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 Buffalo Creek Bacteria Total Maximum Daily Load 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 Buffalo Creek Bacteria Total Maximum Daily Load (TMDL) 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 (CCH) 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 based 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). Nonpoint sources include any non-discrete source, such as runoff from agriculture, silviculture, forestry, and construction activities.

8. Point source pollution is subject to technology-based controls imposed by the National Pollution Discharge Elimination System/State Disposal System (NPDES/SDS) permit process. The NPDES/SDS 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/SDS permit programming authority to the State of Minnesota, which operates the program through the MPCA. 33 U.S.C. §1342 (b).

   NPDES/SDS permits include technology-based effluent limits and also may include water quality effluent limits to meet water quality standards.

9. 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.

   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.

10. 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).
11. 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.

12. 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. § l3l3(d)(1)(A)-(C).

13. 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).

14. 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).

15. 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. § l3l3(d)(l)(A) and (B). This list is known as the "303(d) list."

16. 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).

17. Minnesota must set a TMDL for every pollutant in each reach preventing or impeding compliance with applicable water quality standards. 33 U.S.C. § l3l3(d)(l)(C); 40 CFR 130.7(c)(ii)(1)(ii).

18. 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 the MPCA in developing the draft Buffalo Creek Bacteria TMDL.

19. 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).

20. 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).

21. 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 (last updated March 6, 2012).

22. Minn. R. 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).

23. Minn. Stat. § 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).

24. Based on the definitions provided by the EPA and in Minnesota Statute and Rule, the MPCA hereby finds that "natural background" is the condition that occurs outside of human influence.

25. 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.*)*

26. 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 final report on the TMDL should clearly describe the rationale for a decision regarding this issue.

27. 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 (WWTFs), 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.

28. A TMDL may be expressed as the equation: WLA + LA + MOS + RC = TMDL. (note: seasonal flow variations are considered throughout the TMDL development process.)

29. An important distinction must be made between a resource impaired due to natural or anthropogenic factors. If a resource 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 "discernible impact from point or nonpoint source pollutants attributable to human activity" are not permissible.

30. In June 2009, the MPCA formed a "Natural Background for Streams" workgroup to develop an approach for considering natural background conditions when assessing streams for dissolved oxygen.

31. In June 2010, the MPCA formed a workgroup to develop a process to assess lakes for eutrophication.

32. The MPCA developed two guidance documents related to the assessment of natural background in water quality. The 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.* Document number wq-s1-63 (2011), *available at* http://www.pca.state.mn.us/index.php/view-document.html?gid=16325.

33. 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)

34. 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. The 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 Buffalo Creek Bacteria TMDL / Stakeholder Involvement, Public Notice and Comment Period

35. The proposed TMDL at issue in this case is the draft Buffalo Creek Bacteria TMDL. The draft Buffalo Creek Bacteria TMDL encompasses two (2) impaired reaches of Buffalo Creek, a major tributary to the South Fork Crow River watershed in the Upper Mississippi Basin, Minnesota.

36. The specific objective in the draft Buffalo Creek Bacteria TMDL, 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.

37. The draft Buffalo Creek Bacteria TMDL was developed by Wenck Associates, Inc., in a manner consistent with EPA guidance, MPCA protocol, and previously EPA approved bacteria TMDLs.

38. 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)

39. The MPCA staff met with the CROW board (made up of one county commissioner from each of the ten (10) counties included in the Crow watershed) and staff throughout 2008 to 2011 at their monthly board meetings to discuss development of the Buffalo Creek Bacteria TMDL work plan and subsequent TMDL. A Buffalo Creek Watershed District (BCWD) representative regularly attended the CROW board meetings. Other BCWD managers attended on various occasions.

40. The MPCA and CROW staff attended and presented information at several BCWD board meetings in 2008 to discuss the Buffalo Creek Bacteria TMDL work plan and TMDL. The BCWD provided written comments on the draft work plan and is included as a responsible party (by BCWD request) in the final work plan. The BCWD work plan written comments are found in Appendix A to these Findings.

41. A Stakeholder/Technical Advisory process was established and utilized in the development of the draft Buffalo Creek Bacteria TMDL. A collaboration of local, state, and federal agencies, interest groups, organizations, and citizens were invited and participated in this process to provide input in the development of the TMDL.

42. The earliest Stakeholder/Technical Advisory group involvement in the development of the draft Buffalo Creek Bacteria TMDL was through the CROW and a collaboration of local, state, and federal agencies and organizations which provide local leadership for water quality improvement initiatives in the Crow River watershed. The MPCA began discussing a proposed bacteria TMDL for Buffalo Creek with the CROW in early 2008.

43. Stakeholder/Technical Advisory group members reviewed and provided comments on the draft Buffalo Creek Bacteria TMDL throughout the process and prior to the public notice comment period.

44. Public information meetings were held November 2008 in Litchfield; July 2009 in Glencoe; September 2009 in Buffalo; and in May 2011 and June 2011 in Glencoe.

45. The draft Buffalo Creek Bacteria TMDL was sent to the EPA for preliminary review and comment in April 2011. The draft Buffalo Creek Bacteria TMDL was revised based on three (3) preliminary comments received in April 2011 from EPA.

46. The original public notice comment period for the draft Buffalo Creek Bacteria TMDL was June 13, 2011, to July 13, 2011. Due to the state shutdown from July 1, 2011, through July 20, 2011, the comment period was extended to August 15, 2011. The draft Buffalo Creek Bacteria TMDL was posted on the MPCA website along with a press release and a copy of the mailing sent to interested parties. The extended comment period was re-noticed in the State Register.

47. A total of three (3) written comments were received during the original comment period for the draft Buffalo Creek Bacteria TMDL. All of these comments were timely. No additional comment letters were received during the extended comment period. No written comments from stakeholders or Technical Advisory group members were received during the comment period or extended comment period.

48. The MPCA received three (3) timely identical petitions for a Contested Case Hearing (CCH) on the draft Buffalo Creek Bacteria TMDL on August 15, 2011. The Contested Case Hearing petitions were received from Francis Svoboda and Larry Phillips; Peter Johnson and Daniel J. Lippert; and Corey Henke and Francis Svoboda. The Petitions for Contested Case Hearing are hereby incorporated by reference as Appendix B to these findings.

49. One (1) comment letter from the BCWD was received August 29, 2011, fourteen (14) days following the close of the extended comment period and therefore, was not timely.

50. One (1) additional CCH petition from the BCWD, which was identical to the CCH petitions received during the comment period from the other CCH petitioners, was received August 29, 2011; fourteen (14) days after the extended comment period closed and therefore, was not timely.

51. The MPCA's Response to Comments received is hereby incorporated by reference as Appendix C to these findings.

D. Petitions for a Contested Case Hearing

52. Minn. R. 7000.1800, subp. 2, Contested case petition contents, subp. A, requires that a petition include:

    a. 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

    b. a statement of the issues proposed to be addressed by a contested case hearing and the specific relief requested or resolution of the matter.

53. 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.

54. 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).

55. 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.

56. 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)).

57. 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"

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

    a. <u>Matters of Concern</u>

> "The undersigned petitioners find that the draft TMDL study 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."

59. 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 Buffalo Creek bacteria TMDL. The draft Buffalo Creek Bacteria TMDL did include discussion, and cited other studies, acknowledging the survivability of bacteria in stream sediments.

iii. The three petitions for contested case hearing at issue in this matter are virtually identical as the previously contested Cottonwood and Redwood Rivers Fecal Coliform TMDLs during the public comment period.

On November 14, 2011, the MPCA sent a 'possible solutions letter' outlining the MPCA's proposed draft language changes to the draft Buffalo Creek Bacteria TMDL resulting from the petition. In addition, in the letter, the MPCA staff offered to meet with the BCWD and petitioners to discuss these possible solutions.

The MPCA staff carefully reviewed and considered the Sadowsky study. In addition, the MPCA staff met with the BCWD board at their regularly scheduled board meeting since it was more convenient for the board, other petitioners and their joint designated representative than setting an additional meeting during the fall harvest. Chairman Belter confirmed attendance with the designated representative of the petitioners and the BCWD board prior to the meeting. The designated representative or other petitioners did not attend the meeting as confirmed. Though the BCWD board petition was not timely; managers Henke and Phillips sent timely petitions, therefore the MPCA considered it appropriate to work with the BCWD board to try to resolve the contested case issues. The purpose of the meeting was to discuss the draft Buffalo Creek Bacteria TMDL and specifically whether the natural background discussion contained within the proposed TMDL should be altered in light of the Sadowsky study findings. The BCWD scheduled a second meeting that was cancelled due to the unavailability of the petitioners' designated representative. (A copy of the possible solutions letter sent to all CCH petitioners is attached as Appendix D.)

iv. Prior to receiving the contested case request for the draft Buffalo Creek Bacteria TMDL, the MPCA staff working with the Cottonwood and Redwood Rivers contested cases contacted and met with Dr. Sadowsky, the author of the study petitioners request be included in the TMDL. The meeting focused entirely on the potential implications of Dr. Sadowsky's findings in light of the proposed Cottonwood and Redwood Rivers Fecal Coliform TMDLs.

v. The MPCA hereby incorporates the Sadowsky study into the official record for the draft Buffalo Creek Bacteria TMDL, as the Sadowsky study was considered before the draft Buffalo Creek Bacteria TMDL was finalized.

vi. Although the MPCA staff reconsidered its findings regarding the natural background and specifically the weight to be given to the Sadowsky study, ultimately the MPCA staff declined to alter the expression of natural background in the draft Buffalo Bacteria Creek TMDL findings.

vii. Based on the MPCA's incorporation and consideration of the Sadowsky study in relation to the natural background expression in

the draft Buffalo Creek Bacteria TMDL, the MPCA finds Petitioners fail to establish criterion "A" of Minn. R. 7000.1900.

b. Petitioners issue to be addressed by a Contested Case Hearing. Petitioners "request the MPCA address the legal requirements of the Total Maximum Daily Load Studies 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. The draft Buffalo Creek Bacteria TMDL contains general discussion of natural background sources of bacteria. The MPCA does not dispute that the draft Buffalo Creek Bacteria TMDL does not include a separate, explicit load allocation for natural background sources. The 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 and 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:

(a) 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.

(b) 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 Buffalo Creek Bacteria TMDL, and other bacteria TMDLs completed by the MPCA and approved by EPA, the MPCA staff examined whether it was possible to distinguish and separate out natural background loads from nonpoint source loads and determined it was not possible to distinguish natural background loads clearly enough to support separate load allocations. Although the Sadowsky study was specifically considered by the MPCA staff regarding its effects on whether the load allocation for

natural background could be differentiated, the MPCA staff determined the Sadowsky study did not change that determination.

60. 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.

61. Although the Sadowsky et al. (2008-2010) study was not cited in the draft Buffalo Creek Bacteria TMDL, the MPCA extensively considered the Sadowsky study after virtually identical petitions to this one were received during the public comment period for the Cottonwood River and Redwood River TMDLs.

62. Following the contested case hearing requests related to the Cottonwood and Redwood River TMDLs, the MPCA staff met with Dr. Sadowsky specifically to discuss his findings on the particular work cited in light of the Cottonwood River and Redwood River Fecal Coliform TMDLs.

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

64. The 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 Cottonwood River Fecal Coliform TMDL, but also apply to the Redwood River and draft Buffalo Creek Bacteria TMDL.

65. The MPCA staff propose and the MPCA hereby incorporates the following language into Section 5.3 of the draft Buffalo Creek Bacteria TMDL :

> *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.*

66. The MPCA staff propose and the MPCA hereby incorporates the following language into Section 5.3.3 of the draft Buffalo Creek Bacteria TMDL and change the title of this section from "Wildlife Sources" to "Wildlife/Natural Background Sources."

    Section 5.3 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.

67. In addition to the changes as outlined in Findings 65 and 66 immediately above, Dr. Adam Birr suggested the MPCA include a statement of the pragmatic implications of this 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.

68. The MPCA hereby incorporates the language contained in Finding 67 above into Section 5.3.3 of the draft Buffalo Creek Bacteria TMDL.

69. In light of the above, and especially in light of the MPCA's inclusion of the Sadowsky study, as in Finding 59 (a) (1) v, the 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 Buffalo Creek Bacteria TMDL was given in accordance with Minn. R. 7001.0100, subps. 4 and 5.

4. The three (3) comment letters from Tim Sundby, Minnesota Corn Growers Association and the first BCWD letter were timely.

5. The second comment letter from BCWD, received on August 29, 2011, was not timely.

6. The three (3) Contested Case Hearing petitions from Francis Svoboda and Larry Phillips; Peter Johnson and Daniel Lippert; and Corey Henke and Francis Svoboda were timely.

7. The CCH petition from the BCWD, received on August 29, 2011, was not timely.

8. The MPCA determines the matter of concern and issues raised by petitioners, of the Buffalo Creek watershed, on the draft Buffalo Creek Bacteria TMDL do not meet the requirements for granting a Contested Case Hearing.

9. 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 three (3) petitions for Contested Case Hearing are hereby denied in their entirety.

The draft Buffalo Creek Bacteria TMDL shall be sent to U.S. EPA for approval.

IT IS SO ORDERED.

John Linc Stine
Commissioner

Dated: 9/23/13

Appendix A

From: ceberhard [mailto:ceberhard@bcwatershed.org]
Sent: Tuesday, March 18, 2008 8:09 AM
To: Sander, Diane - Buffalo, MN
Cc: Charles Kubesh; Corey Henke; Larry Phillips; Margaret Leach
Subject: Fw: Work Plan Question revisions

Diane:

Attached find BCWD's review of the work plan.

Chuck

Diane:

Below are comments and questions on the Work Plan prepared by Wenck Associates, Inc.

After reviewing the Work Plan and dollar amount, did all of the consultants know that the dollar amount was going to increase during the preparation of the Work Plan?

In discussing the TMDL project with some of the Board of Managers, it was concluded that MPCA should have come to the BCWD with the TMDL project.

Comments and Questions on Wenck's Work Plan:

1. Page 1 - Request Amount - According to the Wenck's proposal, their fees were between $125,000 to $175,000, depending on which alternate was chosen. How did the request increase to $397,874?

2. Page 2 - Under Project Development - Wenck Associates, Inc. should be working with the CROW and MPCA. Not the CROW working with Wenck and MPCA.

3. Page 2 - Under Project Development - Cost $3,470. Who is getting this money? According to Wenck's proposal, they were going to do the Work Plan for no cost.

4. Page 2 - Under Review Existing Data - Why is the CROW helping Wenck compile the existing data? It is the Watershed District's understanding that the CROW was going to give Wenck the existing data that the CROW has collected on its own and what the Buffalo Creek Watershed District provided to the CROW.

5. Page 2 - Review Existing Data Cost - The Wenck detailed budget shows $22,856 for this work. Why the increase? Who gets the increase?

6. Page 2 - Review Existing Data - CROW Deliverable. Why is the CROW developing a monitoring plan? Isn't this work going to be done by Wenck? What is QAPP? You should define what QAPP is before using the abbreviations.

7. Page 2 - Review Existing Data - Wenck Deliverable. Why is Wenck being paid for doing the same work that the CROW is doing?

8. Page 2 - Monitoring - Why is the CROW conducting water quality when Wenck has scheduled 104hrs for a field technician?

9. Page 2 - Monitoring - Cost - It appears that the MPCA is reimbursing the CROW for something. Will the BCWD be reimbursed for it's time? There is a $59,287 ear-marked for equipment. On the itemized budget for equipment, the total is only $43,557. Where did the increase come from? It should state somewhere what the increase is for.

10. Page 3 - Turbidity - Cost - Is the $50,980 for Wenck? According to Wenck's itemized budget, they indicated $11,955 for labor under turbidity. What is the difference?

11. Page 3 - Stream Channel - Cost $36,294. Under Wenck's budget, they only show $25,417. Why the increase?

12. Page 3 - Fecal Coliform - Is this work going to pinpoint where the fecal is coming from, or is Wenck just going to generalize the location?

13. Page 4 - TMDL - Cost $32,284. Wenck shows $37,162 in their budget. Why the decrease?

14. Page 4 - Implementation Plan - Cost $19,359. Wenck's budget shows $8,316. What is the big increase for?

15. Page 4 - Stakeholder: Cost $8,031 - Wenck & $36,360 CROW - Should Wenck's be getting $10,584? Again, is the CROW getting reimbursed for work? How much work is the CROW doing? The watershed district thought the consultants were to do the work. Again, are the other stakeholders getting reimbursed? Is the CROW going to employ another person?

16. Page 5 - Project Administration - Cost - How did the CROW determine they need $13,070 for P.A.? How many hours is the Prairie Country RC&D's providing of the $10,837? What will Prairie Country RC&D be doing?

Appendix B

Ms Margaret Leach, Impaired Waters Coordinator
Minnesota Pollution Control Agency
7678 College Road, Suite 105
Baxter, MN 56425
margaret.leach@state.mn.us

RE: The Draft Buffalo Creek Bacteria Total Maximum Daily Load Report.

Ms. Leach:

The undersigned petitioners include residents, landowners and farmers in and around the Buffalo Creek 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 Buffalo Creek and its watershed.

Matters of Concern

The undersigned petitioners find that the draft TMDL report fails to account for natural background sources as required by the Minnesota Clean Water Legacy Act (MS 114D.15, subdivision 10). Research has shown that coliform bacteria, once believed to only originate and reproduce in the intestines of warm-blooded animals, survives and reproduces 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 this report. It is likely that the vast majority of Fecal Coliform bacteria attributed to livestock production, in this report, are in fact due to natural background sources.

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 facts 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.

Francis Svoboda
14114 200th St.
Hutchinson, MN 55350
(phone 320-587-8718)

Corey Henke
13031 CoRd. 7
Stewart MN 55385
320-587-9145
Corey Henke

Ms Margaret Leach, Impaired Waters Coordinator
Minnesota Pollution Control Agency
7678 College Road, Suite 105
Baxter, MN 56425
margaret.leach@state.mn.us

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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.

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4. Software utilized to analyze electronic data, including any software used to conduct modeling used in the TMDL.

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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.

Peter Johnson
4041 180th Ave SE
Lake Lillian, MN 56253
(Phone 320-995-6312)

Peter J Johnson 8-15-11

Daniel J. Lippert
22830 15th St SW
Blomkest, MN 56216
(Phone 320-523-5544)

Daniel J Lippert 8-15-11

Ms Margaret Leach, Impaired Waters Coordinator
Minnesota Pollution Control Agency
7678 College Road, Suite 105
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margaret.leach@state.mn.us

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

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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.

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Francis Svoboda
14114 200th St.
Hutchinson, MN 55350 FFA
(phone 320-587-8718)

Larry Phillips

Larry Phillips
8495 Ideal Ave
Glencoe Mn 55336

APPENDIX C
Compilation of Comments Received

Corn Growers

Issue # 1- Description of manure
Manure is a valuable crop nutrient source and should not be referred to as waste. Proper application of manure to cropland or pastureland has been shown to improve soil quality and reduce runoff.

Response: We agree that manure is a valuable crop nutrient source when properly applied as you state in your comment above. However, by definition, manure is produced and excreted as waste from animals, hence the reference as such. The TMDL study points out that it is the nutrient enriched manure that is NOT properly applied that has the potential to contribute bacteria to the creek.

Issue # 2- E. coli sources
Reliance on livestock inventories, wildlife population estimates and human population data omits the consideration of naturalized bacteria strains which are known to exist. MPCA should also evaluate the possibility that bacteria are able to survive and reproduce under some conditions. Dr. Michael Sadowsky of the University of Minnesota is a leader in research on bacteria and should be consulted. You can also find a recent report from Dr. Sadowsky at:
http://www.mda.state.mn.us/protecting/c1eanwaterfu nd/cwfresearch/7milecreek.aspx

Response: As suggested, after consulting with Dr. Michael Sadwosky, the report was updated with the following language which was developed by Dr. Sadowsky.

The following language was added to Section 5.3 of the draft TMDL report:

> 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 percent were represented by a single isolate, suggesting new or transient sources of E. coli. The remaining 36.5 percent 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 percent 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 following language was added to Section 5.3.3 of the draft report and the title of this section was changed from "Wildlife Sources" to "Wildlife/Natural Background Sources."

> Section 5.3 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 these two changes, Dr. Adam Birr, Minnesota Department of Agriculture Research Coordinator has suggested that we include some statement of the pragmatic implications of this study. We included the following:

> 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.

Issue # 3- Uncertainty

As acknowledged in the TMDL, there is substantial uncertainty in source identification. MPCA should consider this in future assessments of the effectiveness of implementation activities chosen by local stakeholders. In the future if progress is determined to be less than desired, specifically if the standard is not met, MPCA should consider the possibility that the source identification as presented in this TMDL was in error, impeding the selection and implementation of effective source reduction strategies.

Response: Because nature is not static, there will always be uncertainty when trying to measure and evaluate it. The TMDL process is designed to provide the best scientific methods that we currently have available to evaluate the entire system including all the multidimensional interactions that occur. The implementation planning process is designed to heavily rely on local knowledge and expertise to tailor the strategies to what the landowners will/want to put into practice on their lands. The best designed Best Management Practices (BMPs) are only as good as the number that the local landowners are willing to install. The Buffalo Creek Implementation Plan includes the BMPs requested by local stakeholders so the chance to bring the creek back to meeting water quality standards is improved. The uncertainty you reference provides a sound basis for utilizing adaptive management for implementation. It allows for course corrections as we learn more about these systems. (See response to Issue #5 below as well.)

Issue #4- Livestock Industry Assessment

The analysis of livestock manure as a bacteria source should go beyond the apparent reliance on livestock inventories and instead give greater consideration to proper manure management practices that are already in place. The vast majority of livestock farms are already using the best available technology to minimize the potential for manure-contaminated runoff reaching surface waters. MPCA should focus its efforts on specific concerns, rather than this generalized, industry-wide approach.

Response:

We agree that implementation of manure management practices has been occurring on agricultural lands. It is important to note that any practices currently being implemented are implicitly incorporated into the modeling assessment because the model is calibrated to current monitored water quality that reflects the implemented practices as a whole. However, based upon a review of the "specific" watershed contributing runoff to Buffalo Creek, opportunities for implementing additional practices still exist. Any practices completed in this immediate watershed area have a potentially larger impact on the water quality of Buffalo Creek.

Issue #5- Adaptive Management

Based on its frequent appearance in TMDL reports, MPCA appears to have embraced the concept of adaptive management. We would encourage MCPA to utilize adaptive management to a higher degree throughout their implementation of the Clean Water Act and Clean Water Legacy Act, beginning with the re-examination of designated uses and standards. MPCA has access to considerably more water quality data today than it had when most of our current water standards were enacted. The Agency should put this additional data to use in first refining water quality standards to make sure water quality goals are reasonable, and second in either refining pollution source assessments or acknowledging that uncertainty renders such assessments largely ineffective.

Response: Adaptive management is an appropriate approach as implementation projects are installed in response to a TMDL study. Since Buffalo Creek is a dynamic system, it is difficult to predict the creek response that will occur from implementing Best Management Practices (BMPs) in the watershed. There may be technological advances in the future that can impact the resource in ways that we cannot plan for at this time. Adaptive management allows for these types of changing circumstances and new technologies to be incorporated in the future as they become available.

An example of utilization of adaptive management by the MPCA is the triennial review process. Every three years the federal Clean Water Act (CWA) requires states to obtain public comment on, and revise as needed, their water quality standards. The Minnesota Pollution Control Agency (MPCA) began the current Triennial Review process by publishing a Request for Comments in the July 28, 2008 edition of the State Register. The proposed amendments will be to Minnesota Rules chs. 7050 and 7052. MPCA plans to complete the current Triennial Review rulemaking process in 2012 and will regularly post updated information with details on the revision process and information on how to become involved.

The following MPCA website has more detailed information about the Triennial Review process.

http://www.pca.state.mn.us/qzqh5e3

Sundby

Comment:

1) A graph showing sampling data compared to TMDL Allocations would be very helpful. Basically use figure 4.2 and add in E.coli and fecal sampling data (multiplied by flow data) to show relationship and correlation to the TMDL. Figure 5.1 does this to a point, but is confusing with the amount of different variables graphically represented.

Response: The purpose of figure 5.1 is to graphically represent bacteria data compared to the standard. Although the allocations are loads, our belief is that the current presentation is more informative because the standard is a concentration based standard and is easier to interpret than loads and their associated units. Consequently, we have not added any graphs to the TMDL, but note that load figures may be useful as well in future TMDLs.

Comment:

2) Discussion of how the Load Allocation is produced as well as a discussion as to what that allocation applies to. I am assuming that it is any left over TMDL allocation after removing MOS, WLA, Construction WLA and Industrial WLA, but clarification would be great.

Response: The following text was added to the report.

"The load allocation is the remaining load after the previously described Wasteload Allocations and Margin of Safety are subtracted. "

BCWD

1. In looking at Figure 3-1 (Monthly E. Coli geomeans), it shows the number of samples taken at each monitoring site.
Why is there only one sample taken for the month of October and all the other months there were five or more samples taken? Is one sample enough to obtain a good monthly geomeans for Buffalo Creek?

Response: Figure 3-1 includes all data that has been collected for the TMDL study. Geomeans are only calculated for months that have five or more data points. The standard can be violated by geomeans over 126 cfu or single samples over 1260 cfu.

2. How many samples were taken to develop the monthly geomean standard 126 organisms per 100 milliliters?

Response: In order to understand how the state standard of 126 cfu was devised, you can refer to the Bacteria Protocol document found at the following website:
http://www.pca.state.mn.us/index.php/view-document.html?gid=8526

3. How many years has E. Coli been studied? What is the life cycle of E. Coli? How long can it live outside a warm body? Can E. Coli multiply outside a warm body? How does it live in a stream?

Response: The factsheet located at the following website combined with the information in the Bacteria Protocol document above provide a general overview of bacteria background information.
http://www.pca.state.mn.us/index.php/view-document.html?gid=8543

4. From Table 5-7 Summary of Estimated Daily Fecal Coliform Available for Potential Delivery to Buffalo Creek. Under Livestock – Surface Applied Manure – Total Fecal Coliform Available by Source is 59.2%, Incorporated Manure 36.9%. What is the E. Coli equivalent? How come the E. Coli geomeans is below the Acute Standard during April and May? The manure (surface applied or incorporated) is applied after fall harvest. Fall harvest ends between mid-October through mid-November.
Manure is not applied during the summer months. It is usually stockpiled. According to Table 5-7 Stockpiles Without Runoff Controls, this source only has 2.1% available Fecal Coliform. Human's have 0.9% available.
Is the report saying that during June through October that 3.0% of the source (Table 57) is contributing all of the E. Coli, during June through October?

Response: The equivalence between fecal coliform and E. Coli was developed during the rulemaking period and can be found here: http://www.pca.state.mn.us/index.php/view-document.html?gid=7270

Low concentrations of E. coli during spring months may be a result of dilution from higher runoff volumes during spring runoff, however other possibilities exist. The fact that the majority of the violations occur in the summer months does not suggest it can only come from summer stockpiles as

some application to pastures occurs during the summer. Furthermore, bacteria may survive in the manure applied in the Spring for many months, continuing to deliver bacteria to surface waters during summer runoff events. Note it was assumed that 20% of the land applied manure occurs in the summer (Table 5-6) and that these assumptions were thoroughly discussed with the Buffalo Creek TMDL Technical Advisory Committee. Consequently, summer bacteria violations are likely a result of summer runoff events bringing in bacteria from summer applications, past spring applications, stockpiles, and livestock with direct access to streams.

5. It is the opinion of the Board of Managers that animal units found in Table 5-5 should be updated using current data, not data from 2000.

Response: The data used to develop the Buffalo Creek Bacteria TMDL represents the most current data set available at the time of report development. Consequently, these data represent the best available data since more current data was not available.

6. Research that we have done on E. Coli is the following:
E. Coli can persist outside animal's guts but it varies on environmental conditions such as sunlight exposure, temperature, dissolved oxygen, levels of inorganic salts, levels of inorganic matter, and presences of toxins. Were all these items tested for, and if so, how do they compare to the relationship to E. Coli? Studies have shown that E. Coli can survive from 14 to over 90 days. Once in water (natural streams) they can settle out and tend to accumulate in sediments. They can lay there quite awhile and multiply, die, and re-suspend into the water column. Typically they will settle out under non-high flows. During sampling, is sediment taken as part of the water column? So, is the E. Coli testing a true result of Buffalo Creek?

Response: No, sediment sampling is not done to determine impairments. Sediment is sediment. It is not part of the water column. The current bacteria standard is written to protect human health while swimming in water; hence it is a "true result of Buffalo Creek".

We received an additional comment letter from you fourteen days after the close of the extended public notice period. (The extended comment period closed August 15, 2011 and your letter was received August 29, 2011.) However, we address your additional comment below.

Comment: "The watershed district feels that the Natural E. Coli should be addressed within the subject TMDL."

Response: As suggested, after consulting with Dr. Michael Sadwosky, the report was updated with the following language which was developed by Dr. Sadowsky.
The following language was added to Section 5.3 of the draft TMDL report:

> 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 percent were represented by a single isolate, suggesting new or transient sources of E. coli. The remaining

> 36.5 percent 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 percent 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 following language was added to Section 5.3.3 of the draft report and the title of this section was changed from "Wildlife Sources" to "Wildlife/Natural Background Sources."

> Section 5.3 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 these two changes, Dr. Adam Birr, Minnesota Department of Agriculture Research Coordinator has suggested that we include some statement of the pragmatic implications of this study. The following language was added to the report:

> 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.

Appendix D

Minnesota Pollution Control Agency

Brainerd Office | 7678 College Road | Suite 105 | Baxter, MN 56425 | 218-828-2492

800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us | Equal Opportunity Employer

November 14, 2011

Mr. Daniel Lippert
22830 15th Street Southwest
Blomkest, MN 56216

RE: Buffalo Creek Bacteria Total Maximum Daily Load

Dear Mr. Lippert:

Below you will find draft language changes that we would propose to help resolve the contested case hearing request on the Buffalo Creek bacteria Total Maximum Daily Load (TMDL). This language was originally drafted for the Cottonwood and Redwood River reports, but would also apply to Buffalo Creek. This proposed language came out of a meeting and several e-mail exchanges that included Mark Hanson (MPCA project manager for Redwood and Cottonwood), Adam Birr (Minnesota Department of Agriculture research coordinator), Dr. Michael Sadowsky (the author of the Seven Mile Creek study), and Lee Ganske (MPCA).

We propose adding the following language to Section 5.3 of the draft TMDL report:

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 percent were represented by a single isolate, suggesting new or transient sources of E. coli. The remaining 36.5 percent 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.

We propose adding the following language to Section 5.3.3 of the draft report and changing the title of this section from "Wildlife Sources" to "Wildlife/Natural Background Sources."

Section 5.3 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 these two proposed changes, Adam Birr has suggested that we include some statement of the pragmatic implications of this study. Such a statement might be along the following lines:

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.

We understand that you are working with Steve Commerford to schedule a meeting with the Buffalo Creek Watershed District Board, other petitioners and MPCA to discuss the contested case request. We felt it would be helpful to share this language with you prior to that meeting so you have ample time to review it. We are open to suggested changes or additions to this proposed language and can discuss them at the meeting.

If you have questions about this letter prior to the meeting, please contact Maggie Leach (MPCA project manager) at 218-316-3895.

Sincerely,

Reed Larson
Manager, North Central Region
Regional Division

RL/ML:vms