DECISION DOCUMENT FOR THE APPROVAL OF MINNESOTA'S 2012 SECTION 303(d) LIST

The U.S. Environmental Protection Agency (EPA) has conducted a complete review of Minnesota's 2012 Section 303(d) list and supporting documentation and information. Based upon this review, EPA has determined that Minnesota's list of water quality limited segments (WQLS) still requiring total maximum daily loads (TMDLs) meets the requirements of Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations. Therefore, EPA hereby approves Minnesota's 2012 303(d) list. The statutory and regulatory requirements, and EPA's review of Minnesota's compliance with each requirement, are described in detail below.

I. Statutory and Regulatory Background

A. Identification of Water Quality Limited Segments for Inclusion on the Section 303(d) List

Section 303(d)(1) of the CWA directs States to identify those waters within their jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point sources and/or nonpoint sources, pursuant to EPA's long-standing interpretation of Section 303(d).

EPA regulations provide that States do not need to list waters where the following controls are adequate to implement applicable standards: (1) technology-based effluent limitations required by the CWA, (2) more stringent effluent limitations required by State or local authority, and (3) other pollution control requirements required by State, local, or federal authority.[1]

B. Consideration of Existing and Readily Available Water Quality-Related Data and Information

In developing Section 303(d) lists, States are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of waters: (1) waters identified as partially meeting or not meeting designated uses, or identified as threatened in the State's most recent Section 305(b) report; (2) waters for which dilution calculations or predictive modeling indicate nonattainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any Section 319 nonpoint assessment submitted to EPA.[2] In addition to these minimum categories, States are required to consider any other data and information that is existing and readily available. EPA's 1991 *Guidance for Water Quality-Based Decisions* describes categories of water quality-related data and information that may be existing and readily available.[3] While States are required to evaluate all existing and readily available water quality-related data and information, States

[1] 40 Code of Federal Regulations (CFR) §130.7(b)(1).
[2] 40 CFR §130.7(b)(5).
[3] Guidance for Water Quality-Based Decisions: The TMDL Process, U.S. EPA Office of Water, 1991, Appendix C (hereafter, EPA's 1991 Guidance).

may decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring States to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations at 40 CFR §130.7(b)(6) require States to include, as part of their submissions to EPA, documentation to support decisions to rely or not rely on particular data and information and decisions to list or not list waters. Such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; and (3) any other reasonable information requested by the Region.[4]

C. Priority Ranking

EPA regulations codify and interpret the requirement in Section 303(d)(1)(A) of the CWA that States establish a priority ranking for listed waters. The regulations at 40 CFR §130.7(b)(4) require States to prioritize waters on their Section 303(d) lists for TMDL development, and also to identify those WQLS targeted for TMDL development in the next two years.[5] In prioritizing and targeting waters, States must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters.[6] As long as these factors are taken into account, the CWA provides that States establish priorities. States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic, and aesthetic importance of particular waters, degree of public interest and support, and State or national policies and priorities.[7]

II. Analysis of Minnesota's Submission

On October 1, 2012, Minnesota submitted to EPA the State's final draft TMDL list, plus supporting documentation. The submittal received by EPA included the following:

- Submittal letter, dated September 17, 2012
- Final Draft MPCA 2012 303(d) List cover page, dated September 17, 2012
- Guidance Manual for Assessing the Quality of Minnesota Surface Waters for Determination of Impairment: 305(b) Report and 303(d) List 2012 Assessment Cycle (December 2011)
- Public participation documentation
    - 2012 TMDL List Response Summary
    - Public comments received during public comment period
    - MPCA responses to public comments
    - Documentation of public meeting announcements (newspaper articles, etc.)
    - Attendance sheets from public meetings
    - Documentation of public participants in MPCA Professional Judgment Groups (PJG)
- Contested case documentation on 2012 chlorpyrifos listing

[4] 40 CFR §130.7(b)(6).
[5] 40 CFR §130.7(b)(4).
[6] CWA Section 303(d)(1)(A).
[7] 57 FR 33040, 33045 (July 24, 1992); see also EPA's 1991 Guidance.

- Minn. Dept. of Agriculture's (MDA) response to public comments made on the 2012 chlorpyrifos listing
- Three (3) copies of the final draft TMDL list, September 17, 2012 (printed spreadsheet)
- Inventory of all impaired waters, September 17, 2012 (printed spreadsheet)
- 2012 Mercury TMDLs within Appendix A, September 17, 2012 (printed spreadsheet)
- 2012 Mercury TMDL additions to Appendix A, September 17, 2012 (printed spreadsheet)

Within this Decision Document, the State's submittals received by EPA on October 1, 2012 and other supporting information are collectively referred to as the "2012 Submittal." All of this information is compiled in EPA's record for this decision.

EPA has reviewed Minnesota's 2012 submittal, and has concluded that the State developed its Section 303(d) list in compliance with Section 303(d) of the CWA and 40 CFR §130.7. EPA's review is based on its analysis of whether the State reasonably considered existing and readily available water quality-related data and information, and reasonably identified water quality-limited segments. EPA has reviewed the State's description of data, information considered, and the Minnesota Pollution Control Agency's (MPCA) 2012 Methodology[8] for identifying waters. EPA concludes that Minnesota properly assembled and evaluated existing and readily available data and information, including data and information relating to categories of waters specified at 40 CFR §130.7(b)(5). EPA also concludes that Minnesota provided an acceptable rationale for not relying on particular existing and readily available water quality-related data and information as a basis for listing waters on the 303(d) list.

EPA has also determined that the State properly listed waters with nonpoint sources causing or expected to cause impairment, consistent with Section 303(d) of the CWA and EPA guidance. Section 303(d) lists are to include all WQLS still needing TMDLs, regardless of whether the source of the impairment is a point source and/or nonpoint source. EPA's long-standing interpretation is that Section 303(d) applies to waters impacted by point source and/or nonpoint sources. In *Pronsolino v. Marcus* [9], the 9th Circuit for the Northern District of California held that Section 303(d) of the CWA authorizes EPA to identify and establish TMDLs for waters impaired by nonpoint sources.

EPA's approval of Minnesota's 2012 303(d) list extends to water bodies as identified in Table A-1 (Attachment #1) of this Decision Document with the exception of those waters that are within Indian Country. EPA is taking no action to approve or disapprove the State's list with respect to those waters that are within Indian Country. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under Section 303(d) for those waters.

A. Identification of Water Quality-Limited Segments for Inclusion on Section 303(d) List

1. Minnesota's 2012 303(d) list

Minnesota uses an Integrated Report to fulfill the reporting requirements of Sections 305(b) and 303(d) of the CWA. Since the 2002 listing cycle, EPA has encouraged states to integrate their 305(b) report and their 303(d) list into one submittal, the Integrated Report (IR). EPA has recommended five beneficial

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[8] *Guidance Manual for Assessing the Quality of Minnesota Surface Waters for Determination of Impairment: 305(b) Report and 303(d) List, 2012 Assessment Cycle* (December 2011) (hereafter, 2012 Methodology).

[9] EPA Impaired Waters and Total Maximum Daily Loads [HYPERLINK "http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/pronsolino.cfm"]

use attainment reporting categories where the various categories represent varying levels of use attainment. Minnesota has chosen to use the recommended five categories with the addition of several subcategories. Minnesota's 2012 integrated report includes the following beneficial use attainment categories (Table 1 of this Decision Document).[10]

Table 1: MPCA's Beneficial Use Attainment Reporting Categories

Integrated Report Category	Description
1	All designated uses are fully assessed and met, and no use is threatened.
2	Some uses or parameters are met; but insufficient data to determine if remaining uses or parameters are met.
3A	No data or information to determine if any use is attained.
3B	Data are available for a review and generally indicate non-support, but insufficient data and information to determine TMDL impairment. (Example: single lake data point showing non-support)
3C	Data available that currently has no assessment tools to allow its use in assessing. (Example: data with only eco-region expectation standards)
3D	Data are available for a review and generally indicated full support, but insufficient data and information to assess for Category 1 or 2.
3E	Data are available for a review, but insufficient data and information to determine full support or TMDL impairment. (Example: lake data just below the threshold showing non-support)
4A	Impaired or threatened but all needed TMDL plans have been completed.
4B	Impaired or threatened but doesn't require a TMDL plan because it is expected to attain standards within a reasonable period of time.
4C	Impaired or threatened but doesn't require a TMDL plan because impairment not caused by a pollutant.
4D	Impaired or threatened but doesn't require a TMDL plan because the impairment is due to natural conditions with only insignificant anthropogenic influence. To be considered "insignificant", the elimination of the anthropogenic influence would not lead to the attainment of water quality standards and it would not be included in formal pollution reduction goal setting activities. A reach-specific water quality standard based on local natural conditions has yet to be determined. Upon determination, the assessment unit will be considered non-impaired for the natural conditions and re-categorized to an appropriate category.
4E	Impaired or threatened but existing data strongly suggests a TMDL plan is not required because impairment is solely a result of natural sources; a final determination of Category 4D will be made in the next assessment cycle pending confirmation from additional information (i.e. water quality or land use).
5A	Impaired or threatened by multiple pollutants and no TMDL plans approved.
5B	Impaired by multiple pollutants and either some TMDL plans are approved but not all or at least one impairment is the result of natural conditions.
5C	Impaired or threatened by one pollutant.

The general process used by Minnesota to develop the 2012 Integrated Report starts with the collection and assessment of readily available data and information. Following guidelines established in MPCA's 2012 Methodology, an assessment of use support for individual water body units is made.

The water body unit used for river system assessments is the river reach. A river reach typically extends from one significant tributary river to another or from the headwaters to the first significant tributary. River reaches are typically less than 20 miles in length. A river reach may be further divided into two or more assessment reaches when there is a change in use classification or when there is a significant

[10] 2012 Methodology, page 47.

morphological feature. Minnesota uses the United States Geological Survey (USGS) eight digit hydrologic unit code (HUC) (ex. 07020012) plus a three digit reach code (ex. 505) to name river reach segments (ex. 07020012-505). River reach segment numbers are also referred to as 'River identification numbers' (River ID#).

MPCA relies on the *Protected Waters Inventory*, which is assembled by the Minnesota Department of Natural Resources (MDNR), to provide identification codes for lakes and wetlands within the state. MDNR uses a unique eight digit identification number to identify lakes and wetlands. The eight digit number consists of a two digit prefix, which represents the county within Minnesota, followed by a four digit number, which identifies the lake or wetland, followed by a two digit suffix which represents either the whole lake (as '-00') or represents a specific bay of the lake (ex. -01, -02, etc.). The entire eight digit identifier is something similar to the following (ex. 82-0020-01).[11] Throughout the remainder of this Decision Document the term 'assessment unit' is used generally to refer to any river segment identified with a River ID# or a lake segment identified with a Lake/Wetland ID# on Minnesota's 2012 303(d) list.

Once an assessment has been completed, the water body is placed into one of the five categories described in Table 1 of this Decision Document. Waters within categories 4 and 5 represent the inventory of impaired waters in Minnesota. Category 5 waters represent impaired waters requiring TMDLs, i.e., Minnesota's 303(d) list. EPA is approving the waters identified in Table A-1 of this decision as Minnesota's 2012 303(d) list.

2. Methodology

EPA's regulations at 40 CFR §130.7(b)(6) require that states provide documentation to support their decisions to list or not list waters including a description of the methodology used to develop the list. MPCA developed its methodology for the 2002 listing cycle and has subsequently modified the methodology with each listing cycle. Minnesota's 2012 submittal included MPCA's 2012 Methodology (December 2011). MPCA's 2012 Methodology defines the data and information requirements needed to assess and determine if a water is meeting its designated beneficial use(s). The 2012 Methodology also establishes thresholds that indicate impairment for various categories of pollutants. As with prior versions of its methodology, the State made the 2012 Methodology available to the public through MPCA's website beginning on or about January 23, 2012.

Minnesota rules identify seven beneficial uses for which surface waters in Minnesota are protected. These beneficial uses are assigned the following use class numbers:

Class 1: Drinking water
Class 2: Aquatic life and recreation
- Class 2A: Cold water fisheries, trout waters
- Class 2B: Cool and warm water fisheries (not protected for drinking water use)
- Class 2Bd: Cool and warm water fisheries (protected for drinking water use)
- Class 2C: Indigenous fish and associated aquatic community
- Class 2D: Wetlands

Class 3: Industrial use and cooling
Class 4: Agricultural use
Class 5: Aesthetics and navigation

[11] 2012 Methodology, page 8.

Class 6: Other uses
Class 7: Limited resource value waters

All surface waters in Minnesota are considered either a Class 2 or Class 7 designated water.[12] Unless classified as a Class 7 water, surface waters in Minnesota are protected for aquatic life and recreation (Class 2 designated water). The State of Minnesota defines protection of aquatic life and recreation as, *"the maintenance of healthy, diverse, and successfully reproducing populations of aquatic organisms, including invertebrates as well as fish. Protection of recreation for all surface waters, except wetlands and limited resource value waters means the maintenance of conditions suitable for swimming and other forms of water recreation. Recreation in wetlands means boating and other forms of aquatic recreation for which they may be usable (this does not preclude swimming if that use is suitable)."*[13] Limited resource value waters (Class 7 designated water) are not fully protected for aquatic life. Class 7 designated waters have a very limited aquatic and fish community mostly due to lack of water, lack of habitat, or extensive physical alterations. Both Class 2 and 7 designated waters are also protected for Classes 3, 4, 5 and 6 designations.

Typically water quality standards applicable to Class 2 designated waters are the most stringent, therefore, Minnesota's assessments usually consider water quality standards applicable to Class 2 waters. Beneficial use supports assessed by Minnesota include;

- Aquatic Life (toxicity-based standards, conventional pollutants, biological indicators);
- Drinking Water and Aquatic Consumption (human health-based standards);
- Aquatic Consumption (wildlife-based standards);
- Aquatic Recreation (*Escherichia coli (E. coli)* bacteria, eutrophication);
- Limited Value Resource Waters (toxicity-based standards, bacteria, conventional pollutants).

Aquatic life use support assessments consider protection of the organisms that reside in the surface waters, while aquatic consumption use support assessments consider protection of the consumers of the aquatic life. Aquatic recreation use support is assessed for the protection of recreation in surface waters.[14]

Class 7 waters and Class 1 waters were first assessed during the 2010 listing cycle. These two beneficial uses are 'newer' beneficial use classes to be assessed by MPCA. Class 7 waters, MPCA designated limited resource value waters, are protected to allow secondary body contact use, to preserve groundwater for potable water supply, and to protect aesthetic qualities of the water.[15] Class 1 waters, MPCA designated drinking waters, are protected surface waters for water supply purposes. All groundwater in Minnesota is protected as a source of drinking water, however, only select surface waters are protected as a source of drinking water.[16] Before being assessed for the 2010 listing cycle, Class 1 surface waters and groundwater were outside the scope of MPCA's assessment methodologies. However, over more recent listing cycles, MPCA recognized a trend of increasing nitrate concentrations

[12] MPCA Water Quality Standards, http://www.pca.state.mn.us/index.php/water/water-monitoring-and-reporting/water-quality-and-pollutants/water-quality-standards.html
[13] MPCA Water Quality Standards, http://www.pca.state.mn.us/index.php/water/water-monitoring-and-reporting/water-quality-and-pollutants/water-quality-standards.html
[14] 2012 Methodology, page 4.
[15] Class 7 Limited Resource Value Waters Fact Sheet, http://www.pca.state.mn.us/index.php/view-document.html?gid=7255
[16] MPCA Water Quality Standards, http://www.pca.state.mn.us/index.php/water/water-monitoring-and-reporting/water-quality-and-pollutants/water-quality-standards.html

in Minnesota streams. Class 1 water bodies have been assessed since the 2010 listing cycle to measure potential exceedances of the nitrate-nitrogen Class 1 drinking water consumption standard.

3. Assessment Process

MPCA redesigned its data collection and assessment process between the 2010 and 2012 listing cycles. Up to and including the 2010 listing cycle, MPCA assessed the condition of the State's waters via water quality data which was collected under a biennial, statewide water quality assessment strategy. Since 2006-2007, MPCA has been moving away from collecting water quality data via a biennial, statewide monitoring approach, and is instead focusing its data collection efforts on the eight digit hydrologic unit code (HUC-8) scale. Each year, MPCA targets specific HUC-8 watersheds for water quality monitoring in an approach called the 'Intensive Watershed Monitoring Approach' (IWMA). Water quality monitoring of targeted HUC-8 watersheds under the IWMA was first employed by MPCA in 2007, in the Pomme de Terre River watershed and the North Fork of the Crow River watershed (Table 3 of this Decision Document).

The 2012 assessment cycle is the first assessment cycle in which MPCA is assessing water quality data which was collected via IWMA efforts. Prior to the 2012 listing cycle, MPCA was solely analyzing water quality data collected under the biennial, statewide assessment approach. Data collected during the IWMA strategy resulted in MPCA revising its internal assessment processes for analyzing water quality data. MPCA explained that the IWMA strategy generated an increased volume of water quality monitoring data which necessitated amendments to how MPCA conducted its internal review of water quality monitoring data for assessment decisions. MPCA believes that the IWMA generates a more robust water quality data set which MCPA can more efficiently use to assess water quality in surface waters of the State. Details of this approach can be found in the *2011-2012 Minnesota Water Quality Monitoring Strategy*.[17]

The incorporation of the IWMA for the 2012 listing cycle generated large amounts of water quality data which necessitated MPCA to redesign its water quality data review process. The redesigned review process combined computerized data analysis, expert analysis, and input from external partners. The goal of the revamped review process was to incorporate all of the available water quality data and information to best determine whether or not the water body was meeting its beneficial uses (ex. drinking water, aquatic life, aquatic recreation, aquatic consumption and limited use waters).

The data review and analysis process utilized to create the 2012 303(d) list expanded upon data analysis methods of the previous (2010 and earlier) assessment processes. Changes made to the data review and analysis process for the 2012 cycle included an additional round of MPCA staff review of water quality data at the parameter level and an additional round of internal comprehensive review of water quality data prior to the professional judgment group (PJG) meeting. These changes were incorporated in response to the increased volume and complexity of the water quality data collected during the IWMA. Details on the specific steps employed by MPCA in the 2012 303(d) water quality assessment process are:[18]

<u>Step 1:</u> 'Pre-assessment': Monitor and gather data information (automated data compilation)

[17] 2011-2021 Minnesota Water Quality Monitoring Strategy, http://www.pca.state.mn.us/index.php/water/water-monitoring-and-reporting/water-quality-and-pollutants/minnesota-s-water-quality-monitoring-strategy.html
[18] 2012 Methodology, page 6-7.

MPCA employs an intensive watershed monitoring schedule that provides comprehensive assessments of all of the major watersheds on a 10-year cycle. This schedule provides intensive monitoring of streams and lakes within each major watershed to determine overall health of the water resources, to identify impaired waters, and to identify those waters in need of additional protection to prevent future impairments.

In addition to gathering water quality information, the first step also includes an initial data review process. The 'pre-assessment' data review involves a computerized/automated screening tool which analyzes water quality monitoring results collected within the HUC-8 watershed (See Table 3 of this Decision Document for a list of watersheds targeted during the 2012 listing cycle). The automated process summarizes the number of data points that exceed the criteria, the total number of data points, and the number of years of data. This step produces a parameter-specific pre-assessment (e.g., for Dissolved Oxygen, or Fish Index of Biotic Integrity (IBI), or *E. coli*). Water quality data is assessed on an individual water body basis. The pre-assessment is the first opportunity in the water quality data review process where individual water bodies' water quality monitoring data are compared against water quality criteria.

Step 2: 'Expert Review': Assessment of the water quality data by MPCA staff
Based on results of intensive watershed monitoring in Step 1, MPCA staff review data to determine whether or not water resources meet water quality standards and designated uses. Waters that do not meet water quality standards are listed as impaired waters.

The second step involves a review by MPCA staff of automated pre-assessment summary data for quality assurance (QA). This step ensures that the computerized screening captured appropriate data and the automated process properly calculated pre-assessments data.

Step 3: Desktop assessment by resource specific MPCA staff
The desktop assessment involves a review of Steps 1 and 2 pre-assessment and expert review information by resource-specific MPCA staff. For example, chemistry data will be reviewed by MPCA water quality staff and biological specific data will be reviewed MPCA biologists. Step 3 of the water quality data review process considers other climatic and hydrochemical evidence (ex. flow conditions, precipitation, land use, habitat, etc.) to ascertain the overall quality of the dataset. The overall quality is a measure of temporal and spatial completeness and whether the chemical parameter is meeting or exceeding the criterion. During Step 3, water body candidates for delisting or natural background review are identified and work begins to determine if those assessment unit identification numbers (AUIDs) meet the criteria to be removed from the impaired waters List (i.e., 303(d) list).

Step 4: Watershed Assessment Team review of water quality data
The fourth step incorporates a joint internal meeting of MPCA staff involved in the review of water quality data in Step 1 through Step 3, the regional watershed project manager and stressor identification staff for specific HUC-8 watersheds. This grouping of people makes up the Watershed Assessment Team (WAT). The joint internal meeting allows the WAT to review comments and parameter-level evaluations from the desktop assessment and any watershed specific supplemental information to reach an overall use-support decision. Delisting and natural background candidates may also be identified at this time.

Step 5: Professional Judgment Group review of water quality data

The fifth step includes a joint meeting between the WAT and external parties (ex. local data collectors, local government units, etc.). This joint meeting is referred to as the Professional Judgment Group (PJG). The MPCA regional watershed project manager is responsible for inviting external parties to the PJG discussions.[19]

Prior to the PJG meeting, the results of the WAT meeting are distributed to all invitees, including parameter-level evaluations, overall use-support recommendations, and all other comments made by reviewers. Invitees are asked to identify AUIDs they wish to discuss; an agenda is developed based on these submissions. The agenda of the PJG meeting is to review the water quality data review process, to hold a general discussion of the watershed and major subwatersheds, and to review requested AUIDs, delisting and natural background candidates. The determinations made within the PJG meeting are the final use-support determinations. Additionally, the PJG may consider the magnitude, duration and frequency of exceedances, timing of exceedances, natural occurring conditions that may affect pollutant concentrations and toxicity, weather and flow conditions, and changes in the watershed that may have changed water quality.

The analyses and recommendations for each AUID are documented in a transparency database. The transparency database is archived following the completion of the assessments. Throughout the annual assessment process, care is taken to maintain consistency among the HUC-8 assessments and decisions. Consistency is maintained via internal training and quality control, and the assignment of individual staff to multiple HUC-8 data sets for the expert review. MPCA designates a team of scientists to oversee desktop assessments and to ensure consistency among watershed assessment discussions and decisions.[20] MPCA's goal is to ensure a robust decision is reached by the staff reviewers regarding the appropriate management actions to be pursued for each assessment unit (water body, or AUID). This decision will impact the planning and implementation phases of the watershed approach (i.e. restoration for impaired waters and protection for unimpaired waters).

MPCA reports the assessment decisions made by the PJG in *Watershed Monitoring and Assessment Reports* (on the HUC-8 scale) and the *Integrated Reports*. The Watershed Monitoring and Assessment Reports are a compilation of the results of the assessments following the determinations of the PJG. AUIDs are discussed by HUC-8 subwatersheds and overall water quality conditions, potential stressors, and protection areas are identified. These documents inform the restoration and protection strategies that are developed by MPCA.

The Integrated Report is composed of a narrative report and Assessment Database (ADB) and geospatial data. The Integrated Report summarizes the results of the water quality assessments conducted by MPCA. MPCA is responsible for uploading assessment decision information to the EPA via the ADB and also preparing a narrative report to the U.S. Congress as required by section 305(b) of the CWA. Each designated use is identified as "full support," "not support," "insufficient information," or "not assessed" as a result of the assessments. In addition, the use assessment data types are rated per the levels in the ADB.

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[19] *A note should be made that the assessment for aquatic consumption (fish) at this time utilizes only the first two steps in the process.*
[20] 2012 Methodology, pages 6-7.

4. Assessment of Waters Based on Narrative and Numeric Water Quality Standards

As previously stated in this decision, Minnesota assesses aquatic life, drinking water consumption, aquatic consumption (via human health-based standards), aquatic consumption (via wildlife-based standards), aquatic recreation use, and limited value resource waters. Minnesota's 2012 Methodology sets forth the specific assessment methods used by the State when determining if these uses are attained. EPA recognizes that water quality criteria have three elements: magnitude, duration, and frequency of exceedance. Minnesota's 2012 Methodology sets forth specific information about how these three elements were considered by the State in development of Minnesota's 2012 303(d) list. EPA finds that Minnesota's use of its 2012 Methodology supports the reasonable identification of WQLS.

The following discussion briefly explains the data requirements, information considered, and impairment thresholds used in Minnesota's assessments as described in Minnesota's 2012 Methodology. The 2012 Methodology sets forth methods for assessing surface waters based on the following:

- numeric and narrative standards for the protection of aquatic life;
- numeric and narrative standards for the protection of human health (aquatic consumption and drinking water);
- numeric standards for protection of aquatic consumption (wildlife);
- numeric standards for protection of aquatic recreation; and
- numeric and narrative standards for the protection of limited resource value waters.

A key component in the assessment process employed by MPCA was the determination of whether an individual parameter within a specific water body met or exceeded the applicable water quality criteria (numeric or narrative standards). MPCA water quality data evaluation also considered the quality of the dataset, whether or not there were sufficient data to make a determination, and ultimately assigned a 'dataset quality' rating. Dataset quality was graded on a scale of 'low,' 'medium,' or 'high' quality ratings. The determinations were stored in a working database and referenced during MPCA WAT reviews and PJG meetings. Additional supporting information, such as magnitude, duration and frequency of exceedances, timing of exceedances, naturally occurring conditions that may affect pollutant concentrations and toxicity, weather and flow conditions, and changes in the watershed that may have changed water quality, were considered in the final use-support determinations.

To further assist MPCA technical staff in their parameter-level evaluations, MPCA considers a 10 percent and 25 percent exceedance frequency[21] (details within Table 2 of this Decision Document) for conventional pollutants. These thresholds were appropriate for the conventional category of pollutants for several reasons, including that none were considered 'toxic' (or bioaccumulative), and all were subject to periodic 'natural exceedances' because of natural causes.[22] An example of natural exceedances from the 2012 Methodology explained that turbidity typically increases in streams after rain events, even in relatively undisturbed parts of the State. Similarly, dissolved oxygen can drop below the standard in low gradient rivers and streams for reasons other than pollution (i.e., the AUID is located downstream of or flows through extensive wetland complexes). These potential pollutants are also natural characteristics of surface waters and aquatic organisms have adapted to cope with the

[21] EPA Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) and Electronic Updates: Supplement, Office of Water, U.S. EPA. EPA-841-B-97-002B. September 1997.
[22] 2012 Methodology, pages 10-11.

fluctuations over time.[23] MPCA considered these and other 'natural exceedances' during its review of water quality data and factored these occurrences into its review during the assessment process.

Table 2: Guidelines for Parameter-Level Evaluations of Conventional Pollutants*

Assessment	Frequency of Exceedances	Magnitude of Exceedances	Duration of Exceedances	Timing of Exceedances[1]
Water Chemistry Parameter Indicating Unimpaired or Supporting Conditions	Less than 10% exceedances of chronic standard	Exceedances generally within 10% of water quality criteria	Continuous data or extensive grab sample data set indicates no or few instances of prolonged exceedance	Exceedances only occurring during extreme events such as 100-year flood (e.g., TSS) or severe drought conditions (e.g., DO)
Water Chemistry Parameter Indicating Potential Impairment	Between 10 – 25% exceedances of chronic standard	Exceedances generally greater than 10% but less than 25% of water quality criteria	Continuous data or extensive grab sample data set indicates some instances of prolonged exceedance	Exceedances only occurring during periods in which they are most likely to occur (e.g., before 9 am, 7Q10 low flow, storm events, etc.); not counting extreme events above
Water Chemistry Parameter Indicating Potential for Severe Impairment	Greater than 25% exceedances of chronic standard	Exceedances generally greater than 25% of water quality criteria	Continuous data or extensive grab sample data set indicates chronic exceedance or many instances of prolonged exceedance	Exceedances occurring during periods (seasonal or daily cycle) in which they typically do not occur in addition to occurring in periods in which they are most likely to occur

* Most parameters will have data sets that only allow frequency and magnitude to be evaluated. When sufficient data exist (e.g., continuous monitoring or extensive grab samples) or appropriate ancillary data (e.g., flow, precipitation) are accessible, duration or timing of exceedances may also be considered in the evaluation. The parameter-level evaluation requires best professional judgment to integrate information across all applicable columns.
[1] Based on evaluation of available flow data and/or precipitation records as well as observations made by monitoring staff.

4a. Assessment of Surface Waters Based on Numeric and Narrative Standards for Protection of Aquatic Life

Assessments based on numeric standards for protection of aquatic life are considered to safeguard the aquatic community. Toxicity-based chronic numeric standards and conventional pollutant standards are calculated to preserve the aquatic community from the harmful effects of toxic substances, and the protection of human and wildlife consumers of fish and other aquatic organisms. Minnesota's 2012 Methodology establishes data requirements and thresholds for pollutants that have toxicity-based chronic numeric standards.

Two types of data are used in these toxicity-based assessments: water chemistry and biological data. In aquatic life determinations, pre-assessments consider chemistry data, biological data, and other data quality indicators.[24] Pollutants which have toxicity-based numeric standards considered in MPCA's assessments are trace metals, un-ionized ammonia, and chloride. Sections V.A.1. and V.A.2. in Minnesota's 2012 Methodology explain the applicable Class 2 numeric water quality standards, data requirements, and impairment thresholds considered in these toxicity-based numeric standard assessments. In general, for the assessment of pollutants with toxicity-based numeric standards, five data points collected within a 3-year period within the most recent 10 year period are necessary. Two or more exceedances of the chronic standard in 3 years is considered an impairment and is included on the 303(d) list.[25]

[23] 2012 Methodology, pages 10-11.
[24] 2012 Methodology, page 13.
[25] 2012 Methodology, page 15.

The State also assesses conventional pollutants with numeric standards and water quality characteristics which typically include low dissolved oxygen, pH, turbidity, temperature, and biological indicators. Sections V.B.1. and V.B.2. of the 2012 Methodology explain the applicable Class 2 numeric water quality standards, data requirements, and impairment thresholds considered in these assessments. Sections V.B.1 and V.B.2 also describe characteristics for dissolved oxygen in the applicable Class 7 standard. In general, a minimum of 20 independent observations (i.e. data points) in the most recent 10 years are needed for an assessment. Data demonstrating greater than 10 percent exceedance are designated as impaired and included on the 303(d) list.[26]

The biological quality of any given surface water body is assessed by comparison to the biological conditions determined for a set of reference water bodies which best represent the most natural conditions for that surface water body type within a geographic region.[27] The basis for assessing the biological community for impairment is found in the narrative water quality standards and assessment factors in Minn. R. ch. 7050.0150.[28] Biological integrity is commonly defined as the ability to support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity and functional organization comparable to those of natural habitats within a geographic region (in Minnesota this is also referred to as 'eco-region'). The presence of a healthy, diverse, and reproducing aquatic community is a good indication that the aquatic life beneficial use is being supported by a lake, stream, or wetland. The aquatic community integrates the cumulative impacts of pollutants, habitat alteration, and hydrologic modification on a water body over time.

MPCA has developed fish and invertebrate index of biological integrity (IBI) scores to assess the aquatic life use of rivers and streams in Minnesota as well as plant and invertebrate IBI scores to assess depressional wetlands. Monitoring the aquatic community, via biological and chemical monitoring, is a direct way to assess aquatic life use support. Interpreting aquatic community data is accomplished using an IBI. Minnesota uses a regional reference site approach to develop and calibrate the IBI for specific regions of Minnesota. The IBI incorporates multiple attributes of the aquatic community, called 'metrics,' to evaluate a complex biological system. Typically, 8-12 metrics related to structural and functional aspects of the aquatic communities are considered. A score is assigned to each metric and the sum of all scores is used to characterize the biological integrity of the site being assessed. The 2012 Methodology does not include assessment protocols for measuring IBI scores for aquatic communities in lakes. These assessment protocols are still being developed by MPCA.

Interpretation of aquatic community data by the PJG is completed by comparing the IBI score against the assessment threshold or biocriteria. In general, an IBI score above the assessment threshold indicates aquatic life use support, while a score below the threshold indicates non-support. MPCA utilizes a Biological Condition Gradient (BCG) along with reference conditions to calculate its biocriteria thresholds. The BCG-derived criteria are compared to criteria derived from reference sites within Minnesota to ensure that the BCG and reference conditions are closely aligned in defining the fish and invertebrate IBI classes. Minnesota used the median of BCG level 4 to develop biocriteria that are protective of the structural and functional health of biological communities. Communities with IBI

[26] 2012 Methodology, pages 16-17.
[27] Determination of Water Quality, Biological and Physical Conditions, and Compliance with Standards (7050.0150, subp. 6), https://www.revisor.mn.gov/rules/?id=7050.0150
[28] Determination of Water Quality, Biological and Physical Conditions, and Compliance with Standards (7050.0150, subp. 6), https://www.revisor.mn.gov/rules/?id=7050.0150

scores near this median value can be expected to have biological communities which exhibit "*...overall balanced distribution of all expected major groups; ecosystem functions largely maintained through redundant attributes.*"[29]

MPCA incorporated a margin of safety into its IBI assessment process. Bracketing each IBI assessment threshold is a 90 percent confidence interval that is based on the variability of IBI scores obtained at sites sampled multiple times in the same year (i.e., duplicate samples). The confidence interval accounts for variability attributed to natural temporal changes within the community as well as method error. Section V.B.e.2 in the 2012 Methodology explains the data requirements and determination criteria for assessing whether AUIDs are meeting their biological use support (i.e. fully supporting, not supporting, or insufficient information). Overall assessment of whether an AUID adequately supports aquatic life involves the review of the parameter-level evaluations and data quality in conjunction with all available supporting information (ex. flow, habitat, precipitation, etc.). The determination of available data is an important step in this review process.

Section V.B.2 in the 2012 Methodology explains the nuances of MPCA's decision making process in determining whether biological communities are deemed as fully supporting of aquatic life or non-supporting of aquatic life. These assessment decisions are made after consulting both biological and chemical data. For a given AUID, there may be chemistry indicator data, biological indicator data, or both types of data available for assessment. The assessment of whether an AUID adequately supports aquatic life involves the review of the parameter-level evaluations and data quality in conjunction with all available supporting information (flow, habitat, precipitation, etc.) to make an overall use-support determination. The final assessment takes into consideration the strength of the various indicators, the quality of the data sets and the upstream and downstream conditions of the water body segment.[30]

In general, a stream reach is considered to be <u>fully supporting</u> of aquatic life if:

- IBI scores for all available assemblages indicate fully supporting conditions; or
- The criteria for both dissolved oxygen and turbidity/t-tube/total suspended solids are adequately met; and
- Other lines of evidence considered comprehensively, including upstream/downstream conditions, do not contradict a finding of full support.

A stream reach is considered to be <u>not supporting</u> if:

- IBI scores for at least one biological assemblage indicate impairment; or
- One or more water chemistry parameters indicates impairment; and
- Other lines of evidence considered comprehensively, including upstream/downstream conditions, do not contradict a finding of non-support.

If the above criteria are not met and the assessment is inconclusive, the result is a determination of insufficient information. A determination of biological impairment must be supported by failing IBI scores for at least one biological assemblage, or one or more water chemistry parameters indicating impairment. In cases where an assessment unit has been determined to be not supporting based on biological indicators, water chemistry parameters are added to the list of impairments only when the

[29] 2012 Methodology, page 17.
[30] 2012 Methodology, page 19.

chemical impairment is clear enough that the AUID would be considered impaired even without the biological evidence.[31]

4b. Assessment Based on Numeric and Narrative Standards for the Protection of Human Health: Aquatic Consumption and Drinking Water

Assessments based on numeric and narrative standards for protection of human health include consideration of pollutants with Class 2 health-based chronic water quality standards. Section VI.A in Minnesota's 2012 Methodology discusses the development of human health protective numeric chronic standards. Class 2 chronic standards are established after determining the water column concentration of a pollutant that will be protective for chronic exposure for aquatic organisms, human health, and fish-eating wildlife. The most protective is chosen as the chronic standard included in Minnesota rules.[32]

Pollutants that have human health based chronic standards which are most often included in the State's assessments include mercury, polychlorinated biphenyls (PCBs), dioxins and chlorinated pesticides.[33] Minnesota Rule ch. 7050.0222 identifies the pollutants which have human health-based and toxicity-based criteria which have similar values. Section VI.A.2.(a) – (c) in Minnesota's 2012 Methodology discusses these pollutants and the applicable Class 2 water quality standards used in assessments of these pollutants. In general, two exceedances of the chronic standard or a single exceedance of the maximum standard in 3 years indicates impairment. For data considerations, five data points within a 3 year period during the most recent 10 years are necessary for assessment.[34] As stated above, when the State develops water quality standards, both a toxicity-based and a human health-based chronic criterion is calculated and the most restrictive is used to establish the chronic standard. For some pollutants, the toxicity-based and the human health-based criterion are very similar. For these pollutants, Minnesota's assessments consider both criteria.

As previously stated in this Decision Document, support of aquatic life means that concentrations of toxicants in water must be low enough that fish and other aquatic organisms are safe for people and wildlife to eat. Minnesota has four wildlife-based water quality standards (dichlorodiphenyltrichloroethane (DDT), Mercury, PCBs and 2,3,7,8 tetrachlorodibenzo-dioxin (2,3,7,8 TCDD)) within Minn. R. ch. 7052, the Great Lakes Water Quality Initiative (GLI) rule. The GLI rule focuses on bioaccumulative toxics within the Great Lakes and these four wild-life based standards are only applicable to the surface waters of the Lake Superior basin. Section VII of Minnesota's 2012 Methodology provides details of the water quality standards for DDT, Mercury, PCBs, and 2,3,7,8 TCDD. Data requirements and exceedance thresholds for pollutants with wildlife-based standards are the same as those used by the State in its assessments of pollutants that have human health-based chronic standards.[35]

Human consumption of fish is considered a separate use support in Minnesota. Toxicants may be at levels sufficient to support aquatic life but because of bioaccumulation the fish are not safe for human consumption. Mercury, PCBs and perfluorochemicals (ex. perfluorooctane sulfonate (PFOS)), are contaminants found in fish that are considered in Minnesota's assessments. Other bioaccumulative

[31] 2012 Methodology, page 20.
[32] 2012 Methodology, pages 22-23.
[33] 2012 Methodology, pages 23-24.
[34] 2012 Methodology, pages 23-24.
[35] 2012 Methodology, page 31.

pollutants such as DDT, dioxins and toxaphene have been analyzed in fish tissue samples but only where potential problems were suspected.[36]

In assessment of the aquatic consumption use support, Minnesota considers the use to be supported if it is safe to consume one fish meal per week over a lifetime. Limiting consumption to less than one meal per week indicates impairment. Impairment thresholds for PCBs and PFOS are established at the fish tissue concentration considered to be the upper threshold for one meal per week fish consumption advisory level for the 'sensitive' population.[37] The impairment threshold for PCBs is based on fish tissue concentrations exceeding 0.22 ppm and impairment threshold for PFOS is based on fish tissue concentrations exceeding 0.2 ppm.[38] In 2008, MPCA adopted into Minnesota Rule chapter 7050 a mercury fish tissue criterion of 0.2 ppm. This criterion for mercury is more stringent than the upper threshold for one meal per week fish consumption advisory for the sensitive population used by Minnesota Department of Health (MDH) fish consumption advisory. Consistent with Minnesota water quality standards, 0.2 ppm is the impairment threshold for aquatic consumption due to mercury.[39]

In the 2012 Methodology, MPCA included assessments based on standards for the protection of human health Class 1 drinking consumption. All groundwater and selected surface waters are designated as Class 1 resources in Minnesota.[40] The MDH monitors municipal finished water supplies for compliance with drinking water standards. The assessment of Class 1B and 1C listed surface waters for potential impairment by nitrate-nitrogen was outlined in the 2012 Methodology. Nitrate-nitrogen concentrations in drinking water exceeding the 10 mg/L safe drinking water standard (federal standard incorporated into Minn. R. ch. 7050.0221) pose a risk to human health. The 10 mg/L standard is an acute toxicity standard. Long term, chronic exposure to nitrate in drinking water is less well understood but has been linked to the development of cancer, thyroid disease, and diabetes in humans.

To assess drinking water-protected surface water (Class 1B and 1C) MPCA calculates a 24-hour average nitrate concentration and compares this average value to the 10 mg/L drinking consumption standard. If the water body exhibits two 24-hour exceedances within 3 years, then the water body is deemed impaired and placed on the 303(d) list. Exceedances were assessed over consecutive 3 year periods and the most recent 10 years of water quality data are considered. A minimum of five data points is required for assessments, but impairment determinations may be made with fewer data points when appropriate.[41]

4c. Assessment Based on Numeric Standards for Protection of Aquatic Consumption: wildlife-based standards

Minnesota rules set forth water quality standards for the protection of aquatic life uses related to wildlife consumers of aquatic organisms. Minnesota has four wildlife-based water quality standards (Minn R. ch. 7052, the Great Lakes Water Quality Initiative (GLI) rule). These water quality standards apply to concentrations of DDT, mercury, PCBs and 2,3,7,8-TCDD (tetrachlordibenzo-p-dioxin).[42] The GLI water quality standards focus on the reduction of bioaccumulative pollutants in the surface waters

[36] 2012 Methodology, page 24.
[37] Sensitive population is comprised of pregnant women, women who may become pregnant, and children under age 15. See Minnesota Department of Health, Minnesota Fish Consumption Advisory at [HYPERLINK "http://www.health.state.mn.us/divs/eh/fish/"] and 2012 Methodology, page 26.
[38] 2012 Methodology, page 27.
[39] 2012 Methodology, pages 27-28.
[40] 2012 Methodology, page 29.
[41] 2012 Methodology, pages 29-30.
[42] 2012 Methodology, page 31.

of the Lake Superior basin. It should be noted that the GLI standards within Minn R. ch. 7052 only apply to surface waters of the Lake Superior basin.[43]

4d. Assessment Based on Numeric Standards for Protection of Aquatic Recreation

Minnesota has two sets of numeric standards protecting waters for aquatic recreation. Numeric standards established for *E. coli* protect for primary and secondary body contact[44] while eutrophication standards protect for aquatic recreation in Minnesota lakes.

Minnesota has established *E. coli* standards for both Class 2 and Class 7 waters. Table 7 in Minnesota's 2012 Methodology identifies these water quality standards. The *E. coli* water quality standards include both a monthly geometric mean standard and an individual maximum standard. Minnesota considers both standards in their assessments. The monthly geometric mean *E. coli* standard is a geometric mean of not less than five samples collected in a month. However, most monitoring programs do not collect samples more often than once a month. In order to use the available data to the maximum extent, Minnesota aggregates available *E. coli* data for an individual month across the most recent 10 years of data. Minnesota's method of aggregating data for an individual month is based on a fecal coliform study conducted by the State which showed that for any given monitoring site there was less variability in fecal coliform data for a given month across years than there was for all months within one year.[45] Minnesota's prior assessment methodologies have included this same approach for fecal coliform assessments.

For assessment of the monthly geometric mean standard, the State considers the most recent 10 years of data, aggregates the data by individual month for a specific assessment unit, and if one or more months exceed the monthly geometric mean standard,[46] the assessment unit is added to Minnesota's 303(d) list. For assessment of the individual maximum standard, an assessment unit is added to Minnesota's 303(d) list if more than 10% of individual values over the most recent 10 years exceed the maximum *E. coli* standard.[47] In order to assess against the individual maximum *E. coli* threshold, Minnesota analyzes a minimum of 15 sampling points over the most recent 10 year period. Assessment decisions of data sets with less than the minimum number of samples are made by the WAT on a case by case basis.[48] Prior assessment methodologies established methods for assessment using fecal coliform data or a statistical relationship between fecal coliform and *E. coli* data. Minnesota explained that there is a considerable amount of *E. coli* and older fecal coliform data. Assessment decisions for the 2012 list used solely *E. coli* data. Exceptions to the exclusive use of *E. coli* measurements for assessment decisions (i.e., the use

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[43] 2012 Methodology, page 31.

[44] For purposes of bacteriological standards, recreation in or on the water is divided into two types: primary body contact and secondary body contact. Primary body contact is considered to be any type of water recreation during which the accidental ingestion of a small amount of water is likely such as swimming, snorkeling, SCUBA, water skiing, kayaking, tubing and wading by young children. Secondary body contact is considered to be any type of water recreation during which the accidental ingestion of a small amount of water is unlikely such as boating, canoeing, fishing and wading by older children and adults. *Statement of Need and Reasonableness, Book III of III, In the Matter of Proposed Revisions of Minnesota Rules Chapter 7050, Relating to the Classification and Standards for Waters of the State, July 2007, pg. 83,* and 2012 Methodology, page 32.

[45] 2012 Methodology, pages 32-34, and *Fecal Coliform Bacteria in Rivers,* MPCA, H.D. Markus, 1999 in EPA Region 5's 2002 administrative record to support EPA's approval of Minnesota's 2002 303(d) list.

[46] The monthly geometric mean water quality standard for Class 2 waters is 126 organisms per 100mL of water and for Class 7 waters is 630 organisms per 100mL of water. See 2012 Methodology, pages 32-34, Minn. R. ch. 7050.0222 subp. 2-5, and Minn. R. ch. 7050.0227 subp. 2.

[47] The *E. coli* maximum individual water quality standard for both Class 2 and 7 waters is 1260 organisms per 100mL of water. See 2012 Methodology pages 32-34, and Minn. R. ch. 7050.0222 subp. 2-5, and Minn. R. ch. 7050.0227 subp. 2.

[48] 2012 Methodology, page 32.

of fecal coliform data to augment the *E. coli* data set) were only employed in special cases. These exceptions utilized the ratio of 200 cfu/100 mL (fecal coliform) to 126 cfu/100 mL (*E. coli*).

Minnesota's promulgated ecoregion-based lake eutrophication numeric water quality standards for total phosphorus, chlorophyll-a (chl-a) and Secchi Disk depth (Minn. R. ch. 7050.0222 subp. 2-4.) are the parameters monitored in lake assessments. Eutrophication standards are specific to ecoregion and lake depth. Minn. R. ch. 7050.0150 defines the State-recognized depths of a lake, a shallow lake, a reservoir and a wetland. The determination between the four requires an analysis of basin depth and littoral area. Appendix A of the 2012 Methodology lists the factors used to separate lakes, shallow lakes and wetlands.[49] Table 9 of Minnesota's 2012 Methodology identifies the lake eutrophication standards used for aquatic recreation use assessments.

Assessments utilizing the eutrophication water quality standards consider data collected over the most recent 10-year period. Samples must be collected over a minimum of 2 years and sampled from June to September. Typically, a minimum of 8 individual data points for TP, corrected chl-*a* (chl-*a* corrected for pheophytin), and Secchi are required.[50] If there are multiple samples collected on the same day, the daily average of samples collected is calculated. All daily data from June to September is averaged to calculate a summer mean value. The summer mean value is the water quality measurement compared to eco-region and depth specific water quality standards. Lakes where total phosphorus and at least one of the response variables (chl-a or Secchi disk depth) exceed the applicable standard are identified on Minnesota's 303(d) list as impaired.[51]

4e. Assessment Based on Numeric Standard for Protection of Limited Resource Value Waters

Minnesota rules set forth water quality standards for Class 7 waters in chapter 7050.0227. The rules include standards for *E. coli*, dissolved oxygen, pH and toxic pollutants. Limited resource value waters include surface waters of the State that have been subject to a use attainability analysis and have been found to have limited value as a water resource. These waters are specifically listed in rule 7050.0470 and are protected so as to allow secondary body contact use, to preserve the groundwater for use as a potable water supply, and to protect aesthetic qualities of the water.[52]

Because Class 7 waters may be used by game fish for spawning and/or maintaining minnow populations during brief periods in the spring, a special protection against bioaccumulative pollutants is needed.[53] The 2012 Methodology includes a discussion on the application of toxic standards to Class 7 waters. The water quality standard states, "*toxic pollutants shall not be allowed in such quantities or concentrations that will impair specified uses*."[54] The 2012 Methodology explains that for Class 7 assessments, for most toxic pollutants, the maximum standard or 100 times the chronic standard, whichever is lower, would apply. For bioaccumulative pollutants in Class 7 designated waters, the chronic standard would apply.

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[49] 2012 Methodology, pages 35-36.
[50] 2012 Methodology, pages 35-36.
[51] Minnesota Rules include narrative eutrophication standards for Class 2 lakes, shallow lakes and reservoirs which explain a polluted condition as an exceedance of total phosphorus and either the chlorophyll-a or Secchi disk standard using data that is averaged over the summer season. See Minn. R. ch. 7050.0222 subp. 2a, 3a, and 4a.
[52] 2012 Methodology, page 37.
[53] 2012 Methodology, page 37.
[54] Minnesota Administrative Rules (MN R. ch. 7050.0227), https://www.revisor.mn.gov/rules/?id=7050.0227

5. Removing a Water from the 303(d) List

Minnesota's 2012 Methodology identifies four reasons for removing a water from the 303(d) list;

- If, during subsequent monitoring or the development of the TMDL study, new and reliable water quality data or information indicates that the water body is no longer impaired and is meeting water quality standards. Such a water body would be de-listed before a TMDL plan was completed.
- If a TMDL assessment and preliminary plan for reducing the sources of pollution is completed and approved by the EPA.
- If the sources of impairment are determined to be non-anthropogenic in origin.
- If it was determined that the water body was placed on the list in error.[55]

When deciding to remove a water body from the 303(d) list based on new data and information, the State generally applies the same standards, guidelines and thresholds used to add a water to the 303(d) list. The 2012 Methodology identifies minimum data requirements and impairment thresholds that must be considered for the various categories of pollutants before removing a water body from the 303(d) list.[56] Decisions to remove a water body from the 303(d) list are subject to review by the appropriate MPCA staff and PJG.

The second basis for removing a water body from the 303(d) list is where a TMDL has been approved by EPA. In accordance with Minnesota's 2012 Methodology, if a water body is identified as being impaired, and EPA has approved all necessary TMDLs for that water body, then the water body will be placed in category 4A. It should be noted that the water body is still considered as impaired and remains on the Impaired Waters Inventory (part of MPCA Integrated Report submittal to the EPA). The water body will remain on the Impaired Waters Inventory until it is demonstrated that the water body supports all of its beneficial uses (i.e. meets water quality standards for each beneficial use designation).

The third basis for removing a water body from the 303(d) list is where a water body is found to be impaired by natural conditions, i.e., non-anthropogenic in origin. In this situation, all sources of the impairment are naturally occurring. Although Minnesota continues to identify these waters as impaired, it places these waters in category 4D (i.e. impaired but does not require a TMDL).

The fourth basis for removing waters from the 303(d) list occurs under circumstances where:

- A water was placed on the 303(d) list in error (ex. wrong AUID assigned);
- A resegmentation or reclassification of a water has occurred since the last listing cycle;
- There has been a change/update to the State's standards or methodology since the last listing cycle.

Errors can be made in the original assessment of a water body. These errors, which may be a result of either human or computer error, are usually discovered during future assessments. Occasionally there is a need for the State to change how a water body is divided into assessment units. This change may cause a water body originally listed under one specific assessment unit ID# to now be listed as two new ID#s. Although it may appear that changing the ID# results in removing waters from or adding waters to the 303(d) list, in most cases the original impaired water is still on the list, it is just identified in a different

[55] 2012 Methodology, page 39.
[56] 2012 Methodology, pages 39-40.

manner. Another water identification change that could affect how a water is listed is when a lake is reclassified. As the State develops watershed plans and TMDLs, specific lake characteristic information could become available which would cause the State to re-evaluate how the lake is classified; e.g., deep or shallow. Since water quality standards are applicable to a lake based on lake type and lake location, a change in a lake's classification could change where the State places that lake in its integrated report.

Minnesota revises its methodology in response to changes to the State's water quality standards. For the 2012 listing cycle, the state made no significant changes to water quality standards which impacted the 2012 303(d) list.

Table A-2 of this Decision Document provides a list of the assessment unit/pollutant combinations that Minnesota has removed from its 303(d) list. EPA concludes that the State has demonstrated good cause for removing these waters from the 303(d) list. In evaluating the reasonableness of the State's decision to remove these waters, EPA considered the delisting explanations provided by the State in its 2012 submittal, [57] information made available to the public during the public notice and comment period, and MPCA lake/wetland and stream assessment transparency documents made available to the public on MPCA's website.[58]

Consideration of Existing and Readily Available Water Quality-Related Data and Information

1. State Monitoring Data and Information

Minnesota conducts a variety of surface water monitoring activities which focus on generating crucial water quality data for assessing the chemical, biological, bacteriological, and physical conditions, within Minnesota's surface waters. This information is used to assess potential and actual threats to water quality within the State and to evaluate the effectiveness of management strategies taken to address impairments and other threats to water quality. Water quality monitoring by local, state and federal partners, along with citizen monitoring efforts, and remote sensing monitoring are all utilized by MPCA in its assessment process.

Through the 2010 listing cycle, MPCA assessed the condition of the State's waters via a biennial, statewide assessment process. Over the previous few years, MPCA has moved away from a statewide monitoring approach and focused its efforts toward targeted watersheds via the intensive watershed monitoring strategy. The IWMA generates more voluminous data sets within those watersheds targeted for water quality monitoring. The 2012 listing cycle is the first assessment cycle in which MPCA is assessing water quality data from earlier IWMA efforts. For assessment decisions made for the 2012 listing cycle, MPCA assessed water quality information from watersheds listed in Table 3 of this decision document. It should be noted, that water quality sampling, under the IWMA, was conducted in the watersheds in Table 3 during 2007, 2008 and 2009.

[57] See *Inventory of all impaired waters*, *De-listings from the inventory*, *Changes initial to final draft*, and *New removals from the 2012 inventory* within submitted spreadsheets from MPCA for detailed discussion from State

[58] http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/assessment-and-listing/303d-list-of-impaired-waters.html

Table 3: Watersheds in which water quality data was assessed for the 2012 Listing Cycle

Watershed Name	Year in which data was collected under the Intensive Watershed Monitoring Approach (IWMA)
North Fork of the Crow River Watershed	2007
Pomme de Terre River Watershed	2007
Le Sueur River Watershed	2008
Little Fork River Watershed	2008
Mississippi (Red Wing) River Watershed	2008
Red River of the North (Headwaters) Watershed	2008
Root River Watershed	2008
Sauk River Watershed	2008
Tamarac (Red River of the North) River Watershed	2008
Buffalo River Watershed	2009
Cedar River Watershed	2009
Chippewa River Watershed	2009
Mississippi (St. Cloud) River Watershed	2009
Shell Rock River Watershed	2009
St. Croix (Stillwater) River Watershed	2009
St. Louis River Watershed	2009

Toxic parameter monitoring continues to occur on a statewide basis. Assessment of those parameters is done on a statewide basis every two years. Watershed assessments employed via the IWMA focus primarily on the aquatic life and recreation beneficial uses. Statewide assessments focus primarily on aquatic consumption and aquatic life toxicity. MPCA has set a schedule to intensively monitor each major watershed once every 10 years (Figure 1 of this Decision Document). The IWMA is designed to identify waters which are impaired and require restoration. Also, information from the IWMA is utilized to identify those waters which are not yet impaired but require further protection to prevent water quality conditions which would lead to that water body being designated as impaired.

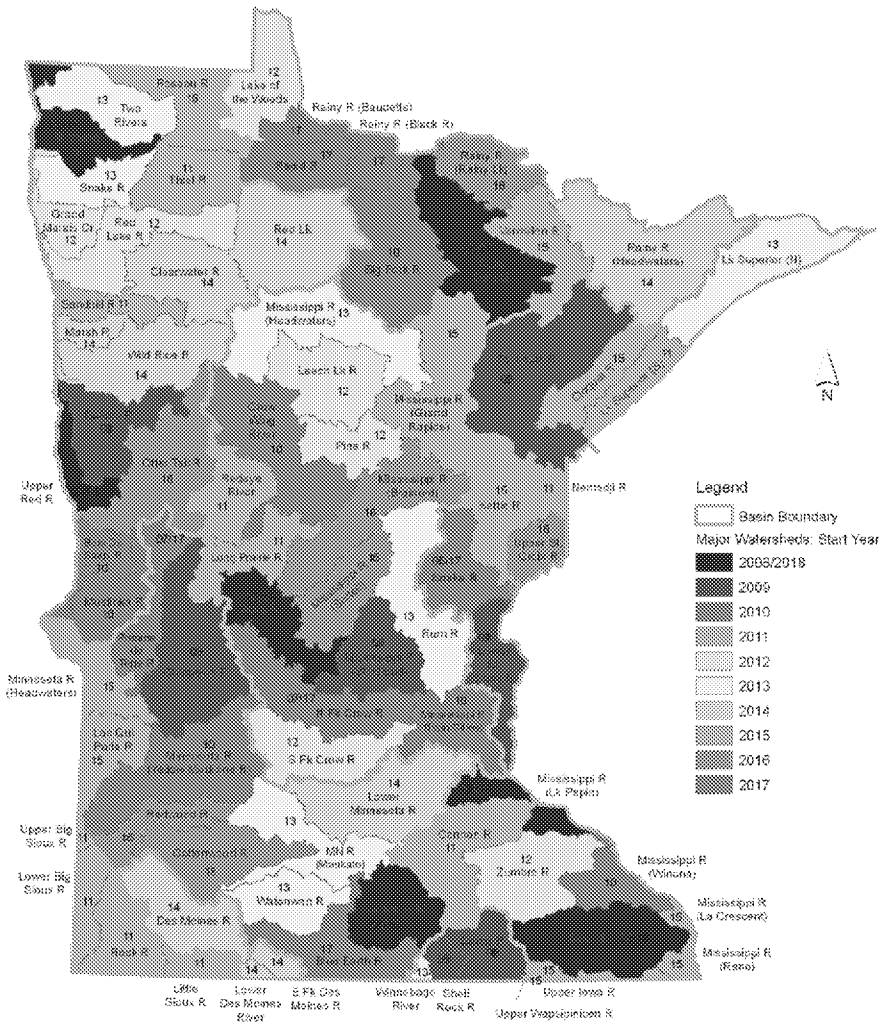

Figure 1: Intensive Watershed Monitoring Map (2008 to 2018)[59]

MPCA's review of water quality data collected during the IWMA involves a five step approach, discussed earlier in this Decision Document in Section 3. The four steps discussed immediate below are related to MPCA's approach for addressing water quality impaired segments.

<u>Step 1:</u> Monitor and gather data information

MPCA employs an intensive watershed monitoring schedule that provides for comprehensive assessments of all of the major watersheds on a 10-year cycle. This schedule provides intensive monitoring of streams and lakes within each major watershed to determine overall health of the water resources, to identify impaired waters, and to identify those waters in need of additional protection to prevent future impairments.

[59] MPCA Watershed Monitoring Approach (Intensive Watershed Monitoring Map), http://www.pca.state.mn.us/index.php/water/water-types-and-programs/surface-water/watershed-approach/watershed-approach.html

Step 2: Assess the data
Based on results of intensive watershed monitoring in step one, MPCA staff and its partners implement a rigorous process to determine whether or not water resources meet water quality standards and designated uses. Waters that do not meet water quality standards are listed as impaired waters.

Assessment of toxic parameters (eg. mercury) continues to occur on a statewide basis every two years. The statewide toxic assessment focuses on those pollutants which influence aquatic consumption and aquatic life toxicity. Also, while MPCA's IWMA focuses monitoring efforts on selected watersheds each year, the State does not discourage outside parties from submitting data and proposing waters to be considered for the 303(d) list which lie outside of the watersheds targeted by the IWMA. MPCA accepts water quality information during the public notice period of the draft 303(d) TMDL list (for the 2012 listing cycle, this was January 23, 2012 to February 27, 2012).

MPCA uses data collected over the most recent 10-year period for water quality assessments.[60] The 'year of record' is based on the USGS water year (October 1 of one year through September 30 of the following year). A full 10 years of data are not required to make an assessment. MPCA uses a 10-year period to provide reasonable assurance that data will have been collected over a range of weather and flow conditions and that all seasons will be adequately represented. MPCA also considers trends in water quality data or changes in climatic conditions (eg. drought periods) which impact water quality during the 10-year period. EPA finds the State's use of the 10-year period for water quality assessments a reasonable approach to ensure that data are collected over a range of weather and flow conditions, and that all seasons are adequately represented.

Step 3: Establish implementation strategies to meet standards
Based on the watershed assessment, a TMDL study and/or protection strategy is completed. Existing local water plans and water body studies are incorporated into the planning process.

Step 4: Implement water quality activities
Included in this step are all traditional permitting activities, in addition to programs and actions directed at nonpoint sources. Partnerships with State agencies and various local units of government, including watershed districts, municipalities, and soil and water conservation districts, will be necessary to implement these water quality activities.

2. Active Solicitation of Data from other Sources
MPCA relies on data it collects along with data from other credible sources, such as other state and federal agencies, local government partners and volunteers, to assess water bodies. In preparation for assessing waters for the 2012 listing cycle, MPCA actively solicited data and information for use in the assessment process. MPCA communicates annual 'Calls for Water Quality Data' which encourage local water organizations to share water quality information. MPCA completed a *Call for Data for the 2010 Annual Surface Water Assessments* and *Call for Data for the 2011 Annual Surface Water Assessments* prior to the 2012 assessment of water quality data by MPCA. These communications are made through the State's 'GovDelivery' electronic mail distribution system.[61] In the *Call for Water Quality Monitoring Data* communication MPCA clearly outlines date deadlines for data submittal from outside parties/organizations. Data submitted before the deadline was considered by MPCA in its staff review

[60] 2012 Methodology, pages 8-9.
[61] *2012 Call for Data email* (email dated October 5, 2011), shared by David Christopherson (MPCA) via Email on 11/9/12 at 8:04 PM.

process to determine whether or not the water body was meeting appropriate water quality standards and designated uses.

In addition to the *Call for Water Quality Monitoring Data* MPCA also conducted a series of meetings around the State with watershed partners in the 16 watersheds (Table 3 of this Decision Document) identified for Intensive Watershed Monitoring within the 2012 listing cycle. During these informal meetings, MPCA asked watershed partners to submit relevant water quality monitoring data for water bodies within each of these watersheds. The 2012 listing cycle was the first listing cycle where MPCA did not publish a solicitation for water quality monitoring data within the Minnesota State Register. MPCA explained that in addition to changes carried forward in the water quality monitoring strategy (i.e. the change to an Intensive Watershed Monitoring strategy) it elected to alter its communication strategy for petitioning for water quality information. MPCA chose to directly contact watershed partners within the 16 watersheds, and felt that this was a more efficient and effective use of resources than State Register announcements.[62]

In 2003, MPCA issued the *Volunteer Surface Water Monitoring Guide*. This guidance discusses data uses and goals of data collection, data quality issues, and includes a specific section on monitoring requirements for data that can be used in 305(b) and 303(d) assessments.[63] This guidance, along with information contained in the formal *Call for Water Quality Monitoring Data (email dated October 5, 2011)*, cited MPCA webpages where interested parties could obtain specific criteria that water quality monitoring data and other information submitted must meet in order to be considered in MPCA's staff review assessment process.

Data used by the State in its assessments are stored in MPCA's water quality data management system, Environmental Quality Information System (EQuIS). EQuIS is the central data repository for assessment information utilized by MPCA. Water quality monitoring data collected by parties other than MPCA are added to EQuIS so long as they meet acceptable MPCA quality assurance and quality control (QA/QC) protocols. Data meeting the QA/QC requirements are entered into EQuIS so that a permanent record is created and data may be merged or considered in light of any other data available for a given water body. Monitoring and data management at MPCA are in accordance with the requirements specified in the Quality Management Plan (June 2007) approved by the EPA and available for review via MPCA's website.[64]

3. Public Participation

In developing Section 303(d) lists, States are required to assemble and evaluate all existing and readily available water quality-related data and information, including consideration of existing and readily available data, and information about waters for which water quality problems have been reported by members of the public.[65] EPA expects states to have full public participation in development of their 303(d) lists prior to submitting the final 303(d) list to EPA for review. Public participation efforts need to be consistent with Section 101(e) of the CWA. When a proposed list has been established, states should, in accordance with the requirements in 40 CFR Part 25, provide the opportunity for public notice

[62] Electronic mail communication (11/9/12 at 8:04 PM): David Christopherson (MPCA) to Paul Proto (EPA, R5).
[63] Appendix D of the *Volunteer Surface Water Monitoring Guide* provides specific requirements for MPCA integrated assessments. This Appendix was revised in September 2009.
[64] MPCA Water Quality Management Plan (June 2007), http://www.pca.state.mn.us/index.php/view-document.html?gid=5479
[65] 40 CFR §130.7.

and submission of comments from the public. States should prepare responses for the comments received.[66]

Minnesota provided the public with the opportunity to review and comment on the assessment decisions through a 35-day formal comment period, public informational meetings and availability of the 2012 Methodology and draft 303(d) list. The 35-day formal comment period was from January 23, 2012 to February 27, 2012. Normally, MPCA holds a 30-day public comment period. For the 2012 listing cycle, MPCA extended its public comment period by 5 additional days. MPCA held seven informational meetings at various locations throughout the State between December 21, 2011 and January 25, 2012. Notice of these meetings and/or the 35-day formal comment period was made available to the general public through news releases, a November 2011 mass mailing by MPCA, information on MPCA's website, and publication in the State Register.[67]

Thirty-nine (39) comment letters or electronic correspondences, were received by MPCA during the public comment period (January 23, 2012 to February 27, 2012). MPCA considered the comments from all thirty-nine comment letters and provided responses to the commenters in a response to public comments summary document. MPCA's response to public comments was shared on an MPCA 2012 303(d) webpage.[68] With the exception of responses to comments regarding Jail and Wine Lakes discussed below, EPA believes that MPCA adequately addressed the comments submitted during the public notice period. MPCA included its responses to public comments within its final 2012 303(d) submittal package to EPA on October 1, 2012.

Data received by MPCA in response to the *Call for Water Quality Monitoring Data* before November 1, 2011, were uploaded into EQuIS for review by MPCA staff. Water quality monitoring data and other information related to specific water bodies, received in public comments within the 35-day public notice period were also uploaded to EQuIS and considered by MPCA staff. Loren J. Larson of Plymouth, Minnesota, submitted summary data showing exceedances of the lake eutrophication water quality standards and a request that MPCA include Jail Lake (18-0415-00) on the 2012 303(d) list.[69] MPCA responded to the commenter within the response to public comment document. MPCA explained that it will review all available water quality data for Jail Lake, and other waters within the Pine River watershed, during the Pine River Watershed comprehensive assessment scheduled for 2014. MPCA stated that deviations from the watershed schedule will be considered by exception, and it will only consider data outside of the schedule if the local benefits of the schedule exception offset the lost assessment efficiency and effectiveness that results from an "out-of-order" assessment.[70]

On February 27, 2012 MPCA asked that the commenter provide the rationale as to why Jail Lake should be considered for listing outside of the Intensive Watershed Monitoring schedule as explained in MPCA 2012 Methodology document. The response received from the commenter by MPCA on March 11, 2012 indicated that local monitoring efforts were losing funding due to the completion of an MPCA grant, and

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[66] *Supplemental Guidance on Section 303(d) Implementation,* EPA Memorandum, August 13, 1992, *Approval of 303(d) Lists, Promulgation Schedules/Procedures, Public Participation*, EPA Memorandum, October 30, 1992, and *Guidance for 1994 Section 303(d) Lists,* EPA Memorandum, November 26, 1993.
[67] State Register Vol. 36 No. 27 p. 847-849, http://www.comm.media.state.mn.us/bookstore/stateregister/36_27.pdf.
[68] MPCA Impaired Waters 2012 TMDL List, http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/impaired-waters-list.html.
[69] See February 27, 2012 correspondence from Loren J. Larson to Howard Markus and *Appendix B: MPCA's response to comments on the draft 2012 TMDL*, which was included in Minnesota's 2012 submittal (received by EPA on October 1, 2012).
[70] 2012 Methodology, page 3.

that a TMDL was required to improve conditions of the lake. MPCA decided that a potential Jail Lake TMDL would at the earliest be initiated by MPCA after the watershed assessment scheduled for early 2014. MPCA did not add Jail Lake to the final 2012 303(d) list.

EPA disagreed with MPCA's decision not to add Jail Lake to the final 2012 303(d) list as a Category 5 water body.[71] EPA explained that the water quality monitoring data shared by the commenter were appropriate data (i.e. within the EQuIS data management system and met the minimum data requirements for lake eutrophication described within the 2012 Methodology[72]) and that MPCA should have considered this water quality data in its assessment of Jail Lake. While EPA understands MPCA's interest in following the State's schedule for its systematic watershed approach (the Intensive Watershed Monitoring strategy) when assessing water quality monitoring data, MPCA needs to consider all readily available and accessible data for assessment decisions. In an email message sent on November 30, 2012, EPA requested that MPCA add Jail Lake (18-0415-00) to the final 2012 303(d) list as a Category 5 water body. MPCA agreed with the request in an email sent to EPA on December 10, 2012 and added Jail Lake to the final 2012 303(d) list.

Tera L. Guetter, on behalf of the Pelican River Watershed District, submitted available water quality data and a request that MPCA return St. Clair Lake (03-0382-00) to the 2012 303(d) list. MPCA removed St. Clair Lake from the 303(d) list due to 'insufficient data.' The commenter also requested that MPCA include Wine Lake (03-0398-00) as a Class 5 water body on the final 2012 303(d) list. The commenter included summary water quality data from the EQuIS data management system to demonstrate non-attainment of lake eutrophication water quality standards for both St. Clair Lake and Wine Lake in her February 15, 2012 letter to Howard Markus (MPCA).[73] Upon further consideration, MPCA concurred that St. Clair Lake should be returned to the 2012 303(d) list as a Category 5 water body.

MPCA asked the commenter to provide additional rationale as to why Wine Lake should be considered for listing outside of the Intensive Watershed Monitoring schedule as explained in MPCA 2012 Methodology document. MPCA was not persuaded that Wine Lake should be added as a Category 5 water on the final 2012 303(d) list. EPA disagreed with MPCA on this decision.[74] EPA explained that the water quality monitoring data shared by the commenter were appropriate data (i.e. within the EQuIS data management system and met the minimum data requirements for lake eutrophication described within the 2012 Methodology[75]) and MPCA should have considered this water quality data in its assessment of Wine Lake. In an email message sent on November 30, 2012, EPA requested that MPCA add Wine Lake (03-0398-00) to the final 2012 303(d) list as a Category 5 water body. MPCA agreed with the request in an email sent to EPA on December 6, 2012 and added Wine Lake to the final 2012 303(d) list.

Jean B. Sweeney, Vice President of 3M Environmental, Safety and Health Operations, on behalf of 3M, submitted data and a request that the State remove four assessment units in Pool 2 on the Mississippi

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[71] See Administrative Record Document #35, telephone conversation between EPA and MPCA on November 7, 2012.
[72] 2012 Methodology, page 35.
[73] See February 15, 2012 correspondence from Tera L. Guetter to Howard Markus and *Appendix B: MPCA's response to comments on the draft 2012 TMDL*, which was included in Minnesota's 2012 submittal (received by EPA on October 1, 2012).
[74] See Administrative Record Document #35, telephone conversation between EPA and MPCA on November 7, 2012.
[75] 2012 Methodology, page 35.

River, which have been identified by MPCA as being impaired for aquatic consumption due to PFOS.[76] PFOS are manmade chemicals used to manufacture products which are heat resistant, stain resistant and repel water. Minnesota originally added these four assessment units within Pool 2 to its 2008 303(d) list based on water quality data which showed that a consumption advisory was necessary for the freshwater drum species in Pool 2. Minnesota Administrative Rules (7050.0150 subpart 7) stated that, "A waterbody will be considered impaired when the recommended consumption frequency is less than one meal per week, such as one meal per month, for any member of the population…the impaired condition must be supported with measured data on the contaminant levels in the indigenous fish."

Despite the data and information submitted by the commenter, the State believes that assessment units in Pool 2 are still not meeting the recommended consumption frequency and therefore not meeting water quality standards. MPCA declined to remove these 4 assessment units from the 2012 303(d) list, explaining that the commenter failed to provide sufficient data to support her case for delisting. In particular, MPCA found that the water quality data submitted by the commenter were not robust enough to cite downward trends in PFOS concentrations within fish tissue in Pool 2. MPCA stated in its response to public comment document, *"Given the wide range of PFOS concentrations observed in Pool 2 fish tissue and the insufficiency of available data, MPCA believes it is prudent and protective of public health and the environment to be very cautious as MPCA determines if and when to delist Pool 2 as an impaired water."*[77] MCPA indicated that fish tissue data from Pool 2 would continue to be analyzed in future assessment cycles and explained that it was working with the MDNR and the MDH to complete additional fish sampling of Pool 2 in the future. EPA agrees with MPCA that due to the variability of PFOS concentrations and the insufficiency of available data, delisting is not supported. EPA finds the continued listing of the four assessment units in Pool 2 on the Mississippi River, identified by the commenter, as being impaired for aquatic consumption due to PFOS on the State's 2012 303(d) list to be reasonable.

Although no other public comments included data, some comments highlighted data and information that were already available to the State, and requested that the State reconsider this available information. Commenter Paul Nelson, a Program Manager for Scott County's Natural Resources Program, submitted a request encouraging MPCA to reconsider the data and information used in listing two river segments.[78] The commenter proposed that MPCA remove County Ditch 10 (CD3 to Raven Str) (07020012-628) and Picha Creek/Unnamed Creek (Unnamed Creek to Unnamed Creek) (07020012-579) from the State's 2012 303(d) list due to the misidentification of designated use for County Ditch 10, and the misidentification of a sampling location and flawed water quality monitoring data which led to the listing for Picha Creek/Unnamed Creek.

Upon reconsideration of information presented by the commenter, MPCA determined that County Ditch 10 and Picha Creek/Unnamed Creek were to remain on the 2012 303(d) list. MPCA explained that for Picha Creek to be removed from the 303(d) list, MPCA would need to see evidence that low flow conditions cited by the commenter were due solely to natural factors, and that the natural factors were the only stressors causing or contributing to the impairment. The stressor identification document for

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[76] See January 31, 2012 correspondence with enclosures from Jean B. Sweeney to Howard Markus and *Appendix B: MPCA's response to comments on the draft 2012 TMDL*, which was included in Minnesota's 2012 submittal (received by EPA on October 1, 2012).
[77] See MPCA's *Responses to the draft 2012 Total Maximum Daily Load List 30-Day Public Notice Comments (September 7, 2012)* document (received by EPA on October 1, 2012).
[78] See February 2, 2012 electronic mail (E-mail) correspondence from Paul Nelson to Howard Markus and *Appendix B: MPCA's response to comments on the draft 2012 TMDL*, which was included in Minnesota's 2012 submittal (received by EPA on October 1, 2012).

Picha Creek, which was assembled by MPCA staff, indentified other potential non-natural causes (ex. habitat fragmentation, habitat alteration and sedimentation) which are likely causing and contributing to the impairment in Picha Creek. MPCA also explained that County Ditch 10 (CD3 to Raven Str) (07020012-628) was assigned the correct designated use and provided supporting data which demonstrated that the water body was impaired for bacteria. EPA agrees with MPCA's analysis and finds the continued listing of County Ditch 10 (CD3 to Raven Str) (07020012-628) and Picha Creek/Unnamed Creek (Unnamed Creek to Unnamed Creek) (07020012-579) on the State's 2012 303(d) list to be reasonable.

Commenter Greg Bartz of Sleepy Eye, Minnesota, with the support of approximately twenty-seven (27) other co-signees, submitted a request encouraging MPCA to reconsider data and information utilized in designating County Ditch 10 (John's Creek) (07020007-571) as impaired for nitrate-nitrogen exceedances. The commenter explained that county and judicial ditches cannot be designated as impaired for Class 1 or Class 2 water quality standards. Also, the commenter described how MPCA misidentified County Ditch 10 as a trout stream and the Minnesota River basin has not historically had trout species in its waters. The commenter believes that the impairment listing is incorrect if the listing is based on the protection of an introduced species. Upon reconsideration of information presented by the commenter, MPCA determined that County Ditch 10 was to remain on the 2012 303(d) list. MPCA cited Minnesota Rule 7050.0470, subpart 5 as justification for designating County Ditch 10 as a Class 1b water. Class 1b waters are protected for drinking water use (under Minnesota Rule 7050.0220, subpart 3a) and waters recognized as potential drinking water resources are protected under a nitrate-nitrogen water quality standard. Since MPCA has appropriately identified County Ditch 10 as a water where Class 1b water quality standards are applicable and data supports a finding that it has exceeded the nitrate-nitrogen water quality standard, EPA find MPCA's listing of County Ditch 10 on the State's 2012 303(d) list to be reasonable.

Commenter Tom Moe, on behalf of US Steel Minntac, submitted a request encouraging MPCA to reconsider the data and information utilized in designating the Minntac Tailings Basin (69-1351-00) as not attaining the water quality standards for mercury in fish tissue.[79] The commenter asserted that the Minntac Tailings Basin is not a water of the State. Additionally, the commenter communicated that US Steel Minntac had completed independent water quality sampling and had determined that mercury concentrations in fish tissue were below the water quality standard. The commenter did not provide water quality monitoring data to substantiate these claims. Upon reassessment, MPCA concluded that the Minntac Tailings Basin was not to remain as a Category 4A water, which would be addressed by the 2012 Revision to the Statewide Mercury TMDL. MPCA explained that the Minntac Tailings Basin is not a water of the State and is considered part of the facility's treatment system, covered under Minntac's NPDES/SDS permit. Since the Minntac Tailings Basin is not a water of the State, EPA finds it reasonable for MPCA to delist the water.

Several commenters requested that MPCA reconsider the listing of Seven Mile Creek (07020007-562) for violations of the chlorpyrifos water quality standard. Chlorpyrifos is a pesticide which is used throughout the State. Amy Linnerooth of Nicollet County, Kerry Hastings and Elisha Modisett-Kemp from Dow AgroSciences LLC, Ken Ostlie of the University of Minnesota, Kurt Kruger of the Minnesota

[79] See January 31, 2012 E-mail correspondence from Jesse Anderson (MPCA), referencing the commenter Tom Moe, to Howard Markus and *Appendix B: MPCA's response to comments on the draft 2012 TMDL*, which was included in Minnesota's 2012 submittal (received by EPA on October 1, 2012).

Soybean Growers Association, and John Mages of the Minnesota Corn Growers Association, were some of the commenters making this request. Upon consideration of the information submitted from these three commenters, MPCA determined that Seven Mile Creek should remain on the 2012 303(d) list for chlorpyrifos water quality violations.

The compound known as 'chlorpyrifos' is a pesticide which is measured via water quality studies carried out by the MDA. In its response to these commenters, the MPCA described how available pesticide data, collected by the MDA, were carefully screened to satisfy all quality assurance and quality control (QA/QC) protocols and Quality Assurance Program Plans (QAPPs). The MPCA considered the data collected within the Seven Mile Creek assessment unit to be valid and scientifically defensible.

In addition to the MPCA's defense of MDA's procedures within the response to public comments summary documentation, the MDA also drafted and included a letter (dated May 17, 2012) to public commenters. In this letter, MDA addressed individual questions from commenters and outlined other supporting scientific observations which were backed by MDA collected water quality data. MDA explained that although it did not detect exceedances of the chlorpyrifos water quality standard, it has observed upward trends in chlorpyrifos detection frequency and concentration magnitude. MDA attributed these increases to localized changes in pesticide usage and agricultural management practices.

MPCA added that MDA's water quality data observations combined with its own ambient water quality sampling data signified that Seven Mile Creek was threatened by chlorpyrifos and therefore should be listed on its 2012 303(d) list. MPCA will continue to monitor the Seven Mile Creek water body and will work with the MDA in promoting best management practices for pesticide usage throughout Minnesota. After reviewing the MDA data, EPA agrees with MPCA that the data meet the appropriate QA/QC protocols and the QAAP requirements, therefore, EPA finds MPCA's decision to list Seven Mile Creek (07020007-562) for impairments under chlorpyrifos water quality standard reasonable.

Kevin Pylka on behalf of PolyMet Mining Inc., Keith Hanson of the Minnesota Chamber of Commerce and David Skolasinski of Cliffs Natural Resources Inc., all submitted comments requesting MPCA reconsider Index of Biotic Integrity (IBI) listings in the 2012 303(d) list. The commenters stated that MPCA needs to provide the opportunity for public review and comment on the IBI development process including calibration, scoring and application of the IBI assessment methodology. Additionally, the commenters requested that MPCA provide a Statement of Need and Reasonableness (SONAR) for protocols and documentation associated with the IBI development.

MPCA's response to public comments document re-emphasized that MPCA's biological assessment process is grounded in the biological assessment framework provided in a SONAR document associated with the 2002 rulemaking for Minn. Rules 7050.0150, subp. 6. This document acknowledges the use of biological community assessments as direct ways of predictably measuring aquatic life conditions in streams, and that biological community assessments integrate the combined effects of all stressors over time and space. MPCA utilized this IBI assessment framework in its biological assessments for the 2012 303(d) list. MPCA explained that increases in the breadth and scope of sampling data, due to the Intensive Watershed Approach, have allowed MPCA to refine the calibration of its IBIs scoring system for the 2012 List. If and when the biological assessment process is further refined, MPCA indicated that future revisions will be available for review via the public notice process. Additionally, the MPCA communicated that it will keep the public updated on its progress through its webpage and other

communication outlets (ex. State Register notices, email notifications, public meetings etc.). Appropriate language outlining the changes to the biological assessment methodology will be reflected within the Methodology document (Assessment Guidance) for the listing cycle which the changes are applicable. Stakeholders may submit comments on the Assessment Guidance during the public notice period for the draft 303(d) list. EPA agrees that the IBI assessment methodology used for the 2012 303(d) list was subject to adequate public notice and comment and therefore finds MPCA's IBI listings to be reasonable.

Minnesota's final 2012 303(d) list did not include water bodies impaired due to nonattainment of the State's sulfate water quality standard (Minnesota Rule 7050.0224) (sulfate WQS). Prior 303(d) lists did not include impairment listings due to non-attainment of the sulfate WQS. In addition to the concerns expressed from tribal partners, MPCA received comments from members of the public requesting that the State reconsider listing specific water bodies for nonattainment of the sulfate WQS. Some of these commenters cited sulfate values above the sulfate WQS from draft and final Environmental Impact Statements (EIS) for mining operations in northern-central Minnesota. Other commenters referenced water bodies which they believed to be impacted by sulfate but did not provide water quality data in support of their comments.

As a result of public comments and discussions EPA held with federally recognized tribes, EPA completed an independent review of water bodies cited within the public comments submitted to MPCA in February 2012. EPA reviewed ambient water quality data related to segments discussed in the draft and final EIS, effluent discharge data from discharge monitoring reports, and NPDES permits and other sulfate and wild rice-related documentation. MPCA assisted EPA throughout this evaluation process. Based on this review, EPA did not identify any waters for which available data indicate that waters specifically identified in Minnesota Rule 7050.0224 & 7050.0470 as wild rice production waters were not attaining the sulfate water quality standard.

In its response to the public comments and EPA inquiries, MPCA explained that it does not intend to assess water bodies potentially impaired by sulfate until it has developed a wild rice/sulfate impaired waters assessment approach and this approach has gone through the necessary public review process. MPCA explained that without an approved wild rice/sulfate impaired waters assessment approach, it was inappropriate to analyze ambient sulfate data to determine compliance with the sulfate WQS for the 2012 303(d) list. MPCA committed to the development of a wild rice/sulfate impaired waters assessment approach for the 2014 listing cycle within its response to public comments received for the 2012 303(d) list and in subsequent communications with EPA. MPCA also committed to utilizing this wild rice/sulfate impaired waters assessment approach to analyze and assess water quality data for potential impairment of the sulfate water quality standard for the 2014 listing cycle.

MPCA's general method for assessing a water body for potential non-attainment of a water quality standard involves the review and analysis of ambient water quality data and the comparison of that data to the appropriate water quality standard. During the review of ambient water quality data, MPCA verifies that the data meet minimum data requirements, including the criteria defining the time period of sample collection, and determines whether they indicate the attainment or non-attainment of the relevant water quality standard. [80] If it is found that the water body does not meet the water quality standard, then the water is added to the State's 303(d) Impaired Waters list. MPCA has indicated that it cannot

[80] 2012 Methodology, pages 8-12.

undertake assessments utilizing its sulfate WQS until MPCA has developed a wild rice/sulfate impaired waters assessment approach. This assessment approach would outline the specific criteria which must be utilized in order to evaluate water bodies against the sulfate WQS.

In order for MPCA to develop its wild rice/sulfate impaired waters assessment approach, MPCA indicated that it must first clarify how it will define specific provisions within the sulfate WQS. In conversations with EPA, MPCA explained it must define the protocols it will use for determining which water bodies it considers as waters used for the production of wild rice. Additionally, MPCA must determine when the sulfate WQS applies to those waters, for the determination of the period when rice may be susceptible to damage from high sulfate levels. MPCA has committed to including the details of the wild rice/sulfate impaired waters assessment approach as part of its 2014 Integrated Report (IR) Methodology document.

MPCA is soliciting sulfate water quality data and wild rice information from tribal partners and other stakeholders in 2013, in advance of the assessment of waters for sulfate impairment for the 2014 303(d) list. MPCA has issued a *Call for Sulfate and Wild Rice Monitoring Data for the 2013 Assessment Cycle*[81] specific to sulfate and wild rice data. MPCA is accepting sulfate and wild rice related data through May 1, 2013. MPCA explains that these data will be analyzed and assessed against the wild rice/sulfate impaired waters assessment approach in 2013 and the determinations of these assessments will be reflected in the 2014 impaired waters list. MPCA stated that where sulfate water quality data meet all of the criteria for assessment and data indicate that a water body is not attaining the sulfate WQS, the State will list the water body as a Category 5 water on the 2014 303(d) list.

In the same email message to stakeholders[82] which announced the *Call for Sulfate and Wild Rice Monitoring Data For the 2013 Assessment Cycle* MPCA explained the procedures for sharing sulfate and wild rice data with MPCA by May 1, 2013. This email message clearly defined how interested parties could upload data to MPCA. Additionally, MPCA shared some of the progress which it had made in the development of the wild rice/sulfate impaired waters assessment approach. This information can be found on the MPCA's 'Minnesota's sulfate standard to protect wild rice' webpage.[83] MPCA communicated that it is still working on finalizing the wild rice/sulfate impaired waters assessment approach and plans to formally solicit input from tribes and other interested parties on the assessment approach. The solicitation and consideration of outside input will be completed prior to the MPCA's assessment of sulfate and wild rice data collected via *Call for Sulfate and Wild Rice Monitoring Data For the 2013 Assessment Cycle*. The final wild rice/sulfate impaired waters assessment approach will be included as part of MPCA's 2014 Integrated Report Guidance Manual for Assessing the Quality of Minnesota Surface Waters. EPA expects that this document will be public-noticed, along with the draft impaired waters list, sometime in the late fall of 2013 (approximately November 2013 to January 2014).

EPA encourages states to evaluate water bodies according to the provisions described in their integrated report assessment methodology. EPA believes that it is reasonable for MPCA to delay in its assessment of water bodies against the sulfate WQS until the 2014 303(d) list. EPA agrees with MPCA's decision to

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[81] State Register Vol. 37 No. 40 p. 1438, [HYPERLINK "http://www.comm.media.state.mn.us/bookstore/stateregister/37_40.pdf"]
[82] Email from Katrina Kessler (MPCA) on April 1, 2013
[83] Minnesota's Sulfate Standard to Protect Wild Rice [HYPERLINK "http://www.pca.state.mn.us/index.php/water/water-permits-and-rules/water-rulemaking/minnesotas-sulfate-standard-to-protect-wild-rice.html"]

not add the water bodies cited by the stakeholders and tribes for impairment of the sulfate WQS on the State's 2012 303(d) list. EPA expects MPCA to provide guidance on the following requirements in the development of the wild rice/sulfate impaired waters assessment approach:

- Criteria defining the minimum number of water quality sampling points necessary to make an assessment decision;
- Criteria defining the time period for collection of water quality sampling data to make an assessment decision (ex. sample collection must occur between X date and Y date);
- Criteria for whether ambient sulfate water quality data will be averaged, and if so, how; and
- A definition of 'seasonality' applicable to sulfate waters (i.e., when the water quality standard would be applicable to surface waters).
- A description of the approach MPCA will utilize for making determinations on whether a water body is classified as a 'wild rice production water';

EPA will continue to monitor the development of the wild rice/sulfate impaired waters assessment approach by MPCA and its use in assessing water bodies for the 2014 303(d) list.

Tribal Consultation

Under its tribal consultation process, EPA consults with federally-recognized tribal partners, on a government-to-government basis in instances when EPA decisions may impact tribal interests. EPA contacted federally-recognized tribal partners within the State of Minnesota to provide these partners the opportunity to consult with EPA on the final 2012 Minnesota 303(d) list of impaired waters. The Fond du Lac Band of Lake Superior Chippewa and Grand Portage Band of Ojibwe requested tribal consultation with EPA. EPA hosted a tribal consultation conference call on November 5, 2012, during which EPA and the tribes discussed tribal concerns related to Minnesota's final 303(d) list, the 2012 Assessment Methodology Guidance document, and other concerns expressed by the tribes. EPA considered the tribal input during its deliberations related to the approval of the final 2012 Minnesota 303(d) list. EPA provided the Fond du Lac Band of Lake Superior Chippewa and Grand Portage Band of Ojibwe a written response which explained how EPA considered their input in EPA's final decision on the list. This response was sent to the most senior tribal official involved in the consultation from the Fond du Lac Band of Lake Superior Chippewa and Grand Portage Band of Ojibwe.

Priority Ranking

EPA reviewed the State's priority ranking of listed waters for TMDL development, and concluded that the State properly took into account the severity of pollution and the beneficial uses to be made of such waters, as well as other relevant factors. MPCA's TMDL priority ranking is reflected in the scheduled target start and end dates for each impairment, as indicated on Minnesota's 2012 303(d) List. Schedules are developed by MPCA's watershed staff located in each regional office. MPCA management analyzes the schedules on a statewide basis and makes final decisions. The schedules are based upon the following ranking criteria:

- Sequencing with MPCA's intensive watershed schedule, which initiates monitoring in approximately eight major watersheds (HUC-8 size) each year. The watershed monitoring schedule was established by MPCA, and was designed to distribute workload as evenly as possible across all basins (1-2 watersheds per basin per year). In addition, watersheds selected for monitoring are based on a number of factors, including local organizational readiness to do the work, amount of data about the watershed, progression of work upstream to downstream, and

whether a major TMDL plan was recently completed and there is a desire to delay monitoring until after implementation work has been well established to understand progress. The ultimate goal is to complete the first round of watershed monitoring statewide by 2018.

- TMDLs are scheduled to be completed within approximately four years after the initiation of TMDL specific water quality monitoring. TMDLs are also considered as a component of the Watershed Restoration and Protection Strategies (WRAPs).
- TMDL projects that are currently in progress (particularly those that are independent of a scheduled WRAP).
- TMDLs that are scheduled to be started outside of a WRAP due to their unique or complex nature (i.e. toxic impairments like mercury, PCBs and other legacy pollutants).
- Beneficial use, severity of the pollution, regulated dischargers, public interest in the resource, and relative cost and resource requirements of a TMDL are also taken into account in the TMDL scheduling process.[84]

The State's priorities are reflected in the target start and completion dates provided on the 303(d) list. Minnesota has begun scheduling TMDL studies by a watershed approach, i.e., all rivers, streams and lakes in a watershed will be targeted for TMDL development at the same time. Minnesota has developed a schedule for monitoring all major watersheds using the watershed approach.

Criteria considered by the State in developing the watershed approach and associated schedules include, among other things, risk to human and aquatic health; readiness of partners and collaboration opportunities with partners to implement; basin management and basin planning efforts; and programmatic needs and resources. The target start and completion dates on the 303(d) list reflect these priorities. EPA reviewed the State's identification of WQLSs targeted for TMDL development in the next two years, and concludes that the targeted waters are appropriate for TMDL development in this time frame. Minnesota also submitted a long-term schedule for TMDL development for all waters on the 303(d) list. As a policy matter, EPA has requested that States provide such schedules, however, at this time EPA is not taking any action to approve or disapprove the State's long-term schedule pursuant to Section 303(d).

Tables

Table A-1: Approved 2012 303(d) List of Impaired Waters needing TMDLs
Table A-2: Waters being removed from 303(d) list

[84] See Administrative Record Document #9, "*Electronic mail message, Subject: MPCA responses to Batch Questions #2 and #3*", pages 1-2.