggesting that livestock numbers "appear to be concentrated in fewer operations." Are the authors suggesting a relationship between bacteria-related water impairments and the size of farm operations? If so, is the relationship direct or inverse? If the authors are not suggesting such a relationship, this sentence should be deleted."

MPCA response: The statement was not meant to imply a relationship between the bacteria-related water impairments and the size of farm operations. Rather it was a simple demographic observation. This comment is acknowledged but results in no changes to the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

Concern #11-

"The Seasonal Variation discussion in section 7.0 states that summer is the peak season of "agriculture" and that soil is "presumably at peak seasonal load for fecal coliform by mid-summer". What assessment tools were used to define "agriculture's" peak season? Could this information be used elsewhere to assess manure management practices?"

MPCA response: The comment intended to make the point that most land application of manure occurs prior to crop growth in the spring. In the summer, then, the land has the most

manure of the season when rainstorms can wash it away. The comment also intended to make the point that summer is the peak season of crop growth, not simply "agriculture." This paragraph has been removed from both draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

Concern #12-

"The implementation strategy outlined in section 9.1 estimates that the cost to put "animal agricultural activities under manure management and feedlot runoff mitigation plans" at around \$25 million. What is the basis for this estimate?"

MPCA response: As section 9.1 in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs states, this estimation was based on EQIP payment history and the number of non-NPDES permitted animal units listed in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

The following comments were received from the Minnesota State Cattlemen's Association (MSCA):

Comment MSCA #1:

"The Minnesota State Cattlemen's Association (MSCA) requests the MPCA withdraw the current Total Maximum Daily Load (TMDL) plan for the Redwood and Cottonwood Rivers and re-engage local stakeholders to discuss monitoring, allocation and remediation issues related to bacteria."

MPCA response: The MPCA declines the request to withdraw the draft Cottonwood River and Redwood River Fecal Coliform TMDLs. The draft Cottonwood River and Redwood River Fecal Coliform TMDL studies were conducted in a manner consistent with EPA guidance, MPCA protocol, and previous EPA approved bacteria TMDLs. A Stakeholder/Technical Advisory process was established and utilized in the development of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs. A collaboration of interest groups, organizations, and citizens were invited and participated in this process as well as local, state, and federal agencies to provide input in the development of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs. Stakeholder/Technical Advisory meetings were held February 2008, April 2008, May 2008 and June 2008 in Redwood Falls. An electronic mail message was sent August 2010 from RCRC to the Stakeholder/Technical Advisory group to request review and provide comments on the final draft Cottonwood River and Redwood River Fecal Coliform TMDLs prior to the public notice comment period. No comments were received from the Stakeholder/Technical Advisory group. The draft Cottonwood River and Redwood River Fecal Coliform TMDLs were revised based on EPA comments and responses sent to EPA in November 2010.

Comment MSCA #2:

“Lack of local livestock stakeholder involvement and engagement

As you know, civic engagement and a formal stakeholder process are required under the Clean Water Legacy Act. Area cattle farmers do not feel they have had an adequate opportunity to provide input into this process nor had time to fully evaluate the ramifications. The MSCA also requests the MPCA clarify the consequences of the TMDL to current NPDES permitted cattle farms in the watershed.”

MPCA response: The public notice comment period for the draft Cottonwood River and Redwood River Fecal Coliform TMDLs was April 25, 2011 to May 25, 2011. The draft Cottonwood River and Redwood River Fecal Coliform TMDLs were posted on the MPCA web site along with a press release and a copy of the mailing sent to interested parties. The timeline for this public comment period was consistent with the length of other TMDLs, and the MPCA feels that due diligence was fulfilled in making interested parties aware of the Cottonwood River and Redwood River Fecal TMDL development. Also, the stakeholder group included area cattle farmers.

As the draft Cottonwood River Fecal Coliform and Redwood River Fecal Coliform TMDLs states in section 5.2.1, “livestock facilities that have been issued NPDES permits are assigned a zero wasteload allocation. This is consistent with the conditions of the permit, which allow no pollutant discharge from the livestock housing facilities and associated sites. Discharge of fecal coliform from fields where manure has been land applied may occur at times. Such discharges are covered under the load allocation portion of the draft Cottonwood River Fecal Coliform and Redwood River Fecal Coliform TMDLs, provided the manure is applied in accordance with the permit”. The draft Cottonwood River Fecal Coliform and Redwood River Fecal Coliform TMDLs will not change the requirements of the current NPDES permit for existing permitted cattle farms.

Comment MSCA #3:

“Questions over designated use

There is uncertainty over what is the actual designated use the Minnesota Pollution Control Agency (MPCA) is attempting to address through these TMDL plans. Clarification is needed whether this TMDL is focused on restoring aquatic recreation or aquatic life. As you know, the measures that must be taken to address the different designated uses will vary significantly.

If the designated use is aquatic recreation, the MSCA requests the MPCA to identify which recreation and swimming areas in the watershed are effected. If the designated use is aquatic life, the MSCA requests the MPCA to identify specific strategies that will address water temperature and tree plantings along riparian areas.”

MPCA response: Impairments for fecal coliform bacteria, such as the ones in the draft Cottonwood River Fecal Coliform and Redwood River Fecal Coliform TMDLs, are impairments of the beneficial use of aquatic recreation.

All of the reaches identified in the draft Cottonwood River Fecal Coliform and Redwood River Fecal Coliform TMDLs are waters of the state. People are free to recreate (which includes but is not limited to swimming) in waters of the state wherever they wish.

Comment MSCA #4:

“Questions over monitoring and correct accounting for sources of bacteria

As you know, accounting for bacteria numbers and sources is a highly technical matter with evolving science. I would point out recent research by Dr. Sadowsky that suggests some strains of coliform bacteria are capable of surviving, being re-suspended and multiplying in soil or stream sediments. If this is the case, strategies to eliminate existing bacteria must be employed, rather than simply focusing on eliminating new sources.

We would also question the assumption that bacteria loadings are primarily caused by manure application. The MSCA requests additional information from the MPCA in terms of failing septic systems and municipal waste water discharges and their potential loadings to area watersheds. Furthermore, the MSCA requests that MPCA deliver genetic fingerprinting data that validates the sources of the bacteria.”

MPCA response: Upon receipt of comments during the public comment period, MPCA staff carefully reviewed and considered the Sadowsky study. In addition, MPCA staff discussed the study and specifically whether the natural background discussion contained within the proposed draft Cottonwood River and Redwood River Fecal Coliform TMDLs should be altered in light of the Sadowsky study’s findings.

The MPCA staff also contacted and met with Dr. Sadowsky, the author of the study. The meeting focused entirely on the potential implications of Dr. Sadowsky’s findings in light of the proposed draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

Dr. Sadowsky cautioned about translating the results of his work to load allocations, and about the extrapolation of the results from the Seven Mile Creek watershed to the Cottonwood River and Redwood River watersheds.

MPCA staff worked with Dr. Sadowsky and Dr. Adam Birr (Minnesota Department of Agriculture Research Coordinator) to develop language additions and changes which were drafted for the draft Cottonwood River Fecal Coliform TMDL, but also apply to the draft Redwood River Fecal Coliform TMDL.

The MPCA staff propose and the MPCA hereby incorporates the following language to Section 4.1 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs:

“Two Minnesota studies describe the presence and growth of “naturalized” or “indigenous” strains of *E. coli* in watershed soils (Ishii et al., 2006). and ditch sediment and water (Sadowsky

et al., 2010). The latter study, supported with Clean Water Land and Legacy funding, was conducted in the Seven Mile Creek watershed, an agricultural landscape approximately 30 miles to the east of the mouth of the Cottonwood River. DNA fingerprinting of *E. coli* from sediment and water samples collected in Seven Mile Creek from 2008-2010 resulted in the identification of 1568 isolates comprised of 452 different *E. coli* strains. Of these strains, 63.5% were represented by a single isolate, suggesting new or transient sources of *E. coli*. The remaining 36.5% of strains were represented by multiple isolates, suggesting persistence of specific *E. coli*. Discussions with the primary author of the Seven Mile Creek study suggest that while 36% might be used as a rough indicator of “background” levels of bacteria at this site during the study period, this percentage is not directly transferable to the concentration and count data of *E. coli* used in water quality standards and TMDLs. Additionally, because the study is not definitive as to the ultimate origins of this bacteria, it would not be appropriate to consider it as “natural” background. Finally, the author cautioned about extrapolating results from the Seven Mile Creek watershed to other watersheds without further studies.”

The MPCA staff propose and the MPCA hereby incorporates the following language to Section 4.2.4 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs and changes the title of these sections from “Wildlife Sources” to “Wildlife/Natural Background Sources.”

“Section 4.1 discusses the potential of “naturalized” or “indigenous” bacteria in soils, ditch sediment, and water as an additional source. However, the studies cited are not definitive as to the magnitude of this contribution. Additionally, the studies are not definitive as to the ultimate origins of this bacteria, so it may not be appropriate to consider it as “natural” background.”

In addition to the changes as outlined immediately above, Dr. Adam Birr suggested MPCA include a statement of the pragmatic implications of the Sadowsky study:

“From a pragmatic standpoint, this study suggests that there is a fraction of bacteria that may exist regardless of most traditional implementation strategies that are employed to control the sources of *E. coli*.”

The MPCA hereby incorporates the language contained above into Section 4.1 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

Information with respect to failing septic systems can be found in MPCA’s “2011 Annual Report Summary Minnesota Subsurface Sewage Treatment Systems” at:
<http://www.pca.state.mn.us/index.php/view-document.html?qid=17868>

Information with respect to municipal waste water discharges can be found in section 5.3 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs. The wasteload allocations for permitted wastewater treatment facilities (WWTF’s) in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs are the potential loadings to the Cottonwood and

Redwood River watersheds. Further information regarding municipal waste water discharges for specific facilities can be obtained by making an information request to the MPCA DataDesk at datadesk.mPCA@state.mn.us.

DNA fingerprinting of *E.coli* bacteria was not done as part of these TMDLs. At this time the MPCA does not plan to do this testing. The MPCA feels the protocols used to delineate sources and loadings in the TMDLs are sufficient to meet TMDL goals.

The following comments were received from the Minnesota Pork Producers Association (MPPA):

Comment MPPA#1:

"It is known that some strains of coliform bacteria are capable of multiplying in soil or stream sediments (Sadowsky). As indicated in section 4.1 of the report, survival of fecal coliform in terrestrial and aquatic environments is poorly understood, exacerbating efforts to track sources. The report also acknowledges that bacteria survival and reproduction in stream sediments, and subsequent re-suspension in the water column, could have an effect on bacteria calculations, but that the magnitude of such processes cannot be quantified at this time.

If one accepts that notion that "pollution" is the result of human activity, should natural background also include naturalized populations of bacteria residing in sediments or soil?"

MPCA response: Upon receipt of comments during the public comment period, MPCA staff carefully reviewed and considered the Sadowsky study. In addition, MPCA staff discussed the study and specifically whether the natural background discussion contained within the proposed draft Cottonwood River and Redwood River Fecal Coliform TMDLs should be altered in light of the Sadowsky study's findings.

The MPCA staff also contacted and met with Dr. Sadowsky, the author of the study. The meeting focused entirely on the potential implications of Dr. Sadowsky's findings in light of the proposed draft Cottonwood River and Redwood Rivers Fecal Coliform TMDLs.

Dr. Sadowsky cautioned about translating the results of his work to load allocations, and about the extrapolation of the results from the Seven Mile Creek watershed to the Cottonwood and Redwood River watersheds.

MPCA staff worked with Dr. Sadowsky and Dr. Adam Birr (Minnesota Department of Agriculture Research Coordinator) to develop language additions and changes which were drafted for the draft Cottonwood River Fecal Coliform TMDL, but also apply to the draft Redwood River Fecal Coliform TMDL.

The MPCA staff propose and the MPCA hereby incorporates the following language to Section 4.1 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs:

“Two Minnesota studies describe the presence and growth of “naturalized” or “indigenous” strains of *E. coli* in watershed soils (Ishii et al., 2006) and ditch sediment and water (Sadowsky et al., 2010). The latter study, supported with Clean Water Land and Legacy funding, was conducted in the Seven Mile Creek watershed, an agricultural landscape approximately 30 miles to the east of the mouth of the Cottonwood River. DNA fingerprinting of *E. coli* from sediment and water samples collected in Seven Mile Creek from 2008-2010 resulted in the identification of 1568 isolates comprised of 452 different *E. coli* strains. Of these strains, 63.5% were represented by a single isolate, suggesting new or transient sources of *E. coli*. The remaining 36.5% of strains were represented by multiple isolates, suggesting persistence of specific *E. coli*. Discussions with the primary author of the Seven Mile Creek study suggest that while 36% might be used as a rough indicator of “background” levels of bacteria at this site during the study period, this percentage is not directly transferable to the concentration and count data of *E. coli* used in water quality standards and TMDLs. Additionally, because the study is not definitive as to the ultimate origins of this bacteria, it would not be appropriate to consider it as “natural” background. Finally, the author cautioned about extrapolating results from the Seven Mile Creek watershed to other watersheds without further studies.”

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“Section 4.1 discusses the potential of “naturalized” or “indigenous” bacteria in soils, ditch sediment, and water as an additional source. However, the studies cited are not definitive as to the magnitude of this contribution. Additionally, the studies are not definitive as to the ultimate origins of this bacteria, so it may not be appropriate to consider it as “natural” background.”

In addition to the changes as outlined immediately above, Dr. Adam Birr suggested MPCA include a statement of the pragmatic implications of the Sadowsky study:

“From a pragmatic standpoint, this study suggests that there is a fraction of bacteria that may exist regardless of most traditional implementation strategies that are employed to control the sources of *E. coli*.”

The MPCA hereby incorporates the language contained above into Section 4.1 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

Comment MPPA #2:

“Did the authors attempt to quantify “legal emergency discharges of partially or untreated human sewage from waste water treatment facilities”? (section 4.2.1) Such discharges may not lead to immediate violations of water quality standards, due to dilution, but could settle in

stream sediments and contribute to exceeding the standard in the future. "As long as WWTFs discharge at or below their permit limit, they will not cause violations of the fecal coliform water quality standard." (Section 5.2.1)

Is this always true, given that discharge could contain bacteria which settle into stream sediments, then be re-suspended by subsequent events? As stated in the report, under low flow conditions, waste water treatment facilities contribute as much as 1996%, of daily load capacity. Also as stated in the report, actual WWTF effluent concentration cannot exceed the stream concentration as stream flow must be at least 100% of WWTF discharge. However, this may allow for storage of excess bacteria in stream sediments."

MPCA response: The word "legal" has been deleted and new language has been developed for this paragraph to clarify circumstances in which municipal wastewater bypasses occur. The new language is as follows:

"Municipal bypasses are emergency discharges of partially or untreated human sewage from waste water treatment facilities. Municipal wastewater facilities shall not allow an anticipated bypass to occur unless the bypass is unavoidable to prevent loss of life, personal injury, or severe damage to the facility or private property. Municipal bypasses sometimes occur during periods of heavy precipitation, when treatment facilities become hydraulically overloaded. Conditions for bypasses are detailed in the facility's NPDES permit and Minn. R. 7001.1090."

The reference in the draft Redwood River Fecal Coliform TMDL to WWTF contributing 1996% has been clarified in all of the applicable loading capacity and allocation tables. The correct wasteload allocation for these low flow zones is calculated by multiplying the maximum daily flow of the WWTFs by 200 organisms per 100 mL.

The discharge of wastewater containing concentrations of fecal coliform bacteria that are less than or equal to 200 organisms/100 mL (or 126 *E. coli* organisms/100 mL) will not cause violations of the water quality standard. NPDES permit effluent limits for fecal coliform bacteria are based on the understanding that discharges in compliance with permit limits do not cause or contribute to violations of the applicable water quality standard. Also, wastewater effluent disinfection usually provides a nearly complete bacterial kill, particularly when chlorine is used and as a result effluent concentrations are usually well below the permitted effluent limitations. Questions relating to the deposition and re-suspension of viable fecal coliform or *E. coli* organisms in flowing waterbodies are the subject of ongoing research and discussion. The load duration analysis does not address bacteria re-growth in sediments, die-off, and natural background levels. Sampling of bottom sediment is not done to determine impairments. Only samples of the water column are taken, and bottom sediment is not part of the water column. The current bacteria standard is written to protect human health while

swimming in water. The margin of safety helps to account for the variability associated with these conditions.

Comment MPPA #3:

“Did the authors attempt to determine actual fecal coliform concentrations and/or loads from urban runoff? (section 4.2.1) Permitted cities falling under stormwater regulation are required to perform “a range of actions that will ultimately reduce the impact of stormwater”, but monitoring to determine effectiveness is rarely conducted.”

MPCA response: The authors of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs did not attempt to determine the actual loads from urban sources. Rather, estimates of urban loadings were taken from the Source Assessment section in the USEPAs 2001 Protocol for Developing Pathogen TMDLs, which is cited as a reference in Section 11 of the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

The comment about effectiveness monitoring is acknowledged.

Comment MPPA #4:

“The reserve capacity discussion (section 5.2.4) includes a comment suggesting that livestock numbers appear to be concentrated in fewer operations. Do the authors have data supporting a link between bacteria-related water impairments and the size of farm operations? It would be inaccurate to imply that larger farms are more likely to contribute to pollution problems. It appears that animal units are the only consideration, and that management activities have little or no influence on determining load allocations. Proximity to surface waters (for all potential sources) does not seem to factor in to the load allocation. MPPA also takes issue with the statement: “Even if less than 1% of the land applied manure enters surface waters through one or more of the pathways mentioned, it could account for violations of the bacterial water quality standard.” Do the authors have any data to support that comment?”

MPCA response: The statement was not meant to imply a relationship between the bacteria-related water impairments and the size of farm operations. Rather it was a simple demographic observation. This comment is acknowledged but results in no changes to the draft Cottonwood River and Redwood River Fecal Coliform TMDLs.

The statement “even if less than 1% of the land applied manure enters surface waters, it could account for violations of water quality standards” was not based on conjecture. It was a calculation based on the animal units of land applied manure known, calculated bacteria content per animal unit type applied to the watershed, and actual calculated TMDLs of the systems. At the low flow rates equal to the 90th percentile, historic flows on the Cottonwood River would be exceeded if only 0.74% of all land applied manure reached the river; the

Redwood River would be exceeded under the same flow conditions (90th percentile) by only 0.53% of available manure reaching the river.

Comment MPPA #5:

"The fecal coliform bacteria standard is intended to protect the designated use of aquatic recreation, yet the report does not include any discussion on the extent of aquatic use of the designated stream reaches, particularly the presence of swimming beaches. The reports do cite low recreational value periods as justification for allowing wastewater treatment facilities utilizing pond systems to discharge prior to June 30 and after September 1 (section 4.2.1). The report also includes stream sections designated as class 7 waters (limited resource value). While we recognize the importance of working to protect surface waters, it seems that limited monitoring resources could be better utilized on increasing coverage of water bodies that are more likely to be used for aquatic recreation."

MPCA response: Class seven (7) waters often flow into other classes of waterbodies and thus can have direct impacts to water quality and aquatic recreation downstream. Water quality standards are reviewed every three years and public comments are welcomed during this process. The following MPCA website has more detailed information about the triennial review process: <http://www.pca.state.mn.us/lryp1405>.

Impairments for fecal coliform bacteria, such as the ones in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs, are impairments of the beneficial use of aquatic recreation.

All of the reaches identified in the draft Cottonwood River and Redwood River Fecal Coliform TMDLs are waters of the state. People are free to recreate (which includes but is not limited to swimming) in waters of the state wherever they wish.

Comment MPPA #6

"In general, the draft Redwood River Fecal Coliform Total Maximum Daily Load Report is filled with too many assumptions and very little actual data in terms of accurate source load allocations. We realize that actual data can be very time consuming and expensive to obtain; however, when estimates can be off by wide margins, the potential to waste significant resources while having minimal impact on water quality is a huge concern."

MPCA response: Comment acknowledged.

Comment MPPA #7:

"MPPA is pleased to see MPCA acknowledge that the TMDL may need to be reopened if adjustments are required (section 5.2.4). Is this an indication that the "adaptive management" that has been heralded for several years might finally actually be used?"

MPCA response: Adaptive management is an important part of watershed management, and the intent is to evaluate and modify TMDL implementation using this technique.

The following comment was received from a citizen regarding the Cottonwood River Fecal Coliform TMDL:

"It is my belief that runoff from farming operations is a major contributor to the poor quality of many of our rivers within the state of MN. For the MPCA to essentially give them a pass and continue to increase the discharge regulations on cities is fundamentally flawed. Without addressing the non-point-source contamination, the water quality of our rivers will continue to degrade. Regulation of the farming industry is long overdue. It is an industry and should be treated as such! Fresh water seems abundant, until you don't have any. I urge you, the MPCA and the EPA to begin taking steps to curb the farm runoff contamination of our waterways."

MPCA response: MPCA's regulatory authority is limited by state statute. It is unclear what specific "steps to curb the farm runoff contamination of our waterways" the commenter would like the MPCA and the EPA to begin to take with respect to the draft Cottonwood River Fecal Coliform TMDL. The comment is acknowledged but results in no change to the draft Cottonwood River Fecal Coliform TMDL.