2006 Minnesota Water Quality: Surface Water Section

(Abbreviated Narrative Report)

Report to the Congress of the United States
Water Years 2004 - 05

2006 Integrated Report

General Report to the Congress of the United States Pursuant to Section 305(b) of the 1972 Clean Water Act

Water Years 2004-05

Beginning in 2004, the Minnesota Pollution Control Agency began providing the Water Quality Integrated Report to the U.S. Environmental Protection Agency. This report is intended to combine the requirements of Sections 305(b) and 303(d) through the following format: an annual electronic report accompanied biennially (in even years) by an abbreviated narrative report.

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Complete List of Acronyms

ADB	Assessment Database
APO	Administrative Penalty Order
ALUS	Aquatic Life Use Support
AQL	Aquatic Life Use Support
AQR	Aquatic Recreation Use Support
AQC	Aquatic Consumption Use Support
AU	Assessment Unit
AUID	Assessment Unit Identification
BAWWG	Biological Assessment Wetlands Working Group
BEACH	Beaches Environment Assessment and Coastal Health
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
BSD	Better Site Design
BWCAW	Boundary Waters Canoe Area Wilderness
BWSR	Minnesota Board of Soil and Water Resources
CALM	Consolidated Assessment and Listing Methodology
CFC	Chloroflourocarbons
ch.	Chapter
chl-a	Chlorophyll-a
CH_4	Methane
CHF	North Central Hardwood Forests
CLMP	Citizen Lake-Monitoring Program
CMS	Compliance Monitoring Survey
CO_2	Carbon Dioxide
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CSMP	Citizen Stream Monitoring Program
CWA	Federal Clean Water Act
CWAMMS	Comprehensive Wetland Assessment, Monitoring and Mapping Strategy
CWAP	Clean Water Action Plan
CWLA	Clean Water Legacy Act
CWP	Clean Water Partnership
DO	Dissolved Oxygen
E. Coli	Escherichia Coli
EMAP	Environmental Monitoring and Assessment Program
EQB	Minnesota Environmental Quality Board
FAV	Final Acute Value
GIS	Geographic Information System
GPS	Global Positioning System

HFC	Hydrofluorocarbon
Hg	Mercury
HRLs	Health Risk Limits
IBI	Index of Biotic Integrity
I&E	Information and Education
ISTS	Individual Sewage Treatment Systems
IUP	Intended Use Plan
LUG	Local Unit of Government
LSTS	Large (10,000 gallons/day) Subsurface Treatment System
LWQA	Legislative Water Quality Assessment
MCES	Metropolitan Council Environmental Services
MCL	Maximum Concentration Level
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
mg/L	Milligrams Per Liter
MDNR	Minnesota Department of Natural Resources
MN	Minnesota
MnDot	Minnesota Department of Transportation
MnRAM	Minnesota Routine Assessment Method
MPCA	Minnesota Pollution Control Agency
MS4	Municipal Separate Stormwater System
MWCA	Minnesota Wetland Conservation Act
N	Nitrogen
NE	Northeast
NGO	Non-Governmental Organizations
NGP	Northern Glaciated Plains
NH_3	Un-ionized Ammonia
NHD	National Hydrographic Dataset
NH_3-N	Ammonia-Nitrogen
NLF	Northern Lakes Forests
NPDES	National Permit Discharge Elimination System
NPS	Nonpoint Source
NSMPP	Nonpoint Source Management Program Plan
NWI	National Wetland Inventory
OIRW	Outstanding International Resource Waters
ORVW	Outstanding Resource Value Waters
P	Phosphorous
PBDE	Polybrominated Diphenyl Ethers
PCBs	Polychlorinated Biphenyls
PFC	Perfluorocarbon
PFOs and PFOA	Perflourinated Chemicals
ppb	Parts Per Billion

PPCPs	Pharmaceuticals and Personal Care Products
PPL	Project Priority List
QA/QC	Quality Assurance/Quality Control
R	Rule
Red River	Red River of the North
Report	Integrated Report
RF1	Reach File 1
RF3	Reach File 3
RIM	Reinvest in Minnesota
RRV	Red River Valley
SD	Secchi Disk
SDS	State Disposal System
SE	Standard Error of the Mean
SONAR	Statement of Need and Reasonableness
SRF	State Revolving Fund
STORET	Storage and Retrieval System
SWPPPs	Storm Water Pollution Prevention Plans
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
TSI	Trophic State Index
TSS	Total Suspended Solids
ug/L	Micrograms Per Liter
US	United States
UVB	Ultraviolet Radiation
USACOE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDA-FSA	United States Department of Agriculture
USDA-NRCS	United States Department of Agriculture Natural Resource Conservation Service
USEPA	United State Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WCA	State Wetland Conservation Act
WCP	Western Corn Belt Plains
WI	Wisconsin
WQ	Water Quality
WCA	State Wetland Conservation Act
WBS	Water Body System
WINS	Wastewaer Infrastructure Needs Survey
WQ	Water Quality
WQS	Water Quality Standards
WWTP	Wastewater Treatment Plant

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I. INTRODUCTION AND EXECUTIVE SUMMARY

The Minnesota Pollution Control Agency (MPCA) currently conducts a variety of surface and ground water monitoring activities that support our overall mission of helping Minnesotans protect the environment. To be successful preventing and addressing problems, decision-makers need good information about the status of the resources, potential and actual threats, options for addressing the threats, and data on how effective management actions have been. The MPCA's monitoring efforts are focused on providing that critical information. Overall, the MPCA is striving to provide information to assess – and ultimately to restore or protect – the integrity of Minnesota's waters.

Sections 305(b) and 303(d) of the Federal Clean Water Act (CWA) both call for states to report on their waters to help measure progress toward the national goals of fishable and swimmable waters. The MPCA is using the U.S. Environmental Protection Agency's (USEPA) Consolidated Assessment and Listing Methodology (CALM) for its 2006 Integrated Report.

CALM integrates the 305(b) Report with the 303(d) Impaired Waters List. It provides a framework for states and other jurisdictions to document how they collect and use water quality (WQ) data and information for environmental decision making. The primary purposes of these data analyses are to determine the extent that all waters are attaining water quality standard (WQS), to identify waters that are impaired and need to be added to the 303(d) list, and to identify waters that can be removed from the list because they are attaining standards.

The CALM requires States to create several new requirements or approaches to enable the Report and List to be blended:

- delineation of water quality assessment units (AUs) based on the National Hydrography Dataset (NHD);
- status of and progress toward achieving comprehensive assessments of all waters;
- WQS attainment status for every AU;
- basis for the WQS attainment determinations for every AU;
- additional monitoring that may be needed to determine WQS attainment status and, if necessary, to support development of Total Maximum Daily Loads (TMDLs) for each pollutant/AU combination;
- schedules for additional monitoring planned for AUs;
- pollutant/AU combinations still requiring TMDLs; and
- TMDL development schedules reflecting the priority ranking of each pollutant/AU combination.

One significant aspect of the first edition of the CALM was that all water bodies must be placed into one, and only one, of five categories as listed below. Minnesota will continue to use this categorization approach for 2006 reporting even though states now have the option of categorizing water bodies by use. The USEPA website has a significant amount of information on CALM and how it was developed at: http://www.epa.gov/owow/monitoring/calm.html.

The five categories in CALM are as follows:

Category 1: all designated uses are meeting WQS
Category 2: some uses are meeting WQS and there are insufficient data to assess other uses
Category 3: there are insufficient data to assess any uses
Category 4: at least one use is impaired, but a TMDL is not required
Category 5: at least one use is impaired and a TMDL is required. These become the List of Impaired Waters.

As noted above, a reach can only be placed into one Category using this approach. For example, if a reach is impaired for one pollutant but the other uses are being met, and a TMDL is required, that reach would be placed into Category 5. Furthermore, if the reach is impaired for more than one pollutant, the reach must stay in Category 5 until ALL pollutants have USEPA-approved TMDL plans.

New for 2006 reporting, states have the option of multiple categorizations of water body segments by use of Assessment Database (ADB) version 2.2. The multiple categorizations are based on categorizing each assigned use into one and only one of the five categories listed above instead of an 'overall' category for the water body. This would allow for better tracking of a state's assessment and work on improving impaired waters, but still does not allow for better tracking within a particular use having multiple impairments. Such a use would remain in Category 5 until all causes of impairment had approved TMDL plans. As mentioned earlier, Minnesota will not opt for the new categorization process for 2006 reporting.

Water Quality Assessments for Rivers and Lakes

Presented below are the summary tables for statewide river and lake assessments, using information from the ADB. An electronic update of the entire ADB is also being submitted to the USEPA. Waterbody specific information will be posted on the MPCA Web site, http://www.pca.state.mn.us/water/index.html. The methodology for determining these assessments is presented in Part III, Chapter 2.C. of this report.

<u>A Note to Readers about the Summary Tables</u>

This biennial report to Congress on the condition of the waters of the State is required under Section 305(b) of the Clean Water Act (CWA). The 2006 reporting year marks the second consecutive time that Minnesota is providing an integrated report, combining the reporting processes for both 305(b) and Section 303(d), the impaired waters listing section of the CWA. The U.S. Environmental Protection Agency (USEPA) has requested that states begin preparing integrated reports, and Minnesota intends to do so.

To accomplish all the requirements for reporting, Minnesota is providing the USEPA with the following items: an update of Minnesota's Storage and Retrieval System (STORET) database; an Impaired Waters List with accompanying information on the public comments; National Hydrography Dataset (NHD) index mapping of impaired and assessed waters; the Assessment Database (ADB) v2.1.4 containing integrated assessment data; and this report.

The summary tables that appear in this section reflect information from both the assessment process for 305(b) reporting and the listing process for 303(d) reporting. Tables I-1 and I-2 provide summaries of stream assessments that occurred in 2005 for the current assessment cycle, while Table I-3 reports both impaired miles assessed for 2006 and the total impaired miles for each pollutant/stressor, which are found in the ADB.

Summary Tables I-4 through I-6 reflects summaries of the lake assessment process. Tables I-4 and I-5 provide summaries of lake assessments that occurred in 2005 to meet requirements of Section 305(b) of the CWA. Table I-6 reports both impaired acres assessed for 2006 and the total impaired acres for each pollutant/stressor, which are found in the ADB. Since a second analysis of lake data assessed as partially or not supporting a beneficial use for 305(b) reporting purposes is required in order to determine impairment for listing on the impaired waters list, the summaries in Table I-6 reflect only those lakes that were found to be impaired after the secondary analysis. Table I-7 is provided to show a correlation between lake assessments made strictly for 305(b) reporting and the overall categorization of waterbodies used in the integrated reporting found in the ADB.

As a result of the integrated reporting the assessment summary tables found in this document reflect different results than what may be obtained from a query of the ADB. An assessment unit (AU) is assigned to only one category based on whether or not there is a cause of impairment, with impaired AUs that are found on the impaired waters list assigned to Category 5 in the ADB. The ADB contains assessment data from previous 305(b) assessment cycles in the form of impaired and listed waters, which have been passed forward from previous impaired waters lists. These data cause a difference to occur in the reporting summaries because they take precedence over newer data, which may show no impairment for a specific AU.

New data for an AU required to be reported for 305(b) purposes, and showing no impairment exists, cannot override the older data that led to a 303(d) impaired listing. Because of this difference the summary tables in this report contain a mixture of 2006 assessment cycle reporting for 305(b) purposes, and integrated reporting that includes impaired AUs from previous assessments.

<u>A Note to Readers on Use of the Word Assessment</u>

The integrated assessment process for lakes and streams was accomplished to satisfy the reporting requirements of sections 305(b) and 303(d) of the CWA. The reader should be aware that the purposes of these two sections are not the same and may use different sets of data. By that we mean that the assessment process begins with a compilation of all monitoring data available on a specific date. All available monitoring data is meant to include data meeting minimum criteria for comparison with water quality standards (WQS) within a ten year window beginning on October 1st in the 12th year preceding the reporting of the assessment process results. For example, the reporting in 2006 uses a ten year window of data beginning on October 1, 1994 and extending through September 30, 2004. These data were used to analyze for compliance with WQS and reported for either or both 305(b) and 303(d) requirements.

Data requirements for 305(b) and 303(d) reporting diverge a bit at this point. While all data may be used in a review for 305(b), a minimum number of data and parameters may be required for a 303(d) review. This makes the set of data used for 303(d) review a subset of the data used for 305(b) review. In addition, lake monitoring data that are older than the ten year window were used for analysis and reporting under section 305(b). Since they are not 'recent' data they were excluded from analysis for requirements under section 303(d).

As stated previously, the assessment process begins with the compilation of all monitoring data available on a specific date. The data are compared to WQS for various pollutant parameters and assessments of support are made for specific uses. *An assessment of support is defined as a review of all available data for a particular water body segment use for their compliance to WQS and maintenance of that intended use.* It should be noted that an assessment of support for a use for one water body may not be based on a complete set of pollutant parameters nor may each water body have the same suite of parameters. Independent applicability as described in the assessment and listing guidance is the basis for making an assessment of support with less than a complete set of pollutant parameters. Assessments of support for each water body use are based on the available data at the time of the assessment process. In light of the ten year window of data and the reporting occurring in two year cycles, the most recent eight years of data used in one cycle are also used in the next cycle.

The compiled data for each water body are reviewed for compliance with WQS and an assessment of support is given to each use. The assessment of support was given a final rating of either, full support, non-support, insufficient data, or not assessed for 305(b) reporting. The subset of data used for 303(d) review was considered to include all stream data used in the 305(b) review plus lake data from the most recent ten year window that met certain minimum data requirements for consideration for listing a segment use support as impaired. The minimum data requirements are defined in the assessment and listing guidance. Final ratings for 303(d) results may only consider data reviewed as full or not supporting and meeting the minimum data requirements, or may include those rated as having insufficient data or reviewed but not assessed in the case of streams.

The use of the word 'assessed' in relation to the work of reporting on surface water monitoring data is somewhat ambiguous and requires an associated definition. The same is true for 'fully assessed'. Any such word usage should be accompanied with a specific definition so that any conclusions or statements made from the data are clearly understood. The words, 'fully assessed' are not used in this report to refer to the assessment process nor is there any attempt to identify which stream or lake segments may have had more data available for review.

Table I-1. Summary of Fully Supporting, Threatened, and Impaired Waters – Rivers.*

Degrees of Use Support	Monitored
Miles Fully Supporting All Assessed Uses- Category 1	0
Miles Fully Supporting at Least One Use & None Threatened or Impaired – Category 2	2255.96
Miles Impaired for One or More Uses – Categories 4 & 5	9004.40
Miles Reviewed but Not Assessed	1432.32
Total:	**12692.68**

*Data for AUIDs with an assessment date later than 1/1/05.

Table I-2. Individual Use Support Summary – Rivers.*

Goals	Use	Miles Reviewed	Miles Fully Supporting	Miles Fully Supporting by Threatened	Miles Insufficient Information to Assess	Miles Not Supporting	Miles Not Assessed
Protect & Enhance Ecosystems	Aquatic Life	12692.68	3673.64	0.00	1170.59	5261.66	2586.79
Protect & Enhance Public Health	Aquatic Consumption	12692.68	0.00	0.00	21.19	5250.15	7421.34
	Aquatic Recreation	12692.68	1213.90	0.00	0.00	2639.51	8839.27

*Data for AUIDs with an assessment date later than 1/1/05.

Table I-3. Total Miles of Waters Impaired by Various Cause/Stressor Categories – Rivers.*

Cause/Stressor Category	2006 Assessed Miles Impaired*	Integrated Reporting Miles Impaired
PCBs	166.75	1227.44
Ammonia	7.57	130.26
Chlorine	3.31	50.44
pH	19.06	64.86
Organic Enrichment/Low DO	214.26	944.07
Pathogen Indicators	1167.64	2611.6
Mercury	242.35	5451.01
Biology (fish)	410.05	1962.32
Biology (Invertebrates)	330.31	510.97
Turbidity	1605.21	3415.9
Temperature	0	8.27
DDT	0	18.86
Dieldrin	0	18.86
Dioxin	0	12.62
Toxaphene	0	12.62

*Data for AUIDs with an assessment date later than 1/1/05.

Table I-4. Summary of Fully Supporting, Threatened, and Impaired Waters – Lakes.*

Degrees of Use Support	Assessments		Assessed Acres
	Monitored	**Evaluated**	
Acres Fully Supporting All Assessed Uses – Category 1	0	0	0
Acres Fully supporting at Least One Use & None Threatened or Impaired – Category 2	230427	69404	299831
Acres Impaired for One or More Uses – Categories 4 & 5	2102683	0	2102683
Acres Reviewed but Insufficient Information to Assess – Category 3	105054	63663	168717

*Data for AUIDs with an assessment date later than 1/1/05.

Table I-5. Individual Use Support Summary – Lakes.*

Goals	**Use**	**Acres Reviewed**	**Acres Fully Supporting**	**Acres Fully Supporting but Threatened**	**Acres Insufficient Information to Assess**	**Acres Not Supporting**	**Acres Not Assessed**
Protect & Enhance Ecosystems							
Protect & Enhance Public Health	Aquatic Consumption	203084	0	0	0	2030849	0
	Aquatic Recreation	2047346	1320477	0	606943	116729	3197

*Data for AUIDs with an assessment date later than 1/1/05 –Monitored Only.

Table I-6. Total Acres of Waters Impaired by Various Cause/Stressor Categories – Lakes.*

Cause/Stressor Category	Acres of Waters by Contribution to Impairment		Total
	2006 Only*	**Integrated**	
Nutrients	23343	94394	**117737**
Mercury Fish Consumption Advisories	41285	3664343	**3705628**
PCBs	0	1640219	**1640219**
Mercury in Water Column	0	7940	**7940**

*Reflects Waterbodies Reviewed in 2005.

Table I-7. Review of 305(b) Assessed Lakes in ADB and Their Categorization.

		Evaluated*	Monitored†	Total			
Numbers:	Total number of lakes assessed for 305(b) below:	1097	1931	3028			
	Assessed for 305(b) as Fully Supporting	680	1239	1919			
	Assessed for 305(b) as Partially Supporting	116	121	237			
	Assessed for 305(b) as Not Supporting	301	571	872			
Acres:	Total lake acres assessed for 305(b) below:	524041	2043993	2568034			
	Assessed for 305(b) as Fully Supporting	240305	1321423	1561728			
	Assessed for 305(b) as Partially Supporting	216195	452183	668378			
	Assessed for 305(b) as Not Supporting	67541	270387	337928			
Categorization of 305(b) Lake Assessments (Acres):							
		Category 2	Category 3A	Category 3B	Category 5A	Category 5C	**Total**
	Assessed for 305(b) as Fully Supporting (Evaluated)	69404	0	0	4982	165919	**240305**
	Assessed for 305(b) as Fully Supporting (Monitored)	230427	0	0	4353	1086643	**1321423**
	Assessed for 305(b) as Partially Supporting (Evaluated)	0	0	14248	820	201127	**216195**
	Assessed for 305(b) as Partially Supporting (Monitored)	0	0	17056	3753	452183	**431374**
	Assessed for 305(b) as Not Supporting (Evaluated)	0	0	49178	0	18363	**67541**
	Assessed for 305(b) as Not Supporting (Monitored)	0	237	87998	41980	140172	**270387**
							2568034
Categorization of 305(b) as Not Supporting (Monitored)							
	Assessed for 305(b) as Fully Supporting (Evaluated)	488	0	0	9	183	**680**
	Assessed for 305(b) as Fully Supporting (Monitored)	860	0	0	4	375	**1239**
	Assessed for 305(b) as Partially Supporting (Evaluated)	0	0	87	1	28	**116**
	Assessed for 305(b) as Partially Supporting (Monitored)	0	0	81	6	34	**121**
	Assessed for 305(b) as Not Supporting (Evaluated)	0	0	260	0	41	**301**
	Assessed for 305(b) as Not Supporting (Monitored)	0	1	314	55	201	**571**
Data for AUIDS with an assessment date later then 1/1/05							

* Evaluated waters are segmented for which the use support decision is based on ambient data more than 10 years old.

† Monitored waters are segments for which the use spport decision is based on current, site-specific ambient data.

WETLANDS

Minnesota is fortunate to have a rich diversity of wetlands and nearly 50% of our historic wetlands remain on the landscape. Minnesota continues to protect this important resource from draining and filling activities primarily through the State Wetland Conservation Act (WCA). Central to the WCA is the enactment of state policy to achieve a "no net loss" and to increase the, "quantity, quality and biological diversity of wetlands in the state" (Minn. Statutes 103A.201).

Under the WCA, Local Units of Governement [LUG(s)] are responsible for administering the law, including, reviews and permit issuance and require mitigation for unavoidable impacts. As a part of implementing the WCA, the Minnesota Board of Water and Soil Resources (BWSR) compiles wetland related loss and gain data collected from WCA LUG. In addition, BWSR collects wetland data from other government and nongovernmental organizations and the data is included in periodic wetland reports. The most current wetland report was published in August 2005 and includes data from the years 2001 to 2003. This report is available at: (http://www.bwsr.state.mn.us/wetlands/publications/wetlandreport.pdf).

In the 2005 report, the BWSR highlights the complexity of no net loss accounting including the relationship in this accounting between regulatory and non-regulatory restorations, and their contribution toward meeting the "no net loss" goal. In addition to the regulatory outcomes during this time period, the report also highlights the thousands of acres of wetland and upland that are restored each year through various conservation programs or organizations.

The 2001-2003 Minnesota Wetland Report has heightened the visibility of the wetland no-net-loss goal in Minnesota. Minnesota Governor Tim Pawlenty has asked his Clean Water Cabinet members to conduct an assessment of the WCA. This assessment is examining the current wetland reporting system, the WCA exemptions, replacement ratios, the state-federal regulatory system, and the costs to administer the WCA. This assessment is currently underway and will be completed by December 2006.

Relatively little data are available concerning the status and trends in wetland quality across the state. Essentially all that is known about Minnesota, wetland quality comes from anecdotal observations, experience with a few local projects to improve or restore wetland habitat, data collected for local comprehensive wetland management plans, and limited data from initial efforts to develop wetland quality assessment methods. As reported in past 305(b) reports the MPCA continues to develop biological assessment methods for depressional wetlands and has very nearly achieved a statewide dataset for this indicator.

The need to develop a broad-based comprehensive assessment of Minnesota's wetlands has been recognized for a long time. In the fall of 2002, an interagency coalition submitted a grant application to USEPA requesting the resources to develop a wetland monitoring strategy for Minnesota. With funding from USEPA, work began in October 2003 to develop a wetland monitoring strategy for Minnesota. The goal of the wetland monitoring strategy is to:

> Develop a broadly understood, scientifically sound strategy for monitoring and assessment of the statewide status and trends in wetland quantity and quality.

There are five objectives under this goal:

1. To establish accurate baseline data on wetland quantity and quality statewide and in each of four geographic regions: the Prairie Parkland, Eastern Broadleaf Forest, the Laurentian Mixed Forest, and the Paleozoic Plateau and by the following wetland classes found in Minnesota based on Cowardin et al (1979) and non-wetland classes.
2. Associate changes in wetland quantity and quality with specific causal mechanisms such as urban and rural development, agricultural and silvicultural activities, transportation, mining, natural factors, conservation programs and other activities.
3. Provide statewide reports of status and trends in Minnesota wetland quantity every three to five years beginning in 2009 and provide wetland quality status and trends reports every two to three years in select regions beginning in 2009. These reports will be used to assess the effectiveness of wetland regulatory and non-regulatory programs and will provide a sound basis for future state wetland policy and management decisions.
4. To accurately assess future changes (trends) in wetland quantity and quality statewide and in the geographic regions presented in Figure III-3 by wetland class.
5. Contribute to the long term understanding of Minnesota's wetland health (functions), distribution, structure and processes.

Recognizing the need for a comprehensive approach to wetland assessment, monitoring and mapping and procedures for evaluating no-net loss wetland in Minnesota, the wetland monitoring strategy is now called, the Comprehensive Wetland Assessment, Monitoring and Mapping Strategy (CWAMMS).

Many details remain to be determined regarding recommendations or how to monitor status and trends in wetland quality. Assessing wetland status and trends, quantity and quality, is a complex task that will require a combination of approaches. These approaches will be integrated to improve the understanding of, and confidence in, wetland status and trends statewide.

The recommendations in the CWAMMS blend well and support the 2006 Governors Wetland Vision and Strategies for Minnesota. The Wetland Vision (http://cwc.state.mn.us/documents/Wetlands.vision.pdf). The Wetland Vision compliments the Working Lands Initiative and ongoing efforts to develop a wetland restoration strategy for the state and will enable Minnesota to effectively evaluate the success of these measures in a comprehensive way. The CWAMMS will be implemented through the collaborative efforts of local governments, state and federal agencies and non-governmental organizations. Specific roles and responsibilities for all participants have been identified.

STREAM WATER QUALITY TRENDS

The best available information on pollutant trends in rivers and streams comes from "Minnesota Milestone" sites. These are a series of 80 monitoring sites across the state with good, long-term data.

Milestone sites (having sufficient data) shows the following information:

	Biochemical Oxygen Demand	Total Suspended Solids	Total Phosphorus	Nitrite/ Nitrate	Unionized Ammonia	Fecal Coliforms
Decreasing pollutant trend	89%	41%	78%	1%	83%	82%
Increasing pollutant trend	1%	4%	1%	75%	4%	0%
No trend	10%	54%	21%	23%	13%	18%

LAKE WATER QUALITY TRENDS

For our 2004 trend analysis, we ran Kendall statistical tests using WQ Stat Plus™ software on lakes with 4 or more transparency readings per summer (June – September) and 8 or more years of data. We used a probability (p) level of p £ 0.1. At this p-level, there is a 10 percent chance of identifying a trend when it does not exist. There were 822 lakes in Minnesota that met the minimum requirements for trend analysis. Of the 822 assessed lakes, 246 of them exhibited a statistically significant improvement in transparency over time. In contrast, only 46 lakes exhibited a statistically significant decline in transparency. The majority (64 %) of the assessed lakes (530 lakes) exhibited no change in transparency over time.

PUBLIC HEALTH ISSUES

A. Lake Superior Beach Monitoring and Notification Program

The Beaches Environmental Assessment and Coastal Health (BEACH) Act passed in October of 2000, requires States that border coastal or Great Lakes waters to develop beach monitoring and public notification programs. The BEACH Act also requires that States adopt USEPA's new criteria for pathogen and pathogen indicators by April 2004. Minnesota is in the process of adopting revised rules and is planning on having them out for public review in early 2006 and adopted by the fall of 2006.

In 2004 Minnesota was awarded $204,490 for implementation of the beach monitoring and notification program. The purpose of this project is to monitor selected beaches along the Great Lakes in accordance with BEACH Act requirements, allow for prompt notification to the public whenever bacterial levels exceeds USEPA's established standards, and investigate alternative methods for public notification. This information is used to investigate long-term trends in WQ and to establish a beach monitoring and public notification plan that will assist communities along the lake shore to improve their ability to monitor and notify beach users of risks associated with high bacteria levels.

Program Overview

This project brought together a Beach Team of state and local-level environmental and public health officials, local health officials, and other interested parties to design a beach monitoring and notification program. Approximately 58 miles of public beach miles and a total of 79 coastal beaches were identified along Lake Superior (Appendices III-A). The definition of "beach" for the purpose of Minnesota BEACH Act implementation is:

"A publicly owned shoreline or land area, located on the shore of Lake Superior, that is used for swimming or other water contact recreational activity."

The coastal beaches were geo-located using Global Positioning System (GPS) technologies and maps were created for all beaches. Additional Geographic Information System (GIS) data layers were added to include the location of all wastewater treatment outfalls along with their proximity to the beaches. Additional information was collected for each beach for evaluation: the potential for impacts from storm water runoff, bather and waterfowl loads, and the location of outfalls and farms. This information was used to rank and classify beaches as "high," "medium," or "low" priority.

A standard sampling protocol was developed and standard advisory signs were designed based on feedback from Beach Team members and public meetings held in coastal communities (Appendix III-C).

The Beach Website was designed to include all public beaches monitored under the BEACH Act program. This site also provides information on beach logistics, amenities, and local weather. The website management is contracted through the Natural Resources Research Institute, a research facility of the University of Minnesota.

Goals and Objectives

The purpose of this project in 2005 was to continue a consistent coastal beach water monitoring program to reduce the risk of exposure of beach users to disease-causing microorganisms in water. Selected beaches along Lake Superior were monitored in accordance with BEACH Act requirements with prompt notification to the public whenever bacterial levels exceed USEPA's established standards (Appendix III-D).

Work Completed in 2005

The 2005 beach season was the third full season a consistently implemented beach-monitoring program was conducted in the coastal area of Minnesota. A total of 39 beaches were sampled. There were 1044 monitoring visits during the 2005 beach season. Out of these samples, 92 of them exceeded the WQ limit of 235 CFU/100 mL for *E. coli (Escherichia Coli).*

Beach Program staff met with the Beach Team three times during 2005 to discuss the program and look for ways to make improvements in the program. As a result of the spring meetings, staff applied for and received a Lake Superior Coastal Grant for the addition of a Data Visualization Tool to the www.MNBeaches.org webpage. The Data Tool should be implemented in early 2006 and will allow users to visualize changes in bacteria counts over time compared to temperature, precipitation, and wave height and wind direction. The tool will enhance the use of ambient surface water data by professionals at resource agencies, consulting firms, Non-Governmental Organizations (NGOs) and universities; by teachers and students, and by the general public.

Success Stories and Concurrent Research Projects

The principal success of the Lake Superior Beach Program Monitoring Program is the continued public awareness the advisories bring to on-going water pollution issues. Residents and tourists are starting to realize that bacteria problems can occur in any part of the Lake Superior Basin but occurs with more frequency in the more urban areas and during storm events. Residents and visitors are picking up after their dogs on a more regular basis. They continue to be vocal about sewage overflows and demand they be corrected. The coastal cities are installing large holding tanks, back-up generators, and home sump pumps to slow and/or stop the storm related sewage overflows. Even though all these positive activities are happening the education and notification of the public needs some improvement and expansion, as evident by the number of surfers in the sewage overflow areas in October and the sunbathers (in the water) next to the advisory sign.

B. Effects of Atmospheric Pollution on Water Quality

The importance of atmospheric loading will vary, depending on the pollutant and the nature of the watershed. In urbanized and agricultural watersheds, nutrient loading from the atmosphere may be negligible. But in the same watersheds, the atmosphere may be the main source of toxic pollutants, such as polycholorinated biphenyls (PCBs) and mercury.

There are two situations where atmospheric deposition may be especially important sources of nonpoint source (NPS) pollution to surface water. First, lakes with a small watershed to lake surface area ratio can receive a large proportion of their loading from the atmosphere. For example, a study of Lake Mille Lacs suggests that precipitation (wet and dry fall) may contribute approximately 48 percent of the annual phosphorus (P) loading to the lake. (Lake Mille Lacs occupies 53 percent of its total watershed area.) Similarly, airborne dust is thought to deliver the majority of phosphorus loading to Lake Superior. Second, some pollutants may be primarily delivered by the atmosphere even when there is significant human activity in the watershed. For instance, the geological source material in most watersheds does not contain a significant source of mercury. Mercury in a waterbody is most likely a result of atmospheric deposition. In addition, environmentally significant levels often accumulate in soils due to atmospheric deposition. If soil is eroded or inundated (say, through impoundment), there may be significant increases in mercury contamination to aquatic systems in the watershed.

Atmospheric deposition of pollutants is implicitly defined as NPS pollution in this document. Yet, the emission source to the atmosphere may well be a point source such as an emission stack. It is worth pointing out that even if modeling or measurement studies verify a direct relationship between a point source of air emissions and deposition to a water body, water managers may still consider that source of pollution to be nonpoint, because it is delivered by the atmosphere.

Mercury vapor emissions from combustion sources result in ambient air concentrations below those of concern for direct human health effects through inhalation. Mercury is probably the most pervasive type of atmospheric NPS pollution in Minnesota, causing fish consumption advisories on over 90 percent of the lakes tested in the state.

The CWA, Section 303(d), requiring TMDLs for targeted impaired waters, led to the MPCA drafting a Statewide Mercury TMDL, which was made available for public review and comment in 2005 and is expected to be submitted to USEPA for approval in 2006.

Sequence for implementation of NPS effort for atmospheric pollutants

1	Identify WQ problem.
2	Determine air pollution as the cause.
3	Determine source of air pollution (e.g., area or facility).
4	Evaluate the relative efficacy of BMPs within the watershed in contrast to air emission reductions.

The 2006 through 2010 (January 31, 2006 through December 31, 2010) the provided 5-year Action Plan summarizes the milestones identified in the preceding sections. Many of the 2006 through 2010 milestones listed, as well as the implementation of specific projects, are contingent upon adequate funding and local involvement.

GROUND WATER

The Ground Water Sortion of the Integrated Report is being submitted but at the same time as the Surface WaterPportion, but under separate cover.

PUBLIC PARTICIPATION

A description of the public participation process and a copy of all letters, e-mails, etc. received from the public and a responsiveness summary was included with the impaired waters list that was sent to USEPA on March 29, 2006.

Figure II-1. Minnesota Background Information and Border Waters.

II. BACKGROUND INFORMATION

Chapter One: TOTAL WATERS, MAPS AND WATER POLLUTION CONTROL PROGRAM

WATERSHED APPROACH

The MPCA's watershed based efforts are directed through watershed planning and implementation on a basin level. Basin plans are five-year plans, continuously updated every five years. The goals, objectives, and targets they specify are to be at least partially achievable within the five-year timeframe of the plan.

Basin plans provide a geographically focused level of water planning, and focus on WQ issues. The approach is based on the state's ten major drainage basins and is designed to 1) identify WQ problems, 2) work with local governments to establish shared goals and priorities, and 3) develop pollutant reduction strategies. Together, focus of this level of planning is to:

- refine WQ related state objectives
- set basin level WQ priorities
- define priority WQ pollutants and problem areas
- identify actions and projects to be performed to address the identified goals, objectives, priorities, and targets
- serve as a mechanism to help secure funding for implementation of the plans

A schedule for basin plan development and other information on the basin planning and management program can be found on the Internet at:
http://www.pca.state.mn.us/water/basins/index.html

The basin approach looks at the "resource" as a whole. The basin approach proposes solutions which, collectively, improve the condition of the basin. The basin approach also links all the jurisdictions in the basin, extending the capacity of local, state and federal governments so that WQ problems can be addressed both ecologically and politically.

ACCOMPLISHMENTS OF MPCA'S BASIN PLANNING APPROACH

External teams have been established and function in eight basins of the state (Fig. II-2). These teams are composed of more than 200 separate state and federal agencies, LUG organizations and non-public constituencies. External basin teams meet monthly in the Lake Superior, Minnesota, Lower Mississippi, Upper Mississippi, Cedar, and Red River basins, and quarterly in the Rainy and St. Croix basins. The names of these teams differ from basin to basin, but the teams each include representatives of federal, state, regional and local government, industry, citizen and special interest groups. Members are actively recruited. Each team has an open door policy, inviting in anyone who wants to participate. These six groups of more than 200 stakeholders meet routinely and are considered their basin's "go-to" group for WQ. They serve as the stakeholders for development of impaired waters plans. They review and recommend projects for 319 funding. The establishment and coordination of these teams brings form and substance to the situational alliances we need to achieve WQ goals.

Basin planning has produced two sets of documents for the state's major drainage basins:

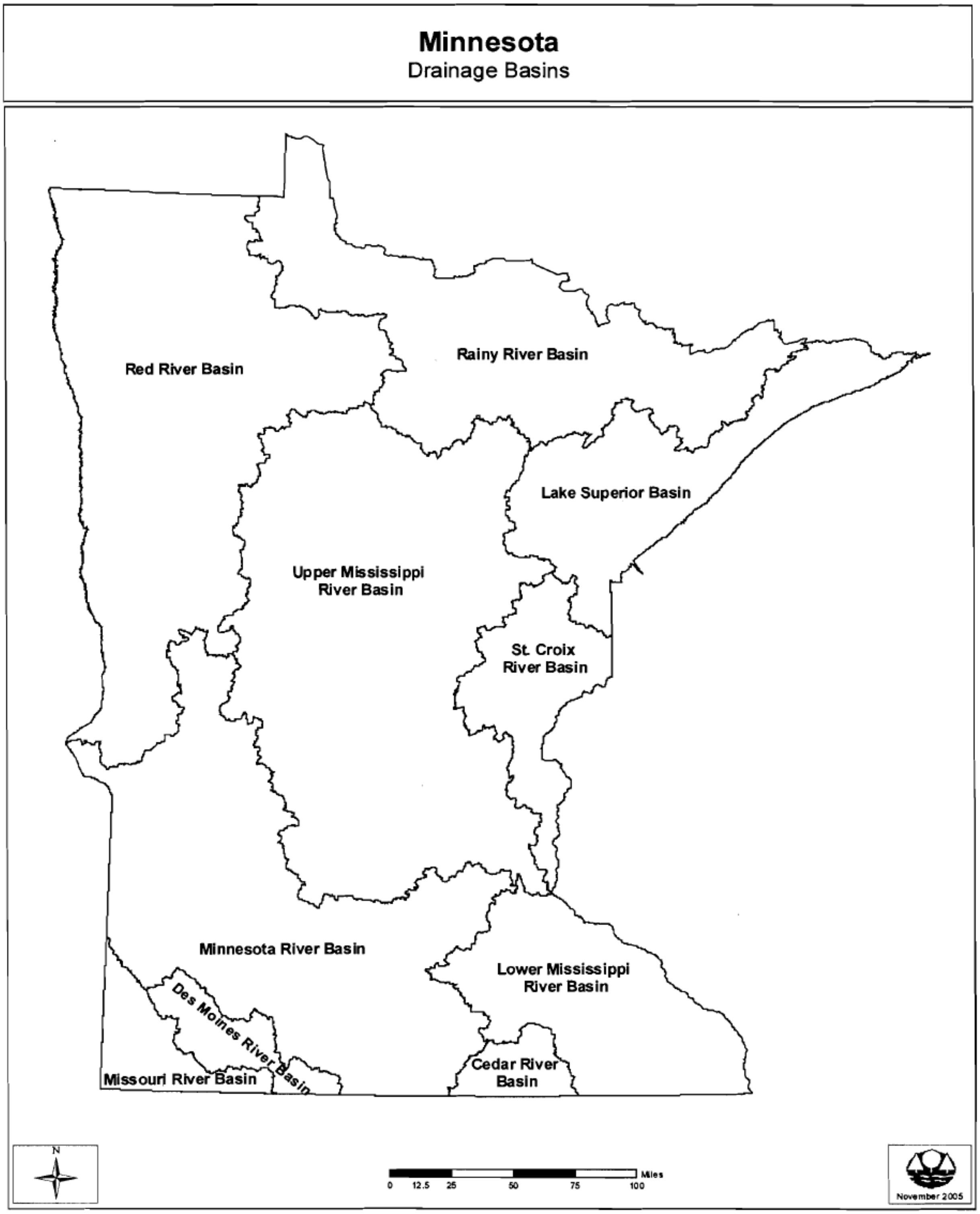
1. Basin information documents

These documents summarize conditions and resources of the basin, assess pollution control status, and list ongoing research and identify major issues.

2. Basin water quality plans

The external basin teams provide the means to mobilize watersheds for action. The basin plans are a plan of action for the basin. Involving the basin teams in the review and recommendation of projects for funding adds significant local involvement. It also has the potential to increase participation in actual projects as the opportunity arises. This closes the loop from gathering information and developing goals arriving at the means to achieve the goals by actually implementing something. These activities also demonstrate how the resources of external basin teams can be utilized in future WQ improvement efforts. At the same time, our partners learn to understand and accept that resources are not great enough to cover everyone's needs.

Figure II-2. Map of Minnesota Basins.



A. **Point Source Program Overview**

Introduction

The National Pollutant Discharge Elimination System (NPDES) permit program originated in the 1972 amendments to the Federal Water Pollution Control Act. The 1972 and subsequent amendments are referred to as the CWA. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's surface waters. The principal vehicle for achieving goals and objectives is the NPDES permit program, which regulates all point source discharges of pollutants to surface waters in the United States.

Permitting

NPDES permits are required for all wastewater discharges to surface waters of the state. Important features of NPDES permits include:

- 5 year permit period
- 30 day public comment period of draft permits
- all surface water dischargers must meet minimum technology based requirements
- WQ based requirements necessary to further protect WQ
- delegation of permit issuance to qualified states

State law, M.S. chapter 115, gives the MPCA authority to require permits for the operation of disposal systems. As a result, all of the NPDES discharge permits issued by the MPCA are also State Disposal System (SDS) permits, combined into one document. We also issue SDS permits for disposal systems that do not discharge to surface waters, and do not require an NPDES permit.

Compliance/Enforcement

When facilities violate permit requirements, the MPCA has an escalating approach to enforcement. Our first objective is always to bring the permittees into compliance. Our initial response to minor violations is often a phone call or letter. If the violations are more serious, we may issue a formal notice of violation, which requests a response to the problem within 30 days. With more serious violations, or continued noncompliance, the staff may issue an administrative penalty order (APO). APOs may be up to $10,000.00 and may be forgivable (a fixit ticket), or non-forgivable. Beyond APOs, are negotiated stipulation agreements which are out of court settlements for noncompliance, with stipulated penalties. If necessary, usually as a last resort, the MPCA can pursue litigation as a solution to noncompliance.

2006 Point Source Plan

The overall goal of the 2006 Point Source Plan is to assure that discharge of wastewater to surface waters and groundwater is done in a manner that is protective of the environment. The work done under the plan to assure that this goal is met includes: technical assistance, development of rules and policy, permitting, land application approvals, limits determination, environmental reviews, technical reviews, compliance and enforcement, financial assistance, training, certification and licensing. Staffs conducting this work are located in Outcomes Division, Industrial Division, Prevention and Assistance Division, Regional Division, and

Municipal Division. The facilities or individuals that we work with to assure that the goal is met are the municipal wastewater and water treatment facilities, industrial facilities that have a discharge from their facility process or wastewater treatment facility, industrial stormwater, and pumpers, installers, and inspectors of Individual Sewage Treatment Systems (ISTS).

2005 Goals and Accomplishments

As with the past three years, we have met most of our goals and while continuing to make many process improvements. The following are some of the accomplishments of the Point Source programs.

Permit Backlog Numbers

- Our permit backlog (both Municipal and Industrial) has been below 8% for over two years.
- "New" DELTA was rolled out in March 2005 which included permit writing process and boilerplate updates.
- Issued about 75% of our permits within 180 days (up from about 9% in 2003). We continue to make progress to achieve our ultimate goal of 90%.
- Reissued the general pond permit in March 2005.
- Issued the Minnesota River Basin Phosphorus General permit in September 2005.

Inspection numbers

- The program conducted 453 inspections, Compliance Monitoring Survey (CMS), recon, construct, and tech assist, etc.
- The average compliance rates are as follows:
  Municipal – minors – 94%
  Industrial – minors – 88%
  Municipal majors – 98%
  Industrial majors – 88%

Technical Assistance

- Assisted in meeting a Zero Industrial NPDES backlog.
- Received 71 engineering reports, approved 46.
- Received 133 plans & specifications, approved 91.
- Reviewed all re-issued municipal individual NPDES and SDS permits for classification and flow.
- Re-scored all State Revolving Fund (SRF) projects.
- Established Minnesota River TMDL Technical Team to address Wastewater Treatment Plant (WWTP) reduction scenarios.
- Modified DELTA to allow treatment component/classification entry.
- Coordinated all biosolids annual report reviews & reviewed all reissued individual NPDES for biosolids.
- Reviewed all reissued NPDES for pretreatment.

Individual Sewage Treatment Systems Compliance

· Complaints Referred to LUG	85
· Complaints investigated by MPCA	113
· Assistance Calls	932
· Pumpers Inspections	29
· LUG Assessments	8
· Enforcement Actions	65
· Post enforcement follow-up	15

State Revolving Fund Program

- Publication of the 2006 Project Priority List (PPL) and the adoption of the 2006 Intended Use Plan (IUP).
- Re-ranking of all 245 wastewater projects on the 2006 PPL to reflect proposed amendments to Minn. Rule 7077.
- Continued rulemaking progress related to revisions to Minn. Rule 7077 by completing the official public notice period.
- 95%+ municipal wastewater systems submitted their Wastewater Infrastructure Needs Survey (WINS) prior to the publication of the Legislative Report.
- Provided staff support on the Clean Water Legacy Act (CWLA) that is being considered by Minnesota Legislature.
- Provide research on the costs of phosphorus removal equipment for use in CWLA and Minn. Rule 7050 triennial review.

Standards Review

- Completed 34 effluent limits reviews
- Continued improvement on the targeted completion date for all types (simple, complex, and those including non-degradation reviews).

Operator Training

- Conducted 14 training conferences/seminars
- Conducted operator assistance outreach visits under 104(g) grant
- Participated in operator training need to know criteria development
- Developing large (10,000 gallons/day) subsurface treatment system (LSTS) training conference/seminar

Pretreatment

- Developed draft state pretreatment rules and SONAR
- Conducted inspections at the 9 delegated wastewater treatment facilities
- Reviewed pretreatment annual reports

Goals for 2006

The overall goal for the Point Source Program is to assure that discharge of wastewater to surface waters and groundwater is done in a manner that is protective of the environment. To achieve this goal the Program has a very ambitious yet attainable level of objectives for 2006 which include:

- Maintaining an overall permit backlog below 10%.
- Meeting the 95% and 90% significant compliance rates for majors and minor respectively.
- Meeting the 90% of permits issued within 180 days of application receipt goal.
- Developing a strategy for unsewered communities.
- Making process improvements that work towards meeting the 120 day APO goal.
- Developing an industrial stormwater permitting and enforcement plan.
- Begin implementing steps to improve our ability to retrieve accurate WQ compliance and enforcement data and annually report results to applicable regulated facilities.
- Develop a standardized expectations and measure for all point source engineers.
- Continue to make refinements and changes to the LSTS strategy.
- Developing a plan to address the chloride limits.
- Continuing implementation of the Minnesota River General permit.
- Continuing to address permitting issues based on the Annandale Maple Lake ruling.
- Finalizing the pretreatment rule and the SRF rule.
- Promulgate the ISTS rule.

B. Nonpoint Source Control Program

Introduction

Minnesota is fortunate not only in that it has so many water bodies, but also in that a number of its water bodies are still pristine. The existence of pristine water bodies emphasizes the importance of a protection component in WQ plans, but it does not mask the fact that already far too many of the state's water resources have been degraded significantly.

Most of the pollution originating from point sources (municipal and industrial facilities discharging to a state water) has been controlled, yet the pollutants entering surface waters in runoff and seepage from land areas, particularly in mostly agricultural regions, continue to degrade WQ. This NPS type of WQ degradation, which originates from human land-use activities, is the major reason causing a number of Minnesota's surface and ground waters to not be clean enough for recreation, drinking water use or support of aquatic life.

The state's efforts to restore these resources center around the concept of a "resource-management system," whereby a set of best management practices (BMPs) appropriate to the site-specific concerns within a watershed unit are selected and applied on a watershed basis.

Updated NPS Assessment

The Updated NPS Assessment in the 2006 - 2010 Nonpoint Source Management Program Plan (NSMPP) reflects a number of steps that have been taken since 2001 to improve the assessments.

- Incorporating biological assessment information, where available, into the process. This includes development of biocriteria for watersheds where none had existed before.
- Biological monitoring of randomly selected sites has been conducted, which will allow for characterization of entire basins.
- Coordination of monitoring and assessment activities among local, state and federal agencies has been increased.
- Assessments using an increasing number of credible sources of information are being developed.
- All contributing monitoring entities are reviewing assessment data for adequacy, relevance and validity.
- Different use supports to reflect adequacy of WQ for various uses are being reported, rather than simply reporting an "overall use."

2006 Nonpoint Source Program Plan

Minnesota's –2006-2010 NSMPP is in progress. Developing this Plan was a massive statewide effort. Eighteen technical committees comprised of more than 200 representatives of 50 federal, state and local governmental agencies and public and private environmental organizations worked to develop the NSMPP. The MPCA coordinated overall development of the NSMPP. The 18 Chapters/strategies of the NSMPP examine sources of NPS pollution contributing to water pollution. Five-year action plans recommending implementation of NPS pollution control measures for 2006-2010 are included in most chapters/strategies.

The web site for Minnesota's 2001 – 2005 NSMPP is: http://www.pca.state.mn.us/water/nonpoint/mplan.html. This Plan will be replaced by the 2006 – 2010 NSMPP when approved.

Federal Clean Water Act - Section 319

Section 319 of the CWA requires each state to assess NPSs of pollution within its boundaries. State investigations must identify NPSs of pollution that contribute to WQ problems, as well as waters or stream segments unlikely to meet WQS without additional NPS controls. State management programs must;

- run for a specific number of years (the Minnesota NSMPP runs through December 31, 2005);
- identify the NPS controls necessary;
- specify the programs that will apply the controls;
- certify that the state has adequate authority to implement these measures;
- identify all sources of funding for these programs; and
- establish a schedule for implementation.

Section 319 NPS funds are made available to assist LUG and organizations in Minnesota to implement NPS measures that reduce water pollution to lakes, rivers, wetlands and ground water resources.

Investment in education must be considered an essential and integral part of every step in the 2006 NSMPP. Education cannot be a viewed as a minor component of the NSMPP, but one of the many steps that must be taken to meet the management plan's goals. In almost every other chapter of this management plan, education is recognized as an important means for effecting change with respect to NPS water pollution problems.

Statewide Information and Education Program

As Minnesota's clean water program continues moving to a watershed approach with a commitment to identify and address remaining water-quality problems, good information about the condition of waters and the health of aquatic systems on a watershed scale is absolutely critical. Unlike when previous versions of this plan were prepared, Minnesota is now very much in the business of conducting Maximum Daily Loads on impaired waters. The CWA's impaired waters provisions call for taking measures to mitigate NPS pollution, but neither state nor federal agencies have the authority to regulate much of the activity that causes such pollution. Many of the needed mitigation measures will consist of education and pollution reduction incentives. This makes it all the more important to have in place sound I&E approaches and strategies for NPS issues.

Five major information and education (I&E) goals are set for the 2006 through 2010 version of the NSMPP to address NPS water pollution. They are:

1. Build and improve capacity to deliver NPS-related I&E at state and local level.
2. Raise awareness of the general public about the nature of NPS pollution, how communities and individuals contribute to it, and what governmental organizations and individuals are doing about it.

3. Foster coordination and cooperation between governmental agencies and private, nonprofit and other organizations to carry out information and education efforts.
4. Include NPS I&E in formal and informal educational curricula.
5. Effectively measure impact of NPS I&E activities.

Prioritization of Watersheds for Nonpoint Source Management

Minnesota currently targets watersheds for NPS controls through the Clean Water Partnership (CWP) program administered by the MPCA. The program, established in 1987, relies upon LUG and other partners to prioritize the watersheds within their regions and subsequently submit proposals to MPCA for watershed projects. The MPCA and an interagency task force called the Project Coordination Team scores the projects based on a set of scoring criteria established in state rules. The highest-scored projects are then eligible for financial and technical assistance from the state. CWP projects involve the following:

- Completing a comprehensive diagnostic study of a water body and its watershed by identifying the pollutants that cause a reduction of WQ and the origin of the pollutants,
- Developing an implementation plan that identifies the BMPs needed to restore and protect WQ and
- Implementing the BMPs.

Through eighteen annual CWP funding cycles (1989 through 2006) the MPCA has awarded $26,183,475 to 81 resource investigation projects, 52 implementation projects and 50 continuation projects.

Through twelve annual CWP funding cycles for loans (1995 through 2006), the MPCA has awarded $30,715,239 in low-interest loans to 131 implementation and continuation projects.

Through sixteen annual funding cycles of the Federal Section 319 program, the MPCA has awarded $31,814,030 for 389 NPS projects.

A description of the nature and extent of NPS pollution and recommendations of programs needed to control each category of NPSs, including an estimate of implementation and costs: The MPCA has no cost data but, below are the goals for most chapters in the draft 2006-2010 NPS Management Program Plan. Also, goals for chapter/strategy 4.3 Rivers and Streams and Chapter 13 Mining, are from the 2001-2005 NSMPP. These two are expected to be submitted very soon.

Chapters 1 through 3 are introductory chapters for the remaining chapters/strategies of Minnesota's Nonpoint Source Management Program Plan (NSMPP). The NSMPP can be viewed at: *http://www.pca.state.mn.us/water/nonpoint/mplan.html*

A brief summary of these chapters is provided.

Chapter 1. Updated Nonpoint Source Assessment

The Nonpoint Source (NPS) Assessment is an ongoing NPS problem identification process which was initiated in 1987 to meet the requirements of Section 319 of the Clean Water Act Amendments of 1987, as well as to evaluate the state's long term assessment and planning needs.

Chapter 1 discusses pollutant trends for surface water, groundwater and includes WQ assessment information as per 305(b) of the federal Clean Water Act.

Chapter 2. Programs and Funding for Implementing NPS Program.

Primary sources of Federal and State funding (grants and loans) and funding criteria for NPS pollution control activities are described in Chapter 2.

Chapter 3. Minnesota's Watershed Planning and Management Framework.

Chapter 3 discusses the major federal, state, basin, regional and local watershed planning activities in Minnesota. Chapter 3 summarized the interaction of these programs providing a comprehensive framework of nonpoint pollution control activities in the State.

Chapter 4. Overall Strategy for Each Water Resource

Because of the interrelation among strategies 4.1 Ground Water, 4.2 Lakes, 4.3 Rivers and Streams and 4.4 Wetlands, these four strategies are included in Chapter 4.

4.1 Ground Water Strategy

Goals 2006-2010

Goal 1: Enhance Coordination Among Ground Water Management Efforts Within the State.

Goal 2: Promote Education and Outreach Efforts for Implementing NPS Management Measures That Protect Ground Water.

Goal 3: Continue Identification of Geologically Sensitive Areas to Help Prioritize Protection Efforts Where Ground Water is Susceptible to Contamination from NPS.

Goal 4: Support LUG in Development and Implementation of Ground Water Protection Programs.

Goal 5: Research and Support Development of Effective Management Measures for Specific Practices That may Impact Ground Water.

Goal 6: Implement Evaluation Tools Appropriate to Measure the Effectiveness of Programs and Practices in Reducing or Preventing the Impacts of NPSs to Ground Water.

4.2 Lakes Strategy

Goals 2006-2010

Goal 1: Finalize the Development of Ecoregion-Based Nutrient Criteria and Promulgate into WQS.

Goal 2: Promote Lake Monitoring, Protection and Prioritization at the Local Level – Including Local Comprehensive Plan Development and Implementation and Source Water

Protection.

Goal 3: Provide Funding and Technical Assistance to Lake Watershed Management Projects Where Lake and Watershed Evaluations Have Been Conducted and Lake WQ Improvements are Projected Based on Implementation of Specific BMPs (With an Emphasis on Protection Whenever Possible).

Goal 4: Promote Prioritization Scheme as a Basis for Scheduling 303(d) TMDL Assessments & Develop Guidance for Developing TMDLs for Nutrient-impaired Lakes.

Goal 5: Expand State's Lake WQ Database via Conventional and New Technologies and Use of Citizen Volunteers. Focus on Those Lakes Most Likely to be Impacted by Development and Other Land Use Changes.

Goal 6: Enhance Incentives Program for Protection of Shoreland (Aquatic and Terrestrial) Vegetation and Broader Implementation of BMPs.

Goal 7: Expand Information and Education on Appropriate BMPs, Ordinances and Strategies for Lake Protection.

Goal 8: Promote Monitoring and Compilation of Bacteria at Beaches and Education of Toxic Algae Blooms.

Goal 9: Minimize the Impact of Urban Storm Water Runoff to Lakes.

Goal 10: Review Impacts to Downstream Lakes from Ditched/Drained Wetlands.

Goal 11: Advance Use of Sediment Diatom Reconstruction in Efforts to Protect or Restore Lakes.

4.3 Rivers and Streams Strategy

Goals 2006-2010

Goal 1: Promote Healthy Hydrological Regime for Minnesota's Streams and Rivers.

Goal 2: Promote Healthy Sediment Regime for Minnesota's Streams and Rivers.

Goal 3: Promote Healthy Nutrient Regime for Minnesota's Streams and Rivers.
Goal 4: Promote Healthy Biological Communities for Minnesota's Streams and Rivers.

Goal 5: Promote Wise Goal-Setting for Citizens And Government.

Goal 6: Support Infrastructure for NPS Management That Is Holistic, Comprehensive and Watershed-Based, And Provides Access To Decision-Making For All Residents and Users.

Goal 7: Research, Demonstration and Education That Encourages Understanding of Origin and Remedy for NPS Pollution Problems.

4.4 Wetlands Strategy

Goals 2006-2010

Goal 1: Improve Our Knowledge about Wetland Quantity: Complete or Update Wetland and Related Inventories.

Goal 2: Improving Wetland Restoration Efforts.

Goal 3: Monitoring and Assessment of Wetland Quality at the State and Local Level.

Goal 4: Support Local Government Wetland Management and Protection Efforts.

Goal 5: Promote Understanding of Wetland Responses to Pollutants.

Goal 6: Wetland Research Needs.

Goal 7: Wetland Education and Outreach.

Chapter 5. Monitoring

Water monitoring provides the information necessary to determine whether the quality and quantity of our water resources are adequate for the many uses they serve. Water monitoring specific to NPS pollution is necessary for determining what contaminants come from NPSs, as well as evaluating which efforts used to manage NPSs are successful in restoring or maintaining, the physical, chemical and biological integrity of the state's waters. This chapter will review the past and present types of monitoring activities, and will make recommendations for future directions. The monitoring strategy has been developed to be consistent with, "The Minnesota Water Monitoring Plan" prepared under the auspices of the Minnesota Environmental Quality Board (EQB) in April 1992. Excerpts from that document have been included in this chapter. This chapter differs from that document however, in that it focuses on monitoring activities with a direct relationship to NPS pollution management.

Goals 2006-2010

Goal 1: Develop Baseline Data Necessary to Allow Establishment of Good Status and Trend Information Relative to Surface Water and Groundwater at the State/Regional Level.

Goal 2: Establish Reference Conditions, Criteria or Standards for Those Waterbody Types or Types of Measurement for Which Such References Do Not Currently Exist.

Goal 3: Improve Monitoring Designed to Characterize NPS Contributions to WQ Problems.

Goal 4: Promote Effective Use of BMPs Through Assessing the Improvement in WQ Relative to Specific NPS Reduction Actions.

Goal 5: Design Monitoring Programs to Meet Management Information Needs Concerning Identified Geographic Areas or Issues of Concern, Then Use Information Obtained for Resource Management Decision-making.

Goal 6: Improve Communication Linkages Both Between State and Local Resource Managers, As Well As Among the Various Local, State and Federal Agencies Within the State for Purposes of Expanding the WQ Monitoring Database and Enhancing Accessibility to It.

Chapter 6. Information and Education (I&E)

Investment in education must be considered an essential and integral part of every step in the 2006 NSMPP. Education cannot be a viewed as a minor component of the NSMPP, but one of the many steps that must be taken to meet the management plan's goals. In this NPS management plan, education is recognized as an important means for effecting change with respect to NPS water pollution problems.

Goals 2006-2010

Goal 1: Build and Improve Capacity to Deliver NPS-Related I&E at State and Local Level.

Goal 2: Raise Awareness of the General Public About the Nature of NPS Pollution, How Communities and Individuals Contribute to it, and What Governmental Organizations and Individuals are Doing About it.

Goal 3: Foster Coordination and Cooperation Between Governmental Agencies and Private, Nonprofit and Other Organizations to Carry Out Information and Education Efforts.

Goal 4: Include NPS I&E in Formal and Informal Educational Curricula.

Goal 5: Effectively Measure Impact of NPS I&E Activities.

Chapter 7. Feedlots

Animal manure, when properly used as fertilizer, is a useful resource. It contains valuable nutrients such as nitrogen (N), P and potassium. It can improve soil quality, including aggregate stability, infiltration, and water holding capacity, aeration, soil organic matter levels, and earthworm activity. However, animal manure improperly stored, handled, disposed of and allowed to leach or run off to surface or ground waters, can create serious water pollution hazards. These hazards include excess nitrogen, excess P, pathogens and possible antibiotics, hormones or trace metals. The impacts of this pollution can be felt locally, regionally, or nationally, as in the issue of hypoxia in the Gulf of Mexico. A study prepared by the Minnesota Nitrogen Task Force (funded by the Minnesota State Legislature) has indicated that although Minnesota farmers are doing a good job of managing nutrients applied in commercial fertilizers, often inputs of nutrients from other sources such as manure are not credited accurately.

Goals 2006-2010

Goal 1: Reduce Pollutant Transport to Surface and Ground Waters Associated with Land Application of Manure.

Goal 2: Assist Producers with Methods to Correct Feedlot Runoff and Discharges to Surface Waters.

Goal 3: Ensure That Ground WQ is protected at Manure Storage Areas.

Goal 4: Increase the Level of Adoption of Air Emission Control Methodologies.

Goal 5: Collect, Assess and Quantify Current Feedlot and Manure Management Practice Information and Establish Risk-Based Priorities, Program and Policies from this Information and Associated Feedlot Research.

Goal 6: Improve Communication and Coordination Avenues Associated with Feedlot Regulations, Research, Education, and Assistance.

Goal 7: Evaluate and Expand Ways to Make it Easier for Livestock Producers to Work on Pollution Prevention Through Evaluating and Improving Existing Feedlots, and Finding the Best Sites for New Feedlots.

Chapter 8. Agricultural Erosion

Soil is one of Minnesota's most valuable resources. Minnesota's fertile topsoil and skilled agricultural producers make Minnesota one of the outstanding crop producing regions in the world. Because our population and agricultural markets are becoming larger on a global basis there is an expanding demand for the numerous products (e.g., food, clothing, and shelter) that come from the soil. It is important that this demand be translated into careful conservation and management of soil and not into exploitation. Minnesota's soil and water resources must be maintained as permanent useful resources because future needs for productive soil will be even greater than those of the present.

Soil and WQ problems caused by agricultural land uses are now recognized by society as a significant environmental concern. Sediments from eroded cropland interfere with the use of water bodies for transportation; threaten investments made in dams, locks, reservoirs and other developments, and degrade aquatic ecosystems. Sediments contain nutrients that accelerate the eutrophication of lakes, streams and wetlands. Compaction and declining levels of organic matter in the soil are other forms of soil degradation that may result in accelerated erosion and greater sedimentation.

Storm water and snowmelt runoff from cropland and pastureland carry sediment nutrients, bacteria and organic contaminants into nearby lakes, streams and wetlands.

The U.S. Department of Agriculture indicates the primary source of pollution to those rivers and lakes of the nation that are affected by NPS is agriculture. Specifically, 64 percent of the nations affected rivers and 57 percent of the nations affected lakes receive most of their pollution from agricultural sources. Sediments and nutrients combine for 60 percent and 81 percent respectively, of the primary type of pollutants to rivers and lakes. Sediment accounts for nearly half of all pollutant types in the nation's rivers and over one-fifth of all pollutants in the nation's lakes.

Additional information regarding the impacts of sediments in Minnesota's waters is incorporated into Chapter 1: Updated NPS Assessment.

Goals 2006-2010

Goal 1: Improve Interagency Coordination in the Development and Implementation of Statewide Policies and Programs Concerning Agricultural Erosion and Sediment Control.

Goal 2: Improve Technical Assistance and Education Associated with the Application and Adoption of BMPs for Agricultural Erosion and Sediment Control.

Goal 3: Continue to Improve the Reliability and Accuracy of Decision-Making Tools Associated with Agricultural Erosion and Sediment Control.

Goal 4: Increase the Adoption and Effectiveness of Agricultural Erosion and Sediment Control BMPs.

Goal 5: Focus Agricultural Erosion and Sediment Control Activities in Watersheds Contributing the Most Sediment.

Chapter 9. Agricultural Nutrients

Nitrogen and P represent significant sources of WQ degradation in Minnesota. Excessive concentrations of Nitrate-Nitrogen (NO_3-N) are toxic to both humans and animals. The USEPA's Maximum Concentration Level (MCL) standard for nitrate-N is 10 mg L^{-1}. Humans, particularly infants, exposed to concentrations in excess of the MCL can develop methemoglobinemia. Methemoglobinemia is a blood disorder in which the ability to convert methemoglobin to hemoglobin is deficient. Methemoglobin does not carry oxygen; consequently, humans with methemoglobinemia may have episodes of breathing trouble and develop bluish mucous membranes. The most recent reported case of methemoglobinemia in Minnesota was a non-fatal case that occurred in 1979. However, the number of reported cases is probably underreported because the state does not have a methemoglobinemia medical registry. Studies in Spain, China, and Taiwan have linked gastric cancer to long-term exposure of elevated nitrate-N concentrations in adults.

Goals 2006-2010

Goal 1: Accelerate and Enhance Education and Outreach of BMPs Related to the Management of Fertilizers, Manure, and Organic Sources of Agricultural Nutrients. Promote Programs Related to BMP Implementation. Focus BMP Education and Implementation Efforts on Vulnerable Areas Identified Using Monitoring Data and Risk Assessment Tools.

Goal 2: Continual Research, Development and Refinement of BMPs That Minimize Nutrient Losses From Agricultural Systems. Evaluate BMP Effectiveness and Long-Term Sustainability. Continual Research of Nutrient Sources and Transport Mechanisms in Agricultural Systems for the Development of Tools for Resource Planners/Managers to Prioritize BMP Implementation and Selection. Provide Guidance to the Agricultural Community for Proper Selection of BMPs and Expected Performance/Outcomes.

Goal 3: Provide Accurate Assessments of BMP Adoption Rates and Performance Through Surface and Groundwater Monitoring As Well As "Performance Indicators" Such As Survey Instruments.

Goal 4: Develop Effective Statewide Policies for Decreasing the Transport of Agricultural Nutrients to the State's Water Resources and Improve the Coordination Framework Necessary to Accomplish These Policies.

Chapter 10. Agricultural Pesticides

For both urban and rural landowners, the term "pest" describes many different threats to crops and lawns, including insects, rodents, weeds, and a variety of plant diseases. To manage this vast array of pests effectively, urban and rural landowners use a variety of pest control tools and management strategies.

Finding the balance between the responsible use of pesticides and the protection of water resources is an ongoing challenge. While certain areas of the state - including the central sand plains and the karst regions of southeast Minnesota - are particularly vulnerable to contamination, all surface water and ground water resources need to be protected from the potential risk of contamination by pesticides.

By finding the balance, pesticides can continue to be available as a tool for protecting crops, shrubs, trees, lawns and gardens from pests while water resources are protected to the greatest extent possible.

Goals 2006-2010

Goal 1: Promote Prevention of Occurrences of Pesticides or Pesticide Breakdown Products in Ground Waters and Surface Waters of the State. It is Intended That This Prevention be Accomplished While Promoting Practices That Consider Economic Factors, Availability, Technical Feasibility, Implementability, Effectiveness, and Environmental Effects, and In Consideration of the Beneficial Uses of Pesticides and Applicable WQS.

Goal 2: Evaluate Detections of Pesticides and Pesticide Breakdown Products in Water Resource Monitoring Data, and Evaluate the Adoption, Validity and Effectiveness of Prevention and Management Strategies, Including Pesticide BMPs.

Goal 3: Reduce or Eliminate Continued Movement of Pesticides or Pesticide Breakdown Products to Groundwater and Surface Water.

Goal 4: Promote the Development and Implementation of Integrated Pest and Weed Management as These Pertain to WQ Protection.

Chapter 11. Urban Runoff

Urban Runoff is runoff from developed or developing urban areas wherever they may be found in the state. Some major WQ concerns associated with urban runoff are: sedimentation, nutrient (P, N) runoff, oxygen demanding substances, toxic chemicals, chloride, bacteria, parasites, and viruses, temperature changes on water resources and floatable trash and litter.

Many reports by the Center for Watershed Protection and others have summarized the impacts of urbanization. The two main issues can be summarized as quantity and quality. The USEPA, Metropolitan Council Environmental Services (MCES), the U.S. Geological Survey (USGS), and the MPCA and others, have documented the impacts of urbanization. The USEPA 305(b) report for 2000 shows urban runoff as the third leading source of pollutants nationally causing impairment of lakes, ponds, and reservoirs behind agriculture and hydromodification.

Goals 2006-2010

Goal 1: Jurisdictions Responsible for Unregulated Small Municipal Separate Storm Sewer System (MS4) Develop Comprehensive Runoff Management Programs (see USEPA's *National Management Measure to Control Source Pollution from Urban Areas*).

Goal 2: Additional BMPs and Better Site Design (BSD) Techniques are Advanced in Minnesota (see the Stormwater Steering Committee's Minnesota Stormwater Manual).

Goal 3: Address Load Allocation Reductions for TMDLs Established Due to Stormwater Runoff Impacting Impaired Water or Maintain WQ of a Water Body Threatened by Urban Runoff.

Goal 4: Establish an Effective Technical Assistance and Education Delivery System.

Goal 5: Improve Urban WQ Through Education and Technical Assistance Programs on the Application of Urban Runoff BMPs Consistent with Goal 4 and Chapter 6 of this Plan.

Goal 6: Minnesota Stormwater Runoff Stakeholders Work Together to Address and Prioritize Runoff Needs for the State.

Goal 7: Research and Effectiveness Monitoring Assesses Urban Runoff BMPs.

Chapter 12. Forestry

Minnesota is blessed with vast acreages of forestland and an abundance of high quality water. Forest management activities are extensive and often take place in close proximity to or adjacent to water resources, or in wetland areas. Sustainable forest management is only possible when all the needs of society are balanced with maintaining diverse, healthy forest ecosystems. Forest managers, landowners and operators must therefore ensure that all forest management activities are accomplished in a manner that minimizes impacts to the environment and WQ.

Goals 2006 - 2010

Goal 1: Education: Improve Adoption and Use of BMPs Through Effective Educational Programs.

Goal 2: Monitoring: Evaluate and Quantify Implementation of BMPs.

Goal 3: BMP Development and Implementation: Continue BMP Development and Implementation Efforts to Improve the Effectiveness and Use of BMPs and Expand the Protection of Resources.

Goal 4: Research: Target Research Efforts to Evaluate Costs and Benefits As Well As Effectiveness of BMPs in Reducing Negative Impacts of Forest Management Practices.

Goal 5: Retain and Restore Forest Vegetation on Sensitive Areas to Improve WQ, Absorb Nutrients, Restore Habitat, Provide Alternative Crop, and Improve Aesthetics, Slow Flood Discharge and Trap Sediment.

Chapter 13. Mining

Historically, iron-ore mining created hundreds of mine pits, tailings basins, and stockpiles. Most pits have filled with water and although there are sections of pit walls that are eroding, the general WQ in these abandoned pits is very good. Several cities use the pit water as their drinking water supply, and some pits have been stocked with trout.

For most mining operations in Minnesota, the WQ concerns are related to the control of suspended solids and resulting turbidity and sedimentation in receiving waters. These are currently addressed by existing state programs. Site-specific issues that may need to be addressed in the future could include the following.

- Increased levels of total dissolved solids (TSS) in wetlands and certain receiving waters.
- Discharge of water containing elevated concentrations of sulfate, which may impact the growth of wild rice and affect the rate of methyl mercury production.
- Releases of nitrate from fertilized areas and blasting residuals.
- Discharge of low-pH water and P from peat mining operations.
- The fate of reagents used in taconite processing.

Goals 2006-2010

Goal 1: To Develop and Test BMPs for Non-Ferrous Mining.

Goal 2: To Identify BMPs for Sand and Gravel Operations,
  - To Develop New Management Practices As Needed
  - To Distribute the Information to Operators
  - To Perform Follow-Up Audits to Insure That the BMPs are Being Implemented.

Goal 3: To Develop BMPs To Control Mercury Release From Mining Areas.

Chapter 14. Individual Sewage Treatment Systems

According to data that LUG provide to MPCA in annual reports, there are approximately 530,000 residences and other buildings served by ISTS in Minnesota. An informal survey of county planning and zoning administrators done by the MPCA in the 1980's indicated that 70%, or approximately 344,000, housing units at that time had systems that failed to provide basic sewage treatment and dispersal. Recent estimates reported to MPCA in the annual reports that local governments file have reduced that amount to approximately 10% of all ISTS. This is a marked improvement in the number of homes discharging untreated sewage to the environment. An estimated additional 27% of the current ISTS fail to protect ground water, and will need to be replaced over time.

Goals 2006-2010

Goal 1: To Have all Counties Adopt Amended Countywide ISTS Ordinance That Meets State

Standards of MR 7082, and To Ensure that Cities and Towns That Chose To Regulate ISTS do so appropriately.

Goal 2: Have All LUG Effectively Administering Their ISTS Ordinance.

Goal 3: To Effectively Enforce the ISTS Licensing Program.

Goal 4: To Increase the Knowledge and Skill Levels of ISTS Professionals.

Goal 5: Provide Technical and Financial Assistance to Areas with Inadequate Sewage Treatment (Small Communities, Rural Subdivisions, Lakeshore Areas, Unincorporated Communities, etc.).

Goal 6: Provide Education to Local Decision-makers, the Public and Special Groups.

Goal 7: Increase Regulatory Control of Operation and Maintenance of ISTS.

Goal 8: Register Proprietary Products Used in ISTS in Minnesota and Provide Information to LUG on Their Appropriate Use.

Chapter 15. Effects of Atmospheric Pollution on Water Quality

The atmosphere as a significant source of pollution to surface water is a relatively recent idea, first demonstrated for acid rain (sulfur dioxide and nitrogen oxides: SO_2 and NO_x), and later for mercury, PCBs, and nutrients such as nitrogen and P. Most pollutants in urban runoff are picked up by clean precipitation running off dirty surfaces; yet the dirt may have come from the atmosphere and the rain may already contain some of pollutants, such as P, N, mercury, pesticides, and PCBs.

Goal 2006-2010

Goal: To Develop a Quantitative Understanding of the Effect of Air Pollutants on WQ, and to Develop Appropriate BMPs to Minimize the Impact of Air Pollution on Water Resources.

A description of the nature and extent of NPS pollution and recommendations of programs needed to control each category of NPSs, including an estimate of implementation costs: The goals of Chapters 4.1 – 15 (above) may help to state the nature and extent of NPS pollution in the 319 NPS Programs. Some of these goals would be common with the CWP Program.

<u>Basin Planning</u>
The MPCA has implemented a biennial planning process for aligning and coordinating the Agency's WQ activities. This process is built from information, priorities and needs of the basins, program goals and commitments, environmental condition monitoring, and statewide policies and priorities.

Since 1995 MPCA has organized delivery of its water programs geographically according to the state's major drainage basins. The MPCA's 1998 Continuing Planning Process Report's description of the goals of this action is still relevant:

- Increase environmental outcomes by maximizing limited resources,

- Clearly identify WQ goals and priorities,
- Integrate point and NPS pollutant reduction strategies, and
- Develop more effective partnerships with MPCA customers, including local governments, environmental groups and permittees.

The basin approach looks at the "resource" as a whole. The basin approach proposes solutions which, collectively, improve the condition of the basin. The basin approach links all the jurisdictions in the basin, extending the capacity of local, state and federal governments so that WQ problems can be addressed both ecologically and politically.

External teams function in six basins of the state. These teams are composed of more than 200 separate state and federal agencies, LGUs, organizations and non-public constituencies. External basin teams meet monthly in the Lake Superior, Minnesota, Lower Mississippi, Upper Mississippi, and Red River basins, and quarterly in the Rainy and St. Croix basins. These teams include representatives of federal, state, regional and local government, industry, citizen and special interest groups. Members are actively recruited. Each team has an open door policy, inviting in anyone who wants to participate.

These six groups of more than 200 stakeholders meet routinely and are considered their basin's "go-to" group for WQ. They serve as the stakeholders for development of impaired waters plans. They review and recommend projects for 319 funding. The establishment and coordination of these teams brings form and substance to the situational alliances we need to achieve WQ goals.

Basin planning established websites for each basin, which are now used routinely by the public and others to gain information about the resources, condition and priorities of the major drainage basins of Minnesota. The basin web sites are the most accessible repository for WQ information that is used routinely by the public and others to understand the conditions, resources and priorities within the watersheds in which they live. These websites also serve as portals to the websites of related agencies and activities. E-newsletters are published for the Minnesota, Lower Mississippi, Red, Rainy and Superior basins.

Basin planning has produced two sets of documents for the state's major drainage basins:

1. <u>Basin information documents, which summarize conditions and resources of the basin, assess pollution control status, list ongoing research and identify major issues.</u> Prepared and published assessments of the effects of land use on WQ and how they relate to the types of activities regulated by the MPCA. This information is the focus of the basin information document. It is generally provided by major watershed (of which there are 81 in the state). It helps the public link environmental conditions, human uses and WQ expectations and it provides critical information about impacts on WQ. It is the foundation for WQ work which requires the identification and assessment of sources as a starting point. This information has several uses. For the impaired waters program, this land use assessment is the first source of information for the development of a TMDL, which requires the allocation of pollutant load back to all sources in the watershed of the listed reach. Its greatest value is that it develops the practice of starting water management with a comprehensive assessment of information about the condition of the water body and the identification of sources that may impact WQ.

2. <u>Basin water quality plans</u> Basin planning has established the practice of setting basin-wide environmental goals to measure performance. This type of goal setting helps basin residents and stakeholders understand the connection between NPS and point sources and the desired condition of the waters. These plans provide specific goals to measure WQ improvements.

Minnesota Watermarks

The Minnesota water plan, *Minnesota Watermarks: Gauging the Flow of Progress 2000 - 2010*, calls for a unified approach to protecting and conserving water throughout the state. The plan is organized as the water flows — into major water basins.[‡] Developed under the leadership of the Environmental Quality Board and its Water Resources Committee with interagency teams, it reflects the unique environmental conditions of each water basin, as well as statewide conditions.

The 10-year plan is mandated by the Legislature and is intended aid in evaluating programs and guiding strategies. Highlights include:

§ A statewide section that provides a framework of goals, objectives and measurable indicators;
§ Locally developed basin sections that provide an overview of unique environmental conditions and pressures and suggestions for measurable indicators; and
§ Maps and graphics to illustrate the state of our water resources.

The plan calls for:

§ A focus on major water basins, such as the Mississippi, Minnesota and Red River basins, to recognize the differences in water resources and management choices throughout the state;
§ Unification of water management through interagency teams in each basin that will work with local entities and the public; and
§ Measurement of results by developing and tracking progress toward a statewide framework of goals and objectives adapted to each basin.

Statewide goals are to improve water quality, conserve the diverse characteristics of state waters, restore and maintain healthy aquatic ecosystems, and provide diverse recreational opportunities. Indicators will measure results at both state and basin levels.

The Environmental Quality Board, staffed by the Office of Geographic and Demographic Analysis, develops policy, creates long range plans and reviews proposed projects that would significantly influence Minnesota's environment.

Biennial Water Policy and Priorities Reporting

Minnesota Statutes, Sections 103A.43 and 103B.151 directs the Environmental Quality Board to coordinate state water programs and develop a biennial water policy and priorities report. The Governor’s Clean Water Cabinet provides the forum through which EQB coordinates state actions and plans for identifying and addressing these needs. In furtherance of this, the Cabinet and Board developed the 2005-2007 biennial water priorities report. The priorities demonstrate the commitment to protecting the economic, social and ecological value of Minnesota’s water

[‡] A basin (or drainage basin) is the area of land drained by a river or lake and its tributaries. Minnesota has 10 major drainage basins. Each drainage basin is made up of smaller units called watersheds, which correspond to the drainage of a tributary or lake system.

resources. EQB and Cabinet activities are documented on the Internet at www.eqb.state.mn.us and http://cwc.state.mn.us.

As expressed in the priorities report, the state's vision for water management requires all Minnesotans to:

- § Guard their waters from present and future threats
- § Restore waters that are impaired
- § Maintain an accurate picture of waters for citizens, managers and policy-makers
- § Ensure adequate reserves of safe water to keep Minnesota prosperous and sustain healthy communities

The report identifies several issues that must be addressed to ensure that Minnesota has high quality water for both a healthy economy and environment. Matters of greatest concern include:

- § As tough budgetary decisions are made, it will be evermore important to hold harmless the interrelated set of core state activities and the knowledge and expertise so key to protecting Minnesota's waters.
- § In 2004, Minnesota reported 1,123 impaired bodies of water whose pollutants threaten their economic and recreational value. These numbers, while alarming, are based on an assessment of only 8 percent of the state's river miles and 14 percent of its lakes. These numbers were determined by MPCA staff as part of surface water monitoring statistics in 2005.
- § The state has limited knowledge of how much water can be safely withdrawn for drinking water supplies, especially its largely unmapped ground water resources. As population increases and development expands, the demand for high quality water will increase. Population pressures of the Twin Cities Metropolitan Area already place great demands on that region's waters.

With these challenges in mind, the Clean Water Cabinet and Environmental Quality Board identified the following priorities for the 2005-2007 biennium:

- § Protect core state water activities and meet strategic long range needs
- § Make the commitment to restoring impaired waters
- § Promote Twin Cities water supply sustainability

The core state activities referenced above serve to protect Minnesota's ground and surface waters through the day-to-day, coordinated application of law, programs, expertise, information and education. This work helps people answer basic quality and quantity questions about water, such as where it is, how clean it is, how we use it and how actions we take may impair it. These core activities provide the key to meeting the state's water vision.

With so much of Minnesota's continuing prosperity hinging on a sound water program, maintaining the collaborative effort to protect and sustain Minnesota's waters must take center stage.

The state's core water activities protect Minnesota's waters by providing the following services:

- Research
- Monitoring
- Data management and assessment
- Regulation and enforcement
- Implementation
- Education and outreach

With these services, people gain the understanding of watershed and land use characteristics, and trends in water quality, supply and use that Minnesota's communities need to plan for population growth and economic development in environmentally safe ways. With this understanding, people can apply the tools of water management in a prudent, effective manner to protect resources and meet future needs.

Policy makers can determine if an activity is a core water activity by asking a few simple questions. Does the activity help people and programs:

- Address current problems and prevent the emergence of new ones?
- Make the link to land use?
- Integrate and coordinate federal, state and local interests?
- Collect sufficient data and interpret it for ready use by decision-makers and citizens
- Involve and empower local governments and citizens
- See and easily understand water issues and efforts?
- Act in a unified, economical manner?

The EQB and Cabinet intend to complete the next generation priorities report late in 2006.

C. Storm Water Program Development

In implementing the Phase II Stormwater federal requirements, the MPCA was directed by the Minnesota Court of Appeals to address Minnesota nondegradation rules stemming from federal antidegradation policy under 40 CFR 131.12, and to provide for review, public comment, and approval of the individual permittee's stormwater pollution prevention plan in a general permit setting. Together these present a considerable challenge and burden on MPCA resources.

Minnesota's nondegradation rules include distinct rules for discharges to all waters of the state, outstanding resource value waters (ORVWs), and wetlands. These rules were written in a traditional point source setting, and their application to stormwater discharges have proven difficult. The 2003 Legislature provided time for the agency to rewrite these rules to better address stormwater discharges by 2007. The MPCA will seek an extension during the 2007 legislative session and address this issue as part of the triennial review of the state's WQS required under federal law.

Minnesota and other states have had courts remand the general permit for small regulated MS4s on the issue of public process within a general permit structure, among other issues. At issue was how the public could comment on a community permit when most of the substantive BMPs chosen by the community were within the applications, which were not open to public comment.

The MPCA formed a Stormwater Design Team of stakeholders during the fall of 2003 due in part to 1) the importance of stormwater pollution in Minnesota, 2) the implementation of Phase

II, 3) the large contentious policy issues, 4) the future issues with impaired waters, and 5) the need to work more closely with various partners to have an effective program to reach down to the individual citizen and smaller/more numerous regulated parties. This team evolved into the Stormwater Steering Committee in 2004. This Committee just completed a state stormwater manual and will continue to address stormwater policy for the state of Minnesota.

Construction Stormwater

The MPCA issued a revised construction stormwater general permit on August 1, 2003, for construction activity over one acre of disturbance in accordance with the Phase II requirements. This permit provides additional environmental protection for the state's ORVWs and wetlands, better regulates those actually doing soil disturbances within subdivisions, and provides more options for post construction BMPs than the previous permit. The permit also addresses impaired waters.

Municipal Stormwater

The MPCA Citizen's Board authorized issuance of the small regulated MS4s general permit in June of 2002. The Minnesota Center for Environmental Advocacy appealed the decision and the Minnesota Court of Appeals remanded the permit to the agency to address nondegradation, public process, and other issues. The regulated small MS4s will follow the appealed permit until issuance of a new permit. On February 28, 2006, the MPCA Citizen's Board authorized issuance of the revised small regulated MS4s general permit that meets the court remanded issues. Applications for this new permit and Storm Water Pollution Prevention Plans (SWPPPs) will be required in June of 2006. This permit addresses impaired waters, ORVWs, and nondegradation of all waters. In addition to the permit, the MPCA is also working with the University of Minnesota and other contractors to develop methods, protocols and approaches to monitor municipal stormwater in the future.

Industrial Stormwater

Comments received during the public comment period to reissue the Industrial Stormwater general permit in 2002 included the need to better address nondegradation and other issues. The MPCA put further work on this permit on hold, first because of the need to address many issues around the March 10, 2003 date for Phase II implementation, then because of the staff resources needed for issuance of the construction general permit and for rule development, and finally until USEPA's Multi-sector General Permit was completed. USEPA's permit will be used as a model for Minnesota's permit, with work beginning in April 2006. The agency is also working on the nondegradation and other policy issues for Minnesota's permit. Phase I regulated permittees are currently regulated under an expired general permit. Phase II regulated parties have submitted applications to the agency awaiting permit issuance.

Stormwater Rules

New stormwater rules Chapter 7090 were enacted August 15, 2005, which incorporate the Phase II federal regulations. This rule chapter combines all stormwater rules, Phase I and II in one place. It also designates 43 additional MS4s, who have until Feb. 15, 2007 to apply for permit coverage and submit their SWPPPs.

D. Rivers and Streams Assessment Development

While implementing the monitoring and assessment strategy, considerable progress has been made incorporating additional data and information from other local, regional, state and federal monitoring and management entities. The MPCA actively seeks both narrative and numeric data from all sources utilizing appropriate Quality Assurance/Quality Control (QA/QC). Criteria used to determine whether to use data from other sources are outlined in the document "Guidance Manual for Assessing the Quality of Minnesota Surface Waters for the Determination of Impairment, 305(b) Report and 303(d) List" developed and revised concurrently with each assessment cycle by MPCA staff. Data from the Citizen Lake Monitoring Program (CLMPs) and Citizen Stream Monitoring Programs (CSMPs) are used as part of assessing lakes and streams. Important outside sources of numeric data include the MCES, USGS, Long Term Resource Monitoring Program on the Mississippi River at Onalaska, Wisconsin (WI), Upper Mississippi River Headwaters Board, Wisconsin Department of Natural Resources, WI Superior Sanitary District, the National Forest Service, and the Hennepin County Conservation District. Data is used from CWP projects that meet the criteria. CWP projects are funded by the MPCA and monitoring is done by local governments. Staff from other agencies contributing monitoring data have also participated in the professional judgment group process.

The major limiting factor in making use of data from external sources has been inaccessibility of some data due to diverse storage formats; lack of information on how data was collected; and difficulty of interpreting measures that lack established WQS, but have intuitive or practical value for local programs.

Two major goals of the CWA, "fishable and swimmable" waters, are assessed here in terms of aquatic life use support (AQL), aquatic recreation use support (AQR), and aquatic consumption use support (AQC).

E. Lake Assessment Process and Development: 2006 Assessment

Thirty four years of data (1970-2004) from USEPA's Storage and Retrieval System (STORET) database was the primary basis for this assessment. The focus of this assessment is on trophic state and its relation to support and nonsupport of designated uses, specifically aquatic recreation uses, which includes swimming, wading, aesthetics and other related uses. The parameters used to assess trophic state and aquatic recreational use were epilimnetic total phosphorous (TP), chlorophyll-a (chl-a) and Secchi Disk (SD) transparency.

DATA ANALYSIS PROCEDURES

A. Data Age and Quality for Assessments

Monitored Data

Lakes with summer data (defined as the time period from June through September) collected between calendar years 1995-2004 were considered monitored. Summer data are preferred for assessments to better represent the maximum productivity of a lake and yield the best agreement among trophic variables. This time period also reflects the primary season when the resource is used for aquatic recreation. Summer-means were calculated for each variable and used in the assessment. In addition the number of observations (N), standard error (SE) of the mean, maximum (max) and minimum (min) values were calculated as well. These additional statistics can be used to place the mean values in perspective and improve the ability to make comparisons of values among lakes.

Evaluated Data

Lakes without data meeting monitored criteria, but with TP, chl-a or SD transparency measurements collected from 1970-1994 were treated as evaluated. Summer data were used for calculating mean chl-a and SD transparency. All available TP data were used to calculate mean TP. Expanding the season for TP allows for inclusion of a larger number of lakes in northern Minnesota. These lakes were often sampled only during spring or fall turnover as part of the MPCA Acid Rain Lake Monitoring Program in the early 1980's.

Data Quality

Assessing the "quality" of data used in the assessment is a new feature of the 305(b) assessment. Since the data used in these assessments was derived from STORET we assume that certain "quality control" thresholds were already established for the data. Hence our definition of "quality" will focus on the relative amount of information available for the assessment. In the case of our aquatic recreational use assessments, TP is the primary variable used, so we place the greatest emphasis on the amount of TP data available for the assessment. The "quality" terms used in Table II-1, were drawn from USEPA guidance. In general, we feel that assessments based on multiple measurements are more reliable than those based on only a few measurements. The rationale for assigning the respective "quality" definitions corresponds roughly to typical lake-monitoring regimens (e.g. monthly sampling during the summer season), whereby four TP samples often represent one summer; eight samples two summers and 12 samples two-three summers. In the case of 303(d) assessments, 12 or more TP, chl-a and Secchi measurements are required to determine if a lake should be placed on the 303(d) list and was considered "excellent" quality data for assessment. In general, the thresholds were similar for the "monitored" (recent) and the "evaluated" (old) data with the exception that there would be no "excellent" evaluated data as these data are more than ten years old.

Table II -1. Data quality characterizations for 305(b) and 303(d) assessments.

Quality	**"Monitored data"**	**"Evaluated data"**
Poor	< 4 TP measurements	< 4 TP measurements
Fair	4 ≤ TP < 8, some chl-a & Secchi	4 ≤ TP < 8, some chl-a & Secchi
Good	8 < TP < 12, some chl-a & Secchi	8 < TP < 12, some chl-a & Secchi
Excellent	12 TP, 12 chl-a & 12 Secchi	NA

Trophic Status Assessment

Trophic Status was determined for each lake using Carlson's Trophic State Index (TSI). This index was developed using the relationship among summer Secchi transparency, epilimnetic concentrations of chl-a, and TP (Figure II-3).

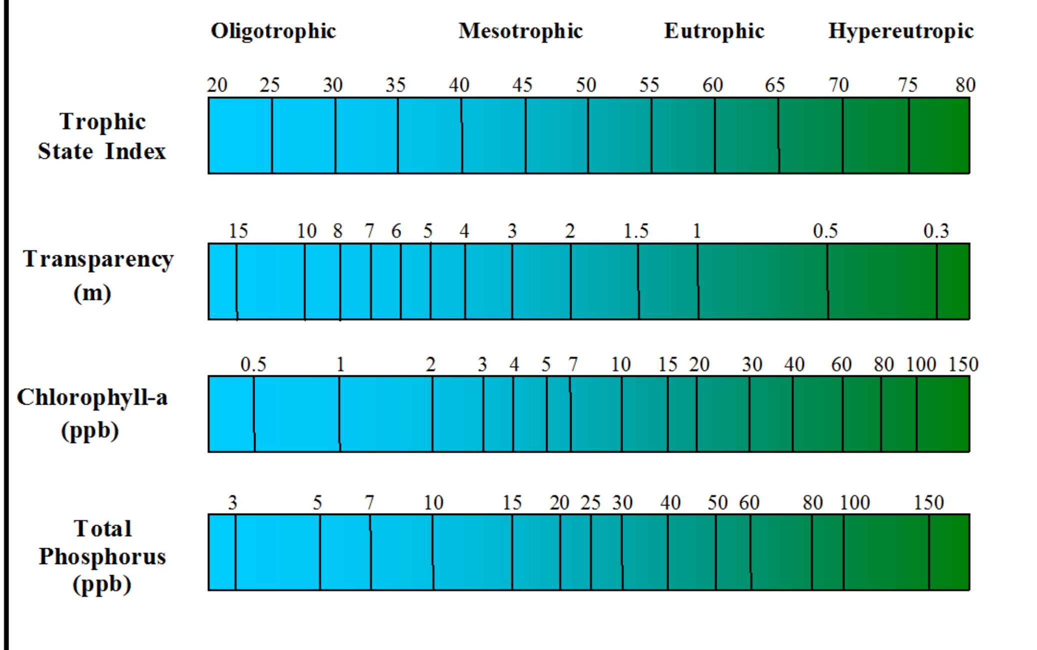
The TSI values are calculated as follows:
* *Secchi disk* (SD) TSI (TSIS) = 60 – 14.41 natural log (ln) SD;
* *Total phosphorus* (TP) TSI (TSIP) = 14.42 ln TP + 4.15;
* *Chlorophyll-a* (chl-a) TSI (TSIC) = 9.81 ln chl-a+30.6;
(chl-a and TP in micrograms per liter (µg/L) and SD transparency in meters).

The index ranges from 0 to 100 with higher values indicating more eutrophic conditions. The TSI values were calculated for each variable; however trophic status will be based on total phosphorus when data are available. If no TP data are available for a lake, the Secchi TSI value will be used to estimate trophic status. Ideally, chl-a would be used for this purpose; however chl-a (corrected) is measured much less frequently than Secchi or TP so we chose to focus on TP. The following breakpoints were used to define the trophic status of the lake: TSI ≤40 “oligotrophic (O)”, ≥41 TSI <50 “mesotrophic (M)”, ≥50 TSI ≤70 “eutrophic (E), and TSI ≥70 “hypereutrophic (H). This index and the interrelationships among TP, chl-a, and Secchi figure prominently in definition of use-support categories to be addressed later.

Figure II-3. Carlson’s Trophic State Index

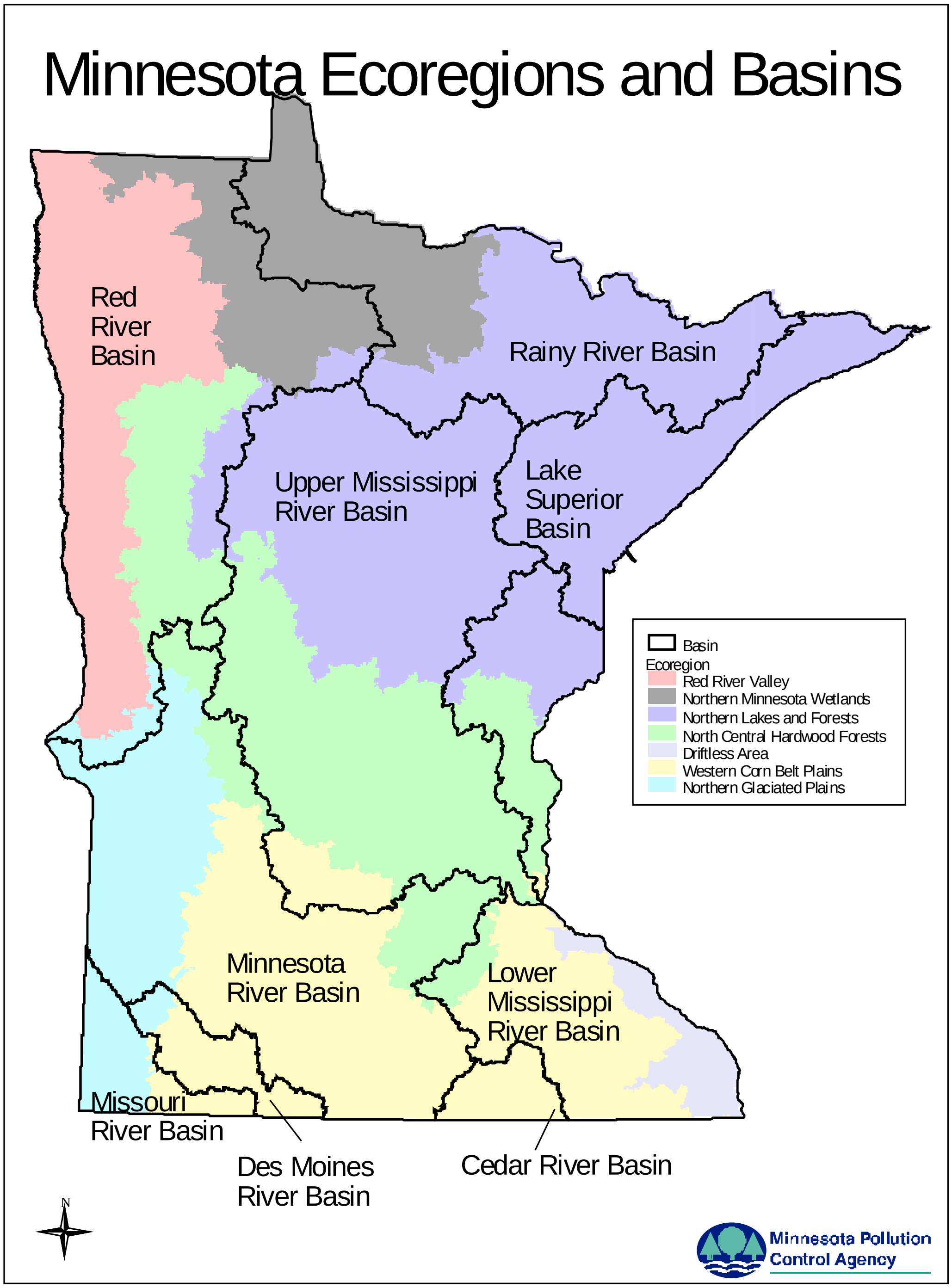
Carlson’s Trophic State Index
RE Carlson

TSI < 30	Classic Oligotrophy: Clear water, oxygen throughout the year in the hypolimnion, salmonid fisheries in deep lakes.
TSI 30 - 40	Deeper lakes still exhibit classical oligotrophy, but some shallower lakes will become anoxic in the hypolimnion during the summer.
TSI 40 - 50	Water moderately clear, but increasing probability of anoxia in hypolimnion during summer.
TSI 50 - 60	Lower boundary of classical eutrophy: Decreased transparency, anoxic hypolimnia during the summer, macrophyte problems evident, warm-water fisheries only.
TSI 60 - 70	Dominance of blue-green algae, algal scums probable, extensive macrophyte problems.
TSI 70 - 80	Heavy algal blooms possible throughout the summer, dense macrophyte beds, but extent limited by light penetration. Often would be classified as hypereutrophic.
TSI > 80	Algal scums, summer fish kills, few macrophytes, dominance of rough fish.



After Moore, 1. And K. Thornton, [Ed.]1988. Lake and Reservoir Restoration Guidance Manual. USEPA>EPA 440/5-88-002.

Figure II-4. Minnesota's Ecoregions and Major Drainage Basins.



Aquatic Recreation Use Assessment

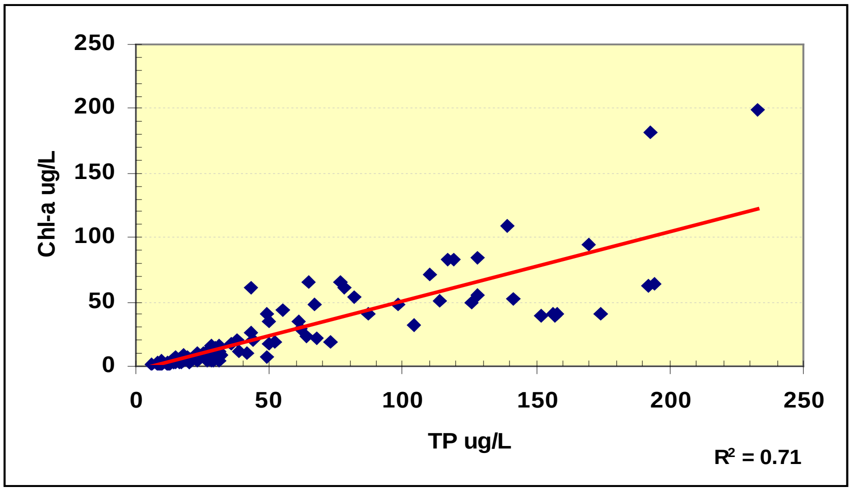
Assessing whether lakes "support" or "do not support" aquatic recreation is required as a part of Section 305(b) of the CWA. Minnesota has long used an ecoregion-based approach for these assessments. Previously developed ecoregion-based phosphorus (TP) criteria (Table II-2) have long been used in conjunction with Carlson's TSI scale (Figure II-3) to establish use support thresholds (Table II-3). These thresholds are described in more detail in MPCA's "Guidance Manual for Assessing the Quality of Minnesota Surface Water" that may be found at: http://www.pca.state.mn.us/water/tmdl/index.html#publications. These thresholds provide a basis for determining nutrient-impaired waters for the 2002, 2004 and 2006 303(d) lists and help guide the 305(b) assessments as well.

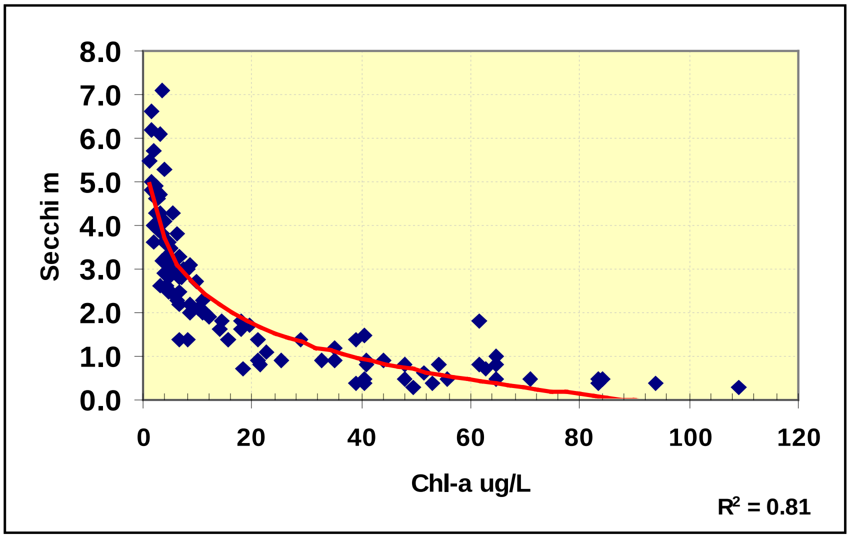
The P "criteria" we refer to were originally derived based on an analysis of reference lake data (Table II-4) and various ecoregion-specific considerations such as lake-morphometry, attainability and lake user perceptions (Heiskary and Wilson, 1989). Determining use support by ecoregion provides a more reflective picture of the condition of Minnesota lakes, as opposed to assessing all lakes by a single scale that ignores important regional differences such as lake morphometry and lake user perceptions. The MPCA is in the process of developing ecoregion-based TP, chl-a and Secchi criteria as a part of the WQ standards revision process and draft criteria are presented in Table II-5.

The thresholds used for 305(b) were modified slightly (from previous assessments) so they were more consistent with use support definitions developed for 303(d) assessment (Table II-3). For 305(b) purposes we employ three "levels" of support: full, partial, and non support. In general, full support thresholds for the Northern Lakes and Forests (NLF) and North Central Hardwood Forests (CHF) ecoregions are the same as in previous 305(b) assessments (30 and 40 µg/L respectively); while those for the Western Corn Belt Plains (WCP) and Northern Glaciated Plains (NGP) are somewhat less restrictive (70 µg/L). Differences in lake-user perceptions of "impaired swimming" and what constitutes nuisance algal blooms, along with differences in lake-morphometry and attainability are primary reasons for the regional differences. As with assessment of trophic status, TP was used as the basis for assessing use support. If TP data was not available, Secchi (based on TSI thresholds described below) was used.

The NLF and CHF ecoregions phosphorus criteria levels, 30 ug/L and 40 ug/L, respectively, serve as the upper thresholds for full support of aquatic recreational use. Those concentrations correspond to Carlson's TSI values of 53 and 57, respectively. P concentrations above criteria levels would result in greater frequencies of nuisance algal blooms and increased frequencies of "impaired swimming." The upper threshold for partial support of aquatic recreational use was set at 56 and 59 Carlson's TSI units, respectively, for these two regions. As P concentrations increase from about 30 ug/L to 60 ug/L, summer-mean chl-a concentrations increase from about ten ug/L to 30 ug/L, and Secchi transparency decreases from about 2.5 meters to 1.5 meters (Figure II-5). Over this range, the frequency of nuisance algal blooms (greater than 20 ug/L chl-a) increases from about five percent of the summer to about 70 percent of the summer (Figure II-6). The increased frequency of nuisance algal blooms and reduced Secchi transparency results in a high percentage of the summer (26-50 percent) perceived as "impaired swimming."

Figure II-5. Total Phosphorus, Chlorophyll-a, and Secchi Scatterplots and Regressions. Based on ecoregion reference lake data.





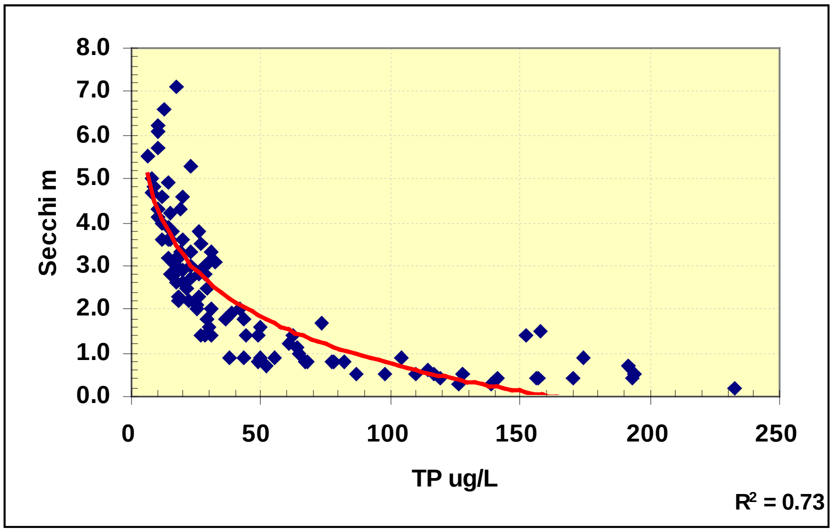
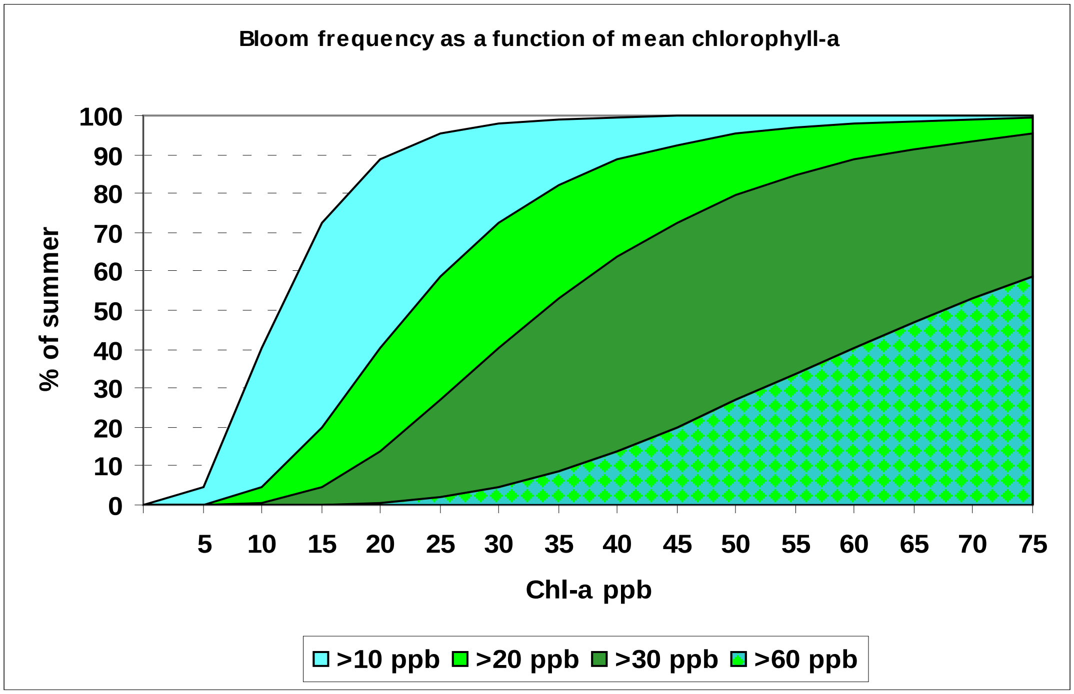


Figure II-6. Algal Bloom Frequency as a Function of Mean Chlorophyll-a and Total Phosphorus.



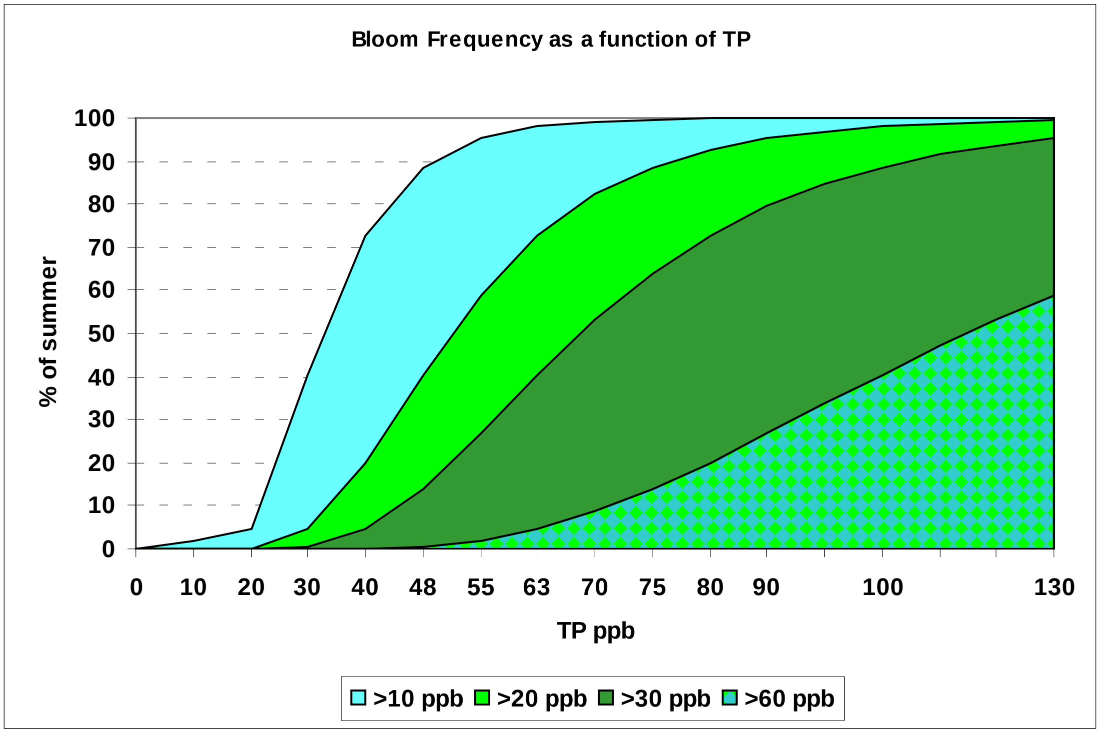


Table II-2. Minnesota Lakes Total Phosphorus Criteria (Heiskary and Wilson 1988).

Ecoregion	**Use and Level of Support**	**TP Criterion**
Northern Lakes and Forests	Cold water fishery Full support	< 15 mg/liter
Northern Lakes and Forests	Primary-contact recreation and aesthetics Full support	< 30 mg/liter
North Central Hardwood Forests	Primary-contact recreation and aesthetics Full support	< 40 mg/liter
Western Corn Belt Plains and Northern Glaciated Pains	Primary-contact recreation, Full support	< 40 mg/liter
Western Corn Belt Plains and Northern Glaciated Pains	Primary-contact recreation, Partial support	< 90 mg/liter

Table II-3. Trophic Status Thresholds for Determination of Use Support for Lakes: Comparison of 305(b) and 303(d). (Carlson's TSI noted for each threshold.)

Ecoregion (TSI)	TP ppb	Chl ppb	Secchi m	TP Range ppb	TP ppb	Chl ppb	Secchi m
305(b):	Full Support			Partial Support		**Non-Support**	
303(d)	Not Listed			Review	**Listed**		
NLF	**<30**	**<10**	**≥1.6**	**30 – 35**	>35	**>12**	<1.4
(TSI)	(<53)	(<53)	(<53)	(53 – 56)	(>56)	(>55)	**(>55)**
CHF	**<40**	**<15**	**≥1.2**	**40 – 45**	**>45**	**>18**	<1.1
(TSI)	(<57)	(<57)	(<57)	(57 – 59)	(>59)	(>59)	**(>59)**
WCP & NGP	**<70**	**<24**	**<1.0**	**70 – 90**	**>90**	**>32**	<0.7
(TSI)	**(<66)**	**(<61)**	**(<61)**	**(66 – 69)**	**(>69)**	**(>65)**	**(65)**

TSI = Carlson trophic state index; Chl = Chlorophyll-a; ppb = parts per billion or mg/L, m = meters

For the NLF ecoregion, summer-mean TP concentrations above 35 ug/L were associated with nonsupport of aquatic recreational use. At TP concentrations above 35 ug/L, mild algal blooms (greater than 10 ug/L chl-a) may occur over 50 percent of the summer and nuisance blooms (> 20 µg/L chl-a) about 15 percent of the summer. Secchi transparency will typically average 1.6 m or less. The combination of frequent blooms and reduced transparency will result in a high frequency of impaired swimming (perhaps 50 percent of summer) and greater than 25 percent as "no swimming."

For the CHF ecoregion, summer-mean TP concentrations above 45 µg/L were associated with nonsupport of aquatic recreational use. At TP concentrations above about 45 µg/L mild blooms occur over 80 percent of the summer, nuisance blooms about 40 percent of the summer, and severe nuisance blooms about 15 percent of the summer. Secchi transparency typically averages 1.1 m or less over this range of TP. Transparencies less than 1.4 m are typically associated with impaired swimming, while those less than 1.1 m are typically associated with no swimming (Heiskary and Wilson, 1989).

For the WCP and NGP, the upper TP threshold for fully supporting is 70 µg/L, which is consistent with the level used for 303(d) assessment (Table II-3). This corresponds to a TSI of 66. At a TP concentration of 70 ug/L, summer mean chl-a averages about 24 µg/L and Secchi transparency is about 0.8 meters. Nuisance algal blooms (greater than 30 ug/L chl-a for these regions) would occur for approximately 50 percent of the summer. Few lakes in these two ecoregions have TP concentrations of 70 ug/L or less. Partial support, which corresponds to a TP concentration of 70 – 90 ug/L (Carlson's TSI = 69), is again consistent with the 303(d) assessment (Table II-3). TP concentrations greater than 90 ug/L are considered not supporting of aquatic recreational use. At TP concentrations greater than 90 ug/L, Secchi transparency averages 0.5 meters or less and nuisance algal blooms may occur over 75 percent of the summer.

Lakes in the Red River Valley (RRV) and Northern Minnesota Wetlands (NMW) ecoregions were assessed using the CHF and NLF criteria, respectively. This is because there were too few lakes to establish reference conditions in the Red River Valley or Northern Minnesota Wetlands ecoregions.

Once promulgated into WQS the draft nutrient criteria (Table II-5) will be the basis for 305(b) and 303(d) lake assessments. These criteria should allow for a more comprehensive assessment of lake WQ and use support. Two features of the draft criteria are that they allow for the differentiation between deep and shallow lakes and also consider fishery requirements more fully. A detailed report on the development of the criteria is available at: http://www.pca.state.mn.us/water/lakequality.html#reports.

Table II-4. Ecoregion reference lake data summary. Based on the interquartile (25th – 75th percentile) range for reference lakes. Also referred to as "typical range."

Parameter	Northern Lakes and Forests	North Central Hardwood Forests	Western Corn Belt Plains	Northern Glaciated Plains
# of reference lakes	30	35	12	10
Total Phosphorus (µg/L)	14 – 27	23 – 50	65 – 150	122 – 160
Chlorophyll mean (ug/l)	4 – 10	5 – 22	30 – 80	36 – 61
Chlorophyll max. (µg/L)	< 15	7 – 37	60 – 140	66 – 88
Secchi Disk (feet) **(meters)**	8 – 15 (2.4 – 4.6)	4.9 – 10.5 (1.5 – 3.2)	1.6 – 3.3 (0.5 – 1.0)	1.3 – 2.6 (0.4 – 0.8)
Total Kjeldahl N (mg/l)	0.4 – 0.75	< 0.60 – 1.2	1.3 – 2.7	1.8 – 2.3
Nitrite + Nitrate-N (mg/l)	<0.01	<0.01	0.01 – 0.02	0.01 – 0.1
Alkalinity (mg/l)	40 – 140	75 – 150	125 – 165	160 – 260
Color (Pt-Co Units)	10 – 35	10 – 20	15 – 25	20 – 30
pH (SU)	7.2 – 8.3	8.6 – 8.8	8.2 – 9.0	8.3 – 8.6
Chloride (mg/l)	0.6 – 1.2	4 – 10	13 – 22	11 – 18
Total Sus. Solids (mg/l)	< 1 – 2	2 – 6	7 – 18	10 – 30
Total Suspended Inorganic Solids (mg/l)	< 1 – 2	1 – 2	3 – 9	5 – 15
Turbidity (NTU)	< 2	1 – 2	3 – 8	6 – 17
Conductivity (umhos/cm)	50 – 250	300 – 400	300 – 650	640 – 900
TN:TP ratio	25:1 – 35:1	25:1 – 35:1	17:1 – 27:1	7:1 – 18:1

Table II-5. Draft eutrophication criteria by ecoregion and lake type (Heiskary and Wilson, 2005).

Ecoregion	TP	Chl-a	Secchi
	ppb	**ppb**	**Meters**
NLF – Lake Trout (Class 2a)	<12	<3	**>4.8**
NLF – Stream Trout (Class 2a)	<20	<6	**>2.5**
NLF – Aquatic Rec. Use (Class 2b)	<30	<9	**>2.0**
CHF – Stream Trout (Class 2a)	<20	<6	**>2.5**
CHF - Aquatic Re. Use (Class 2b)	<40	<14	**>1.4**
CHF – Aquatic Rec. Use (Class 2b) Shallow Lakes	<60	<20	**>1.0**
WCP & NGP – Aquatic Rec. Use (Class 2b)	<65	<22	**>0.9**
WCP & NGP – Aquatic Rec. Use (Class 2b) Shallow Lakes	<90	>30	**<0.7**

RESULTS AND DISCUSSION

Following is a discussion of AQR use support and associated data used in this assessment. For 305(b) purposes, assessments are commonly done on both a statewide and basin-specific basis. Hence our analysis will include results and discussion pertinent to Minnesota's nine major drainage basins (Figure II-4). In addition ecoregion-specific results will be shared to offer further insight into the status of lakes, potential causes of support or non-support, quality and sources of data used in the assessment. Where appropriate results are expressed in terms of number of lakes and number of lake acres. An ecoregion-based summary of trophic status measurements (TP, chl-a and Secchi) and lake morphometry of the assessed lakes is presented (Table II-6).

Available data and data quality

Trophic status data used in this assessment were available for 3,033 lakes representing approximately 2,596,552 acres.[§] This represents a nine percent increase in the number of lakes and a 10 percent increase in lake acres over the 2004 assessment. Of this total 64 percent of the lakes (80% acres) were assessed based on monitored data and 36 percent were assessed based on evaluated data (Figure II-7). The higher percentage of monitored lake-acres (as compared to number of lakes) can be attributed to the numerous large lakes assessed in the past ten years including: Mille Lacs, Rainy, Lake of the Woods and Upper Red Lake.

The greatest number of assessed lakes were located in the Upper Mississippi Basin, and of these, over 70 percent were considered monitored (Figure II-7b). Active participation in the CLMP, numerous local water plans, MCES activities, and related monitoring efforts contribute to the high number of assessed lakes and the high percentage of monitored lakes in this basin. The Rainy and Lake Superior Basins were the next highest by number, however less than 40 percent were based on monitored data. This is likely because many of the lakes in these basins are located within the Boundary Waters Canoe Area Wilderness (BWCAW) and there has been very limited monitoring of these lakes and lakes in the surrounding Superior National Forest in the past decade. Though there is participation in the CLMP, it is not nearly as high as that seen in the Upper Mississippi Basin. Much of the monitored acreage in the Rainy Basin can be attributed to Lake of the Woods (312,070 acres), Rainy (220,800 acres) and Vermillion (40,557 acres), all of which have been monitored by the MPCA in the past ten years. Individual lake assessment reports for some of these lakes may be found at: http://www.pca.state.mn.us/water/lakereport.html. The Lower Mississippi Basin, while being relatively lake poor, had the highest percentage of its assessments based on monitored data. Lake Pepin, at 25,000 acres, accounts for much of the monitored acres in this basin. Other large lakes that have been monitored include Lakes Tetonka, Sakatah, Cannon and Byllesby on the Cannon River. The Red River and Minnesota Basins also had a high percentage of monitored lakes – about 80 percent. In the Red River Basin active monitoring through local water plans (coalitions of lake associations); watershed districts, other local efforts and CLMP contribute to the high percentage of monitored lakes. Among the larger lakes that have been monitored here are Upper Red Lake (107,800), Otter Tail (14,753 acres) and Lake Traverse (11,525 acres). In the Minnesota Basin, local monitoring efforts by counties, municipalities, MCES, CLMP and MPCA lake assessments all play a role in the data collected.

[§] 10 acres or more in size

Table II-6. Minnesota Lake Water Quality Assessment Data Base Summary (2006). Water quality values represent summer means.

Ecoregion	Parameter	Percentile 5	10	25	50	75	90	95	# of lakes
NLF[1]	Area (acres)	13	20	44	121	328	817	1,620	1,980
	Depth-max. (ft)	0	0	8	25	47	75	95	1,878
	TP (ppb)	8	10	14	21	30	44	58	934
	Chl-a (ppb)	1	2	3	5	7	13	21	608
	Secchi (m)	1	1	2	3	4	5	6	1,604
NCHF[1]	Area (acres)	11	19	56	162	377	877	1,568	980
	Depth-max. (ft)	3	6	14	27	45	67	82	846
	TP (ppb)	15	17	27	53	115	242	358	723
	Chl-a (ppb)	3	4	7	20	45	84	123	683
	Secchi (m)	0	1	1	2	3	4	4	976
WCBP	Area (acres)	16	22	99	262	630	1,560	2,222	131
	Depth-max. (ft)	0	4	6	9	14	22	30	111
	TP (ppb)	31	55	99	153	236	404	646	99
	Chl-a (ppb)	8	13	29	52	79	154	174	96
	Secchi (m)	0	0	0	1	1	2	2	128
NGP	Area (acres)	52	91	150	316	708	2,091	4,700	45
	Depth-max. (ft)	0	1	7	9	13	18	23	38
	TP (ppb)	34	46	104	158	270	352	405	32
	Chl-a (ppb)	6	13	29	37	65	103	133	29
	Secchi (m)	0.2	0.2	0.5	0.6	1.5	1.9	2.1	44

[1] NLF summary includes lakes from NMW and CHF includes lakes from RRV.

For example, a TP concentration of 14 ppb ranks at the 25th percentile for lakes in the Northern Lakes and Forests and Northern Minnesota Wetlands ecoregions, which implies that 75% of the assessed lakes in these ecoregions have a TP > 14 ppb. Number of lakes assessed for that parameter is noted (e.g. for TP in the NLF the distribution is based on 934 lakes).

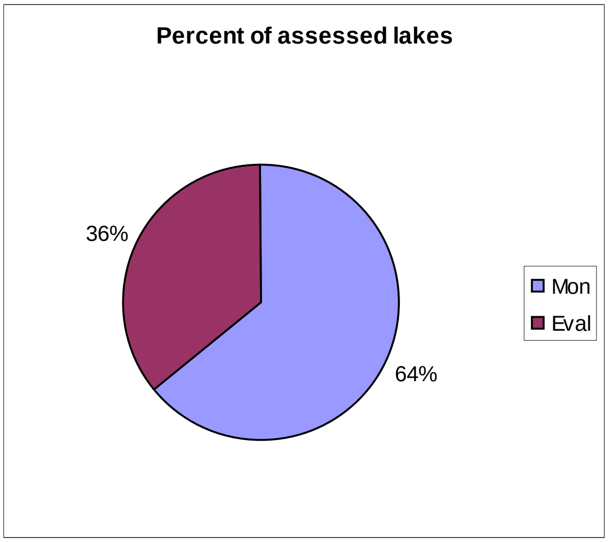
Table II-7. Trophic Status of Significant Publicly Owned Lakes.

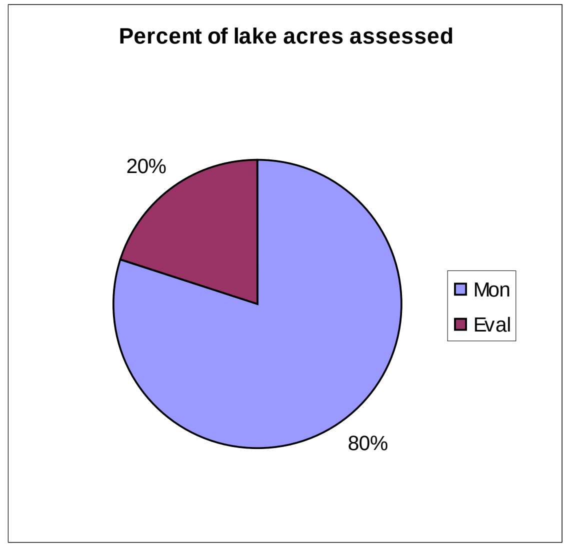
Description	Number of Lakes	Acres of Lakes
Total in State	11,842*	**3,290,101**
Assessed	2,980	**2,599,058**
Oligotrophic	462	**245,628**
Mesotrophic	1,012	**1,069,572**
Eutrophic	1,134	**1,100,402**
Hypereutrophic	372	**1,183,456**
Dystrophic	0	**0**
Unknown	**8,862**	**691,043**

*Ten acres or more in size

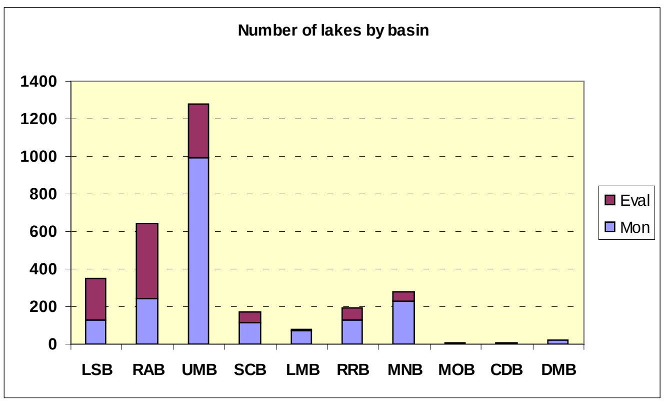
Figure II-7. Age of data: monitored versus evaluated data by: a) state, b) basin.

a)





b)



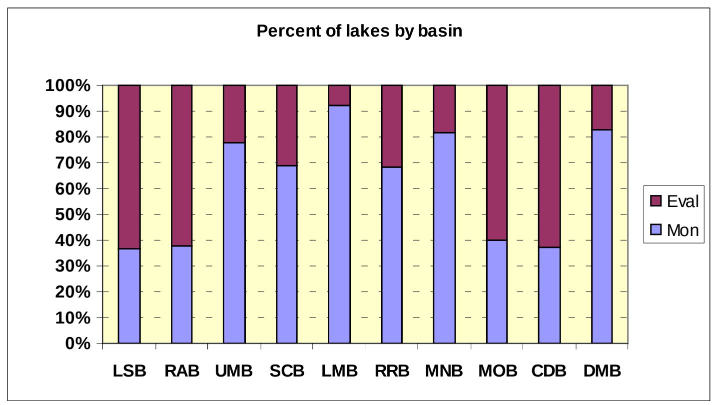
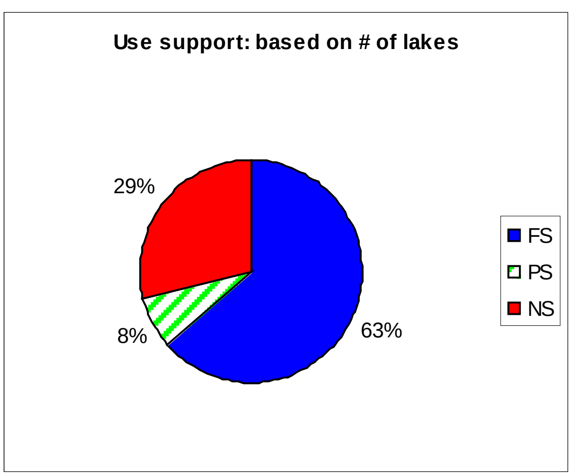
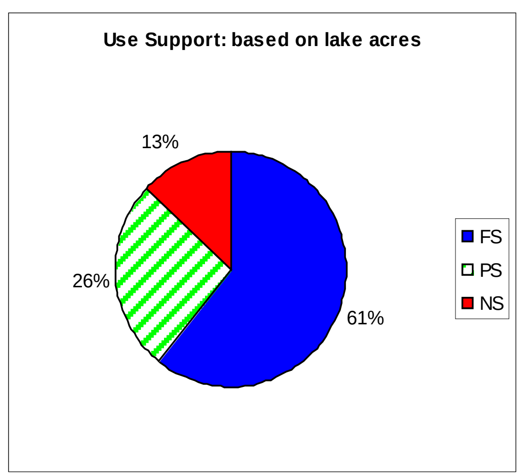


Figure II-8. Aquatic recreational use support by a) state.

a)





SOURCES

The examination of use support by ecoregion may provide more insight than the basin-based comparisons, since the thresholds used in the assessment are ecoregion-based and the underlying characteristics that comprise the ecoregions-- land use, soil type, potential natural vegetation and landform can-- strongly influence the delivery of nutrients to the lake. The majority (80% or more) of the assessed lakes of the NLF and NMW ecoregions either fully or partially support aquatic recreation uses (Figure II-8). These two ecoregions are characterized by moderately deep lakes (Table II-6) and watersheds dominated by forest and wetland uses. In contrast, the majority of the lakes in the CHF, WCP and NGP ecoregions are non-supporting of aquatic recreational uses. The reasons for non-support of aquatic recreational use vary between regions. NLF ecoregions lakes that do not support aquatic recreational use are often smaller and shallower than the norm and often have some past or present sources of excess P loading in their watershed, such as a wastewater treatment plant discharge. CHF ecoregion lakes that do not support aquatic recreational use are often shallower than the norm. Also they often have a source (or multiple sources) of excessive P loading in their watershed such as WWTP, numerous feedlots, excessive land application of bio-solids, high percentage of agricultural land use, or high percentage of impervious area (receive larges amounts of stormwater run off). All of these sources can contribute high P loading to a lake. In the WCP and NGP ecoregions, the vast majority of lakes are quite shallow (Table II-6) and have highly agricultural watersheds. Runoff from these agricultural lands is typically very high in P. This high P loading from the watershed and shallowness of the lakes (which promotes poor retention of P by lake sediments and internal recycling of P) typically lead to high in-lake P concentrations and, subsequently, nuisance algal blooms and low transparency. The combination of high watershed P loading and the limited assimilative capacity of shallow lakes often limit the degree to which WQ of these lakes might be improved.

http://www.pca.state.mn.us/water/lakequality.html#reports - This includes the LWQA: Developing Nutrient Criteria report and the general LWQA report as well.

http://www.pca.state.mn.us/water/lkwqSearch.cfm - This allows for the individual search for lakes.

http://www.pca.state.mn.us/water/nonpoint/nsmpp-ch4-2.pdf - This is the 319 strategy.

ECONOMIC COST BENEFIT ANALYSIS

Underlying the nation's water pollution control efforts is the assumption that the overall cost of those efforts, while considerable, is outweighed by the resulting benefit.

Cost-benefit analysis is an attempt to make this assumption explicit and testable. However, the benefits associated with environmental programs (and, to a certain extent, even the costs) are not well quantified at present. Environmental amenities, for the most part, are not traded in the market place, and prices, in the normal sense, are not attached to benefits such as clean water, healthy aquatic communities, or even the wellbeing that comes with good health. While various attempts have been made to put dollar figures on some of these, their value remains largely intangible.

As a result, environmental policy decisions are inevitably, and perhaps best, made through the political process, rather than through the strict application of a quantitative cost-benefit analysis, which would be incomplete and of debatable accuracy.

Nevertheless, the underlying purpose of cost-benefit analysis – the assurance that the public's dollars are well spent – lies at the heart of the MPCA's considerable efforts at cost control and program effectiveness. In a time of decreased funding countered by increased demand for environmental services, the MPCA has done a great deal to ensure that its programs are directed towards the most important environmental problems and that those programs are conducted as cost-effectively as possible. The ongoing Six Sigma[**] analysis of the efficiency of various Agency processes and the Environmental Information Report – An Assessment of Stressors Facing Minnesota's Environment, a tool used by the MPCA to help prioritize the environmental problems currently faced by Minnesota, are only two examples of this continuing effort.

At the same time, even if complete figures are lacking, a partial accounting – partly quantitative, partly descriptive – can be given of some of the costs and benefits associated with Minnesota's WQ programs.

Costs

The primary WQ programs at the state level are those of the MPCA and BWSR. Including local assistance, the WQ budget of the former is approximately $45 million per year and of the latter approximately $15 million per year. Other costs are incurred at the local level in the regulation of land use, feedlots, and on-site sewage disposal systems. It should be noted also that other environmental programs, such as air quality, solid waste, hazardous waste, and agricultural pesticide regulation have direct effects on the quality of the state's surface and ground waters. The MPCA, which has primary jurisdiction for the first three of these, has an overall budget of approximately $125 million per year.

Regarding the actual implementation of point source water pollution controls, approximately $2 billion in federal, state, and local funds have been spent since the enactment of the CWA for the construction of municipal wastewater treatment facilities in the state, including the separation of

[**] Six Sigma is both a management strategy and a methodology used to improve existing processes or design new ones. The methodology consists of a structured approach to understanding customer requirements, developing appropriate responses, and implementing actions that are continuously measured and modified based on meaningful data.

combined sewers. Operating costs for Minnesota municipal sewer utilities are estimated at more than $200 million per year. At this point, no similar figures exist regarding industrial water pollution control costs. It should be noted, however, that municipal facilities treat industrial as well as municipal wastes and that industrial contributions represent a significant portion of the above figures.

Regarding the implementation of NPS water pollution controls, the overall costs are both more diffuse and more difficult to calculate than are those for point source programs. Current estimates, however, are that it will take between $600 million and $3 billion to restore Minnesota waters on the current 303(d) list that are impaired by NPSs. Details on these estimated costs can be found at http://www.pca.state.mn.us/publications/reports/lrwq-s-lsy03-appendix.pdf.

Benefits

If the comprehensive costs of water pollution control efforts are not yet fully calculated, the benefits are even less precisely measured. Theoretical models for translating WQ improvement into economically measured benefits do exist, but no attempts have been made to do this for the state as a whole.

For point source programs, even if dollar figures are not readily available, benefits can be illustrated in descriptive terms. Significant improvements in state WQ have occurred over the past several decades, especially since the passage of the CWA. While only 20 percent of the state's sewered population was served by facilities capable of at least secondary treatment in 1952, fully 99.9 percent are so served at present. In a similar vein, rates of regulatory compliance for municipal and industrial facilities are at a high level, with more than 95% of major WQ permittees meeting their effluent limits.

Even more striking are the indications of WQ improvements associated with improvements in specific major wastewater treatment facilities. On the Mississippi River below the Twin Cities, both the elimination of floating mats of sludge and the return of the mayfly are evidence of cleaner water conditions that followed massive treatment facility construction and storm water separation. Parks are being developed up and down the river's shores and recreational boat use has increased significantly. In the St. Louis River Bay, while sediment and fish tissue contamination problems remain, facility construction by the Western Lake Superior Sanitary District has led to noticeably cleaner water and return to use of the river as a walleye fishery. Similar results have been achieved on the Rainy River below International Falls.

While the NPS program is considerably younger than that for point sources, similar benefits are beginning to be shown. WQ projects implemented through local cooperators have led to significant improvements in specifically targeted problem areas. Improved WQ in Lake Bemidji and Lake Shokatan are examples of this. Perhaps even more impressive is the WQ improvements for the Minnesota River, with a 25 percent reduction in sediment carried by the river during typical flow conditions. Increased use of agricultural soil conservation practices in recent years appears to be the main reason behind the reductions, and is a large step towards meeting the ultimate goal of a 40 percent reduction in sediment originating from cropland in the basin. Similar improvements have been seen for P and biochemical oxygen demand (BOD) concentrations in the river.

As a result of both point source and NPS programs, WQ improvements in the state have been significant. Over the last three decades, the large majority of regularly monitored streams show a decreasing pollutant trend for BOD (89% of sites), fecal coliform bacteria (82%), ammonia (83%), and TP (78%). (On the other hand, only 42% of the sites show a decreasing trend for TSS, and fully 75% of the sites show an increasing trend for nitrite/nitrate.)

Indicative of both the value of clean water and the success of Minnesota's clean water programs is the large total revenue of the state's tourism industry. At approximately $10 billion per year, the economic importance to the state is considerable; water is one of the state's greatest attractions and plays a critical role in those dollars. Similarly, a recent study by Bemidji State University on the socio-economic value of Minnesota lakes found a strong relationship between water clarity and lake property values, with an increase (or decrease) of one meter in clarity leading to changes of tens or even hundreds of millions of dollars for given individual lakes. This matches with the results of studies elsewhere in the United States demonstrating and quantifying the benefits of WQ protection and improvement.

An accounting of some of the key results regarding the MPCA's environmental programs can be found at http://www.departmentresults.state.mn.us.

SPECIAL STATE CONCERNS AND RECOMENDATIONS

A. Impaired Waters - Total Maximum Daily Loads

Impaired waters, are a special and growing concern. When a water body fails to meet WQS because of one or more pollutants, it is considered an impaired water.

Minnesota has over 12,000 lakes and 92,000 miles of rivers and streams. Of those water bodies, 1,123 lakes and rivers, approximately 40 percent of those asses thus far, are on Minnesota's 2006 draft list of impaired waters, updated every two years. The total number of impairments in these rivers and lakes is 2,274. However due to resources limitations, water body assessments have occurred on only 16 percent of Minnesota's lakes and 10 percent of its rivers and streams. The MPCA expects to find more than 10,000 impairments statewide, with impaired waters located in nearly every watershed in the state, once it assesses all the state's waters.

An approach to help control water pollution is through TMDLs. The federal CWA requires states to adopt WQS to protect the nation's waters. These standards define how much of a pollutant can be in a surface and/or ground water while still allowing it to meet its designated uses, such as for drinking water, fishing, swimming, irrigation or industrial purposes. Many of Minnesota's water resources cannot currently meet their designated uses because of pollution problems from a combination of point and NPSs. TMDLs determine all sources of pollutants in a water body that is not meeting its designated uses, including NPSs and those sources that may not be located near the water body but are in its watershed. The information is used to allocate load limits from all sources in the watershed for each pollutant in violation. Minnesota has begun to implement TMDLs on some water bodies as required by the CWA.

A Clean Water Legacy Partnership, a broad-based coalition of farm, industry, conservation, environmental and local government organizations, has developed a bill under consideration by the Minnesota Legislature. The proposed CWLA would provide funding to address impaired waters. With implementation, this first-in-the-nation approach will further Minnesota's position as an environmental innovator.

B. Nutrient Criteria

The USEPA has requested that states develop nutrient criteria for lakes, streams, wetlands and estuaries. Further, they recommend the criteria be developed on an ecoregional basis. The MPCA has long used ecoregions as a basis for examining lakes and characterizing lake condition. In the mid 1980's reference lakes for the four ecoregions that contain 98% of Minnesota's lakes were identified and sampled over the course of two to three years. Data from these reference lakes combined with a variety of other information, served as the basis for developing P criteria in 1988. This work also served as the basis for our current effort to develop eutrophication criteria.

An important aspect of the criteria-setting process requires the definition of "most sensitive sub-uses" of lakes. In this context, we have defined a sensitive sub-use of a lake as that use (or uses) which can be affected or even lost as a result of an increase in the trophic status of the lake. Two examples of sensitive uses include coldwater fisheries and primary contact recreation (aquatic recreation use support). In the case of a coldwater fishery, increased nutrient loading will result in a reduction of oxygen in the hypolimnion, and die-offs of coldwater species may occur as these populations are driven into warmer surface waters. In the case of aquatic recreational use, excess P stimulates the production of algae growth that can lead to frequent and severe nuisance blooms and reduced transparency that will limit use of the resource. Most sensitive uses have been identified for each region, and appropriate P, chl-a and Secchi criteria are noted. These criteria are ecoregion-based and reflect several considerations, including: reference lake condition; assessed lake condition; background trophic status based on diatom reconstruction of phosphorus; interrelationships among P, chl-a, Secchi and nuisance bloom frequency; lake morphometry; lake-user perception; lake ecology (fishery composition and rooted macrophytes); and appropriateness as reflected by overall characteristics of the ecoregions and assessed trophic status for each ecoregion. As of 2006, these criteria are being promulgated into Minnesota's WQS. We anticipate that these standards will have a broad range of application including, but not limited to, 305(b) assessment, 303(d) listing, evaluating NPDES permit limits, and for setting goals and protecting the condition of lakes that are below criterion levels.

http://www.pca.state.mn.us/water/lakequality.html#reports: *This includes the Legislative Water Quality Assessment (LWQA): Developing Nutrient Criteria report and the general LWQA report as well.*

C. Other Contaminants of Concern in Minnesota's Environment

There are many newly recognized environmental contaminants (sometimes called "emerging contaminants") that are not commonly monitored, but which have the potential to enter the environment and cause known or suspected adverse ecological and/or human health effects. These contaminants are commonly derived from municipal, agricultural and industrial wastewater sources and pathways. They represent a shift in traditional thinking as many are produced industrially, yet are dispersed to the environment from domestic, commercial and industrial uses. In some cases, release of these contaminants to the environment has occurred for a long time, but may not have been recognized because methods to detect them had not been developed. In other cases, synthesis of new chemicals or changes in use and disposal of existing chemicals can create new sources of emerging contaminants.

Increasing knowledge of the environmental occurrence or toxicological behavior of emerging contaminants has resulted in concern for their potential adverse environmental and human health effects. Public health experts often have an incomplete understanding of the toxicological effects of these contaminants, including the significance of long-term exposure. Even with incomplete knowledge, science and policy must continue to evolve to speed the process of identifying and preventing problems, and to ensure protection of human health and the environment.

The following kinds of substances have recently "emerged" and are currently being investigated as contaminants of concern in Minnesota:

- Pharmaceuticals and personal care products (PPCPs)
- Perfluorinated chemicals (PFOS and PFOA)
- Polybrominated diphenyl ethers (PDBEs)

PPCPs constitute a wide variety of bioactive agents including: antibiotics, hormones, detergents, disinfectants, plasticizers, fire retardants, insecticides and antioxidants. PPCPs are widely used, and are continuously released into the environment through human activities. Primary sources include sewage, manure from confined animal feedlots, landfill leachate, and veterinary clinics. A recent reconnaissance study by the USGS, MPCA and the Minnesota Department of Health (MDH) showed that industrial and household use compounds and pharmaceuticals are present in streams, ground water and in some Minnesota drinking water supplies. Steroids, nonprescription drugs and insect repellent were the chemical groups most frequently detected. Detergent metabolites, steroids and plasticizers were measured in the highest concentrations. The complete report may be found at http://water.usgs.gov/pubs/sir/2004/5138/.

The perfluorinated chemicals (PFOS, PFOA) were manufactured for many years by 3M and other companies. They are produced synthetically or through degradation of other fluorochemical products. PFOS, used in emulsifier and surfactant applications, is found in fabric, carpet and paper coatings, floor polish, shampoos, fire fighting foam and certain insecticides. PFOA is used as a processing aid to produce fluoropolymers and is found in many personal care products and textiles. 3M phased out its manufacture of PFOS and PFOA in 2002.

PFOS and PFOA are widespread and persistent in the environment, but little is known about their toxicity to humans. They have been found in animals all over the globe, and MPCA research has detected PFOS at elevated levels in blood, liver and tissue of several fish taken from the Mississippi River near the 3M Cottage Grove plant.

In animals, high concentrations of PFOS and PFOA cause harm to the liver and other organs. Exposure to high concentrations of PFOA over a long period of time also cause cancer in animals, and the USEPA Science Advisory Board recently recommended that PFOA be classified as a "likely" human carcinogen . Developmental problems have been seen in the offspring of rats exposed to PFOS and PFOA while pregnant. Epidemiological studies by 3M of workers exposed during manufacture show no apparent impact on their health. There is no similar epidemiological information on the general population.

Due to limited information and the persistence of PFOS and PFOA, the MDH has set health risk limits (HRLs) of 1 ppb for PFOS and 7 ppb for PFOA in drinking water, which it characterizes as conservative (protective with an extra margin of safety). At this writing the MPCA and MDH are awaiting additional analyses of fish tissue, landfill leachates and other possible sources of perflourochemical (PFC) exposure. A complete description of all MPCA activities related to PFCs is included in a fact sheet available at http://www.pca.state.mn.us/hot/pfc.html.

PBDE are commonly used flame retardants found in plastics, textiles, electrical appliances and equipment, furniture, building materials and automobiles. Toxicity concerns include developmental neurotoxicity, thyroid disruption, altered behavior and learning, and dioxin formation when burned. PBDEs have been detected globally in both developed and remote environments. Monitoring studies have measured PBDEs in sediment, air, wildlife, fish, human blood and human milk. A human-milk monitoring program in Sweden showed that PBDE concentrations in breast milk nearly doubled every five years until Sweden banned PBDEs in 1997, after which concentrations in breast milk dropped off rapidly. In contrast, PBDE concentrations in breast milk of North Americans, where PBDEs are still widely used, have been shown to be 10 -100 times higher than in Europe, where manufacture and usage has been phased out.

Dietary intake is assumed the primary route of PBDEs exposure in humans, although recent information suggests that inhalation and ingestion of indoor dust also may be an important exposure pathway.

The MPCA has been involved in investigating the impacts of PBDE contamination in Minnesota for several years. A 2001 MPCA study found that PBDEs were present in different environmental settings, including fish and sediments from major river basins in Minnesota. This study also detected PBDEs in waste management processes, including landfill leachate, and wastewater treatment plant sludge.

Additional MPCA analysis nearing completion involves measurement of PBDEs in Lake Superior water, sediment, fish tissue, zooplankton and ambient air; wastewater treatment influent, effluent and sludge; stream fish tissues and bottom sediments; and closed-landfill gases, leachate and ground water.

The European Union and five US states have enacted laws banning or phasing out the manufacture and use of PBDEs over the next three years, and five other states are considering similar measures.

A scientific background paper *Flame Retardants: Polybrominated Diphenyl Ethers (PBDEs)* was published by the MPCA in February 2005, and is available at the following link to 2005 Legislative Reports: http://www.pca.state.mn.us/publications/reports/tdr-g1-02pdf.

III. MONITORING AND ASSESSMENT STRATEGY

Chapter One WATER QUALITY STANDARDS PROGRAM

INTRODUCTION

At the heart of the assessment process are the beneficial uses we derive from our water resources and the WQS that protect these uses. The WQS are the fundamental benchmarks by which the quality of surface waters is measured. The WQS have been adopted into Minnesota's administrative rules, principally Minn. R. chs. 7050 and 7052.

BENEFICIAL USE CLASSES FOR SURFACE WATERS

The beneficial use classification system adopted into Minnesota's WQ rules in the late 1960s is essentially unchanged, except that limited resource value waters (Class 7) were added in 1980. In the Minnesota system, all surface waters are classified and protected for fisheries and recreation, unless they are classified as limited resource value waters. Also, all surface waters are protected for multiple beneficial uses (Minn. R. pts. 7050.0400 – 7050.0470). Surface waters include lakes, rivers, streams, wetlands, temporary pools, and man-made as well as natural water bodies.

Minnesota R. ch. 7050 identifies seven beneficial uses as listed below. The use class numbers 1-7 are not intended to imply a priority rank to the uses.

Use Class	Beneficial Use
Class 1	Drinking water
Class 2	Aquatic life and recreation (swimming)
Class 3	Industrial use and cooling
Class 4A	Agricultural use, irrigation
Class 4B	Agricultural use, livestock and wildlife watering
Class 5	Aesthetics and navigation
Class 6	Other uses
Class 7	Limited resource value waters (not fully protected for aquatic life due to lack of water, lack of habitat or extensive physical alterations)

Classes 1 through 3 waters have further been divided into subclasses. Since the goal of the CWA is 'fishable and swimmable' waters, Minnesota assesses waters with respect to Class 2 subclasses as follows:

Class 2A	Cold water fisheries, trout waters
Class 2Bd	Cool and warm water fisheries, in addition these waters are protected as a source of drinking waters
Class 2B	Cool and warm water fisheries (not protected for drinking water)
Class 2C	Indigenous fish and associated aquatic community
Class 2D	Wetlands

Protection of aquatic life and recreation means the maintenance of healthy, diverse and successfully reproducing populations of aquatic organisms; and the maintenance of conditions suitable and safe for swimming and other forms of water recreation. This is consistent with the goal in the CWA that the nation's waters should be "fishable and swimmable" wherever attainable. Class 7 waters are not able to support a fishery due to lack of water, habitat and extensive alterations; most are headwater channelized ditches. About one percent (approximately 900-950 miles) of Minnesota's 92,000 miles of rivers and streams are limited resource value waters.

Both Class 2 and Class 7 waters, (i.e. all surface waters of the state), are also protected for industrial (Class 3), agricultural (Class 4A&B), aesthetics and navigation (Class 5), and other uses (Class 6). For example, the St. Croix River from the dam in Taylors Falls to its mouth is classified as 1C, 2Bd, 3B, 4A, 4B, 5 and 6; and is therefore protected for all uses defined by these use classes (Minn. R. pt. 7050.0470, subp. 6). If a pollutant has numerical standards in more than one beneficial use class, the most stringent applies.

All ground waters, but only selected surface waters, such as the St. Croix example cited above, are protected as a source of drinking water (Class 1). The federal drinking water standards apply to these waters.

NUMERICAL WATER QUALITY STANDARDS

A numerical WQ standard is a safe concentration of a pollutant in water, associated with a specific beneficial use. Numerical standards are associated with all use classes except Class 6 (other uses). Ideally, if the standard is not exceeded, the use will be protected. However, nature is extremely complex and variable, and the MPCA must use a variety of tools in addition to numerical standards, such as biological monitoring, to fully assess beneficial uses.

Surface waters are assessed for this Report only with respect to Class 2 standards. However, compliance with the Class 2 standards will, with some exceptions, protect the usually less sensitive Class 3, 4, 5 and 6 beneficial uses.

All Class 2 standards for toxic pollutants have three parts[††].

- Chronic standard
- Maximum standard, and
- Final Acute Value (FAV)

The chronic standard is the highest concentration of a toxicant to which aquatic organisms can be exposed indefinitely with no harmful effects to the organism itself, or to human or wildlife consumers of aquatic organisms. The maximum standard protects aquatic organisms from potential lethal effects of a short-term "spike" in toxicant concentrations. The maximum standard is always equal to one half the Final Acute Value (FAV). The FAV is most often used as an "end-of-pipe" effluent limit to prevent an acutely toxic condition in the effluent or the mixing zone.

Class 2 chronic standards are based on one of three "end points", as listed below.

- Toxicity-based. The chronic standard is based on the direct toxicity of the toxicant to fish and other aquatic life.

[††] Un-ionized ammonia, di-2-ethylhexyl phthalate, hexachlorobenzene, and vinyl chloride have only a chronic standard and no maximum standard or final acute value.

- Human Health-based. The chronic standard is based on the protection of people that eat fish from Minnesota waters (and drink the water, if the surface water is also a Class 1 water).
- Wildlife-based. The chronic standard is based on the protection of wildlife species that eat aquatic organisms (Minn. R. ch. 7052 has four wildlife-based standards; Minn. R. ch. 7050 has none).

Both toxicity-based and human health-based criterions are calculated by the MPCA, and the more restrictive of the two is adopted into Minn. R. ch. 7050 as the applicable chronic standard. Wildlife-based criteria have not been calculated outside of those adopted in Minn. R. ch. 7052. Minn. R. ch. 7052 is the Great Lakes Initiative Rule, applicable only to the Lake Superior basin. Maximum standards and FAVs are always toxicity-based, never human health or wildlife-based. Most of Minnesota's aquatic life (Class 2) standards are based on USEPA aquatic life criteria. The USEPA develops and publishes aquatic life criteria as required by Section 304(a) of the CWA.

NARRATIVE WATER QUALITY STANDARDS

A narrative WQ standard is a standard that prohibits unacceptable conditions in or upon the water, such as floating solids, scums, visible oil film, or nuisance algae blooms. Narrative standards are sometimes called "free froms" because they help keep surface waters free from very fundamental and basic forms of water pollution. The association between the standard and beneficial use is less well defined for narrative standards than it is for numerical standards; however, most narrative standards protect aesthetic or aquatic life beneficial uses. Because narrative standards are not quantitative, the determination that one has been exceeded typically requires a "weight of evidence" approach to data analysis showing a consistent pattern of violations. There is an unavoidable element of professional judgment involved in using narrative standards to determine impairment. The narrative standards most relevant to 305(b) assessments are found in Minn. R. pts. 7050.0150 and 7050.0222 subp. 7. These standards protect surface waters and aquatic biota from:

- Eutrophication (particularly lakes)
- Impairment of the biological community
- Impairment of fish for human consumption

NONDEGRADATION

Nondegradation (equivalent to the federal term, antidegradation) is a third element of WQS, in addition to (1) numeric or narrative standards and (2) the beneficial uses. The fundamental concept of nondegradation is the protection of water bodies whose quality is better than the applicable standards, so that the existing high quality is maintained and not allowed to degrade down to the level of the WQ standard.

Federal guidance establishes three levels or tiers of nondegradation. The first level is, at a minimum, waters should be in compliance with WQS, and that beneficial uses should be protected. Level two is the protection of waters that have quality better than standards so the existing high quality is maintained, unless there is a social and economic need to degrade the waters down to the level of the standards (Minn. R. 7050.0185). The third level, which provides the highest level of protection from pollution, are waters designated as outstanding, very sensitive or unique resources (Minn. R. 7050.0180). The MPCA has specifically designated a number of waters that are special for a variety of reasons. In Minnesota these special waters are called ORVW. There are two categories of ORVW, “prohibited” and “restricted”. New or expanded point and NPS of pollution are entirely prohibited to the first category (examples are waters in the BWCAW and Voyagers National Park). New or expanded point and NPSs of pollution are prohibited to the restricted category unless the discharger can demonstrate there is no “prudent or feasible alternative” to allowing the increased pollutant loading (examples in the restricted category are Lake Superior and federal and state designated scenic and recreational river segments such as the St. Croix River). In addition to designated ORVW, which are located statewide, all surface waters in the Lake Superior basin are designated as Outstanding International Resource Waters (OIRW) (Minn. R. 7052.0300). Implementation of nondegradation for OIRW waters focuses on reducing the loading of bio-accumulative pollutants to the Lake Superior basin because of the sensitivity of the Lake Superior ecosystem to these pollutants.

A. Drinking Water Assessments

At the present time the MPCA does not assess surface waters of the state for drinking water; however, discussions have been held with the MDH on the subject. The agencies are investigating the possibility of making such assessments, and staff of both agencies are continuing to attend source water protection plan development meetings with the municipal water suppliers for the major metropolitan cities of Minneapolis, St. Paul, and St. Cloud, Minnesota. These three cities all use surface waters in their municipal supplies and provide drinking water to a large portion of the state’s population. They have helped the state agencies to identify some of their contaminants of concern in intake waters that presently fall within current monitoring strategies and others which are not currently being monitored. These initial steps will be followed by a more statewide review of contaminants of concern for current municipal water suppliers who use surface waters.

B. Source Water

The MDH is the lead agency in Minnesota working on source water protection with USEPA. For ground water-based public water supplies, source water protection is the state’s wellhead protection program. For surface water supplies, source water assessment is being approached in various ways, depending on the size and circumstances of each source water and watershed. Where possible, these assessments and MPCA’s basin and watershed assessments are being coordinated.

In the past, the MPCA has worked closely with the MDH on source water protection, through a Memorandum of Agreement. As part of this effort, the MPCA provides data on potential contaminant sources in source water protection areas and provides technical assistance to MDH and public water suppliers on managing contaminant sources. While the MPCA’s activity in these areas has been curtailed by budget and staff reductions, the MDH and the MPCA continue to coordinate on special projects, such as Upper Mississippi Source Water Protection, that involve both source water protection and basin and watershed management. The MDH can now electronically access many of the MPCA’s electronic data bases to obtain information it needs on potential contaminant sources. The MPCA also has a representative on the MDH Ad Hoc Committee on Source Water Protection for Surface Water Systems.

C. Types of Monitoring

In its USEPA approved ten-year monitoring strategy, the MPCA categorizes its environmental monitoring efforts by the purpose for the monitoring and how the information is assessed and used. In general, water monitoring efforts can be grouped into three "use" categories as follows:

- *Condition monitoring:* This type of monitoring is used to identify overall environmental status and trends by examining the condition of individual waterbodies or aquifers in terms of their ability to meet established standards and criteria. Condition monitoring may include chemical, physical or biological measures. The focus of condition monitoring is on understanding the status of the resource, identifying changes over time, and identifying and defining problems at the overall system level. Examples include routine surface water monitoring, basin monitoring, TMDL listing activities, and the ambient ground water network.

- *Problem Investigation Monitoring:* This monitoring involves investigating specific problems or protection concerns to allow for the development of a management approach to protect or improve the resource. Problem investigation monitoring is used to determine the specific causes of impairments to water or ground water and to quantify inputs/loads from various sources. It is also used to determine the actions needed to return a resource to a condition that meets standards or goals. Examples include CWP and Section 319 (319) projects, TMDL development, site assessment, and investigation of specific ground water issues, such as pesticides.

- *Effectiveness Monitoring:* This is used to determine the effectiveness of specific regulatory or voluntary management actions taken to remediate contaminated water. Effectiveness monitoring allows for the evaluation and refinement of the management approach to ensure it is ultimately successful. Examples include environmental monitoring associated with a permitted facility, implementation monitoring for TMDLs, CWPs and 319 projects, drinking water system monitoring, and monitoring associated with a particular BMP. Another example of effectiveness monitoring is effluent monitoring done to assess the compliance of a facility with a permit, rule or statute (i.e. compliance tracking) and to provide information on the effect of regulatory actions on inputs to water bodies (not the effects on the water body itself).

While there are similarities among the three monitoring types and the definitions are not meant to be exclusive and rigid, the definitions do help to distinguish between the various purposes for monitoring. Perhaps the greatest area of overlap is found between effectiveness and condition monitoring. In this case, the difference between the two is largely a matter of scale.

Effectiveness monitoring is done at the management scale, to evaluate particular management actions. In contrast, condition monitoring can be used to track the system-wide effectiveness of environmental protection efforts. In discussing the elements of the monitoring program strategy, it will be important to distinguish among the three types of monitoring, since many elements are different depending on the type of monitoring.

D. Monitoring Goals and Objectives

Minnesota has several sets of goals and objectives related to monitoring. MPCA has adopted three strategic goals to drive its WQ protection and restoration efforts (both point and nonpoint) and achieve its vision of clean, fishable and swimmable surface waters. For NPS pollution, a consortium of federal, state and local organizations have adopted water monitoring goals, as part of the 319 planning process.

<u>MPCA's Strategic Goals for Water Quality Protection and Restoration</u>

- Goal W.1. and W.2. address ground water.

- **Goal W.3. Assess the chemical, physical and biological integrity of lakes, streams and wetlands to identify if designated uses are being met, and to provide information on the condition of waters.**

Objectives:
W3a) By January 1, 2015, gather water quality data and increase assessment of streams and rivers to 33 percent, in comparison to the 2003 level of 5 percent.
W3b) By January 1, 2015 gather water quality data and assess 100 percent of the lakes larger than 500 acres.
W3c) By January 1, 2015, gather data and increase monitoring so that 25 percent of the state's depressional wetlands are assessed.
W3d) By January 1, 2009, assess Minnesota's contribution to identified regional, national and international water pollution problems.
W3e) Ensure data is readily available to the public within one year of season it is collected.
W3f) Complete impaired waters list according to USEPA requirements.§§

- **Goal W.4. Maintain and enhance the chemical, physical and biological integrity of Minnesota lakes, streams and wetlands so that WQS and designated uses are met and degradation is prevented.**

Objectives:
W4a) Ensure that discharges from all permitted point sources are in significant compliance with state and federal limits 95 percent of the time for major facilities and 90 percent of the time for regular facilities. [‡‡]
W4b) By July 1, 2009, all of the 240 Municipal Separate Storm Water Systems (MS4s) are actively managing storm water programs.
W4c) By January 1, 2008, 95% of the storm water permits for construction sites less than 50 acres will be issued within seven days.
W4d) Ensure that feedlots with NPDES permits meet state and federal requirements 90 percent of the time.‡‡
W4e) By January 1, 2011, 90 percent of the feedlot facilities enrolled in the open lot program meet water quality effluent standards.[§§]
W4f) By January 1, 2007, conduct a performance evaluation of the water quality program basin management framework and make adjustments.
W4g) By October 1, 2006, and every three years there after, review Minnesota's water quality standards to incorporate changes to the standards to reflect current science and information.§§

[‡‡] Federal or State Guidance
[§§] Federal or State Rule or Law

W4h) By January 1, 2014, strengthen local programs to reduce the percentage of septic tanks characterized as failing or imminent threats to public health and safety from 39% to less than 5%.
W4i) Annually complete 95% of the non-TMDL watershed activities specified in the federal work plan.
W4j). Annually complete 95% of the watershed projects specified in the federal work plan.

- **Goal W.5. Restore the chemical, physical and biological integrity of Minnesota lakes streams and wetlands that do not support designated uses.**

Objectives:
W5a) Complete TMDL studies within 13 years of initial listing.
W5b) Within one year of USEPA approval of each TMDL study, implementation plans will be approved and initiated.
W5c) By January 1, 2007, implement the impaired waters program plan and report annually.

E. Condition Monitoring Strategy

Lakes and Streams

Minnesota's statewide surface WQ assessment strategy has four data collection components: 1. MPCA stream and lake monitoring; 2. stream and lake data collected by other organizations; 3. remote sensing; and 4. citizen monitoring. Each of these components contributes important data to the system that results in both geographic coverage and data confidence.

For both lakes and streams, the MPCA considers this four component strategy of data collection to be sufficient for fully assessing streams and lakes in Minnesota over a ten-year cycle. This strategy is considered complete, in that it builds on a foundation of citizen monitoring, remote sensing, and other information to direct attention to waters that may be changing or indicating impairment for further assessment.

Further details on the condition monitoring strategy can be found in Minnesota's Monitoring Program Strategy (now in draft).

Condition monitoring on streams conducted by MPCA staff includes long-term monitoring at fixed sites, integrated stream monitoring, river nutrient monitoring and monitoring for trace metals.

Basinwide Assessments (formerly called Statistically Based Monitoring Program)

The MPCA's "integrated, statistically based" stream-monitoring program uses a random-site approach to gain a statistically valid representation of overall WQ in a given area. Fifty to 60 sites are chosen within a basin, using USEPA's Environmental Monitoring and Assessment Program (EMAP) random site-selection protocol. The monitoring focuses on biological measures, with the sites being examined for fish, macroinvertebrates and habitat, plus flow and basic water chemistry. Additional sites are monitored as reference sites to develop the necessary ecoregion-specific biocriteria for assessing stream health.

By eliminating the bias that can result from selectively targeting sites, the design achieves a representative sample that allows extrapolation from a relatively small number of sites to the entire population of rivers and streams within the basin. (The same concept is used in political polling, where the results of a small number of randomly selected interviews can represent the opinions of a much larger population.)

Field work has been done in most major basins of the state; analysis of the data has been done and reported for the St. Croix River basin, with analysis for the others in preparation. When this analysis is completed, it will provide for the first time an unbiased assessment of overall stream and river WQ for the state as a whole.

F. Problem Investigation Monitoring Strategy

Minnesota's problem investigation monitoring strategy is built on two cornerstones – the impaired waters program and the basin management planning process – and includes monitoring by a variety of entities, depending on the purpose.

Within these two cornerstones – the impaired waters program and the basin management process – the problem investigation monitoring work is accomplished. Minnesota's strategy relies on a variety of partners to conduct problem investigation monitoring:

- monitoring by regulated parties for most of its regulatory programs NPDES,
- a mix of MPCA and MPCA-contracted monitoring for its TMDL studies,
- local monitoring for locally-identified problems or protection concerns (through CWP, county water planning, local lake associations, etc.),
- MPCA monitoring to fill gaps and for special projects (fish kills, wasteloads, etc.), and
- monitoring by other organizations for additional needs (USGS, MCES).

G. Effectiveness Monitoring Strategy

Much like problem investigation monitoring, the state's effectiveness monitoring strategy relies on monitoring activities by a variety of parties. On a project scale, regulated parties, local implementers, MPCA contractors, other organizations and MPCA conduct effectiveness monitoring to evaluate specific management practices or groups of practices in a specific area. And, as in problem investigation monitoring, project-scale effectiveness monitoring will be targeted to the priorities of Minnesota's impaired waters list, as those projects are implemented.

H. Surface Water Monitoring Purposes, Designs and Indicators

Tables 1, 2 and 3 (see Appendix I) describe current Condition, Problem Investigation and Effectiveness monitoring activities, respectively. Each table provides information on the monitoring activity: activity start date, purpose, description of monitoring with an indication of the type of monitoring design to meet the specific monitoring purpose, and indicators.

I. Monitoring Planning Database

In 2002, MPCA conducted a comprehensive evaluation of all of its monitoring programs. The report assessed MPCA's monitoring projects to identify needs and gaps, opportunities and ways to make the projects more efficient and effective. The report included a series of recommendations that applied across the media and recommendations for surface water monitoring.

A primary need identified in the monitoring evaluation (and the evaluation's first recommendation) was the need for an annual planning process for identifying and coordinating monitoring efforts and needs. The Monitoring Leadership Team (supervisors and managers involved in all three types of monitoring, responsible for coordinating surface water monitoring at a strategic level) has authorized development of a prototype database for use in annual monitoring planning. Monitoring staff will enter their monitoring plans into the database annually, which then will be available to staff and management for planning and coordination purposes. This will serve as a first step in establishing an annual planning process and will be evaluated for effectiveness.

Chapter Two ASSESSMENT METHODOLOGY AND SUMMARY DATA

A. Assessment Units

Assessments of use support in Minnesota are made for individual water bodies. The water body unit used for river system assessments is the river reach or "assessment reach". A river reach extends from one significant tributary river to another and is typically less than 20 miles in length. The reach may be further divided into two or more assessment reaches when there is a change in the use classification (as defined in Minn. R. ch. 7050), or when there is a significant morphological feature such as a dam, or a lake within the reach. In the past, Minnesota used USEPA's Reach File 1 (RF1) to define reaches. Many of our current assessment reaches are RF1 reaches, or sub segments of RF1 reaches. MPCA is now using the NHD to identify stream segment locations because it provides a much more complete accounting of all the streams in the State. All of our assessment reaches will be indexed to the NHD. Each water body is identified by a unique water body identifier code, comprised of the USGS eight digit hydrologic unit code plus the three digit assessment reach. It is for these specific reaches that the data are evaluated for potential use impairment.

The MPCA has routinely relied on Bulletin 25 (Schupp, 1968), as the primary basis for identifying lakes and reservoirs. However, some "lakes" listed in Bulletin 25 are really wetlands. If a "lake" basin in Bulletin 25 is listed as a wetland on the MDNR Public Waters Inventory, it will be considered a Class 2D wetland, and it will be protected for the maintenance of a healthy aquatic community and for boating and other forms of aquatic recreation for which they are suitable. This may exclude swimming because the shallow water, soft bottom substrates and plentiful vegetation make many wetlands unattractive for swimming.

Also, to help define reservoirs for assessment of the impacts of excess nutrients, the MPCA will use a minimum hydraulic residence time of 14 days. Reservoirs with residence times less than 14 days will not be assessed as lakes. For this purpose, residence times are usually determined under conditions of low flow.[***] The MPCA may establish a minimum residence time of less than 14 days on a site-specific basis if credible scientific evidence shows that a shorter residence time is appropriate for that reservoir. The 14-day residence time was originally established as part of the "Phosphorus Strategy" to guide the MPCA in the application of the 1 mg/L P effluent limit in Minn. R. pt. 7050.0211 (MPCA 2000). The 14-day residence time is consistent with USEPA's current guidance, which recommends that reservoirs with residence times less than 14 days be included with rivers for the purposes of nutrient criteria development (USEPA 2000a, Kennedy 2001).

The application of residence time is relevant in the assessment of eutrophication described here, since the nutrient impairment threshold values are applied to lakes and reservoirs rather than rivers. The eutrophication of rivers is a concern, but the assessment of rivers will require the development of separate river-specific eutrophication thresholds. The professional judgment teams will consider residence time as part of their "weight of evidence" review.

Bulletin 25 provides unique identification numbers for all lakes greater than 10 acres in size in

[***] A mean flow for the four-month summer season (June-September) with a once in ten-year recurrence interval is normally used.

Minnesota (15,291 listed). The Bulletin 25 numbers serve as the USEPA's WQ data storage and STORET station numbers; for example, 27-0104 is Medicine Lake in Hennepin County. In addition to the 6-digit numbers, a 2-digit suffix may be added as a basis for defining distinct bays in a lake (e.g., 27-0133-01 = Grays Bay in Lake Minnetonka). The bay suffixes are assigned consecutively, starting with the most downstream (outlet) bay as "-01", and so on.

Bulletin 25 also provides surface acreage and location information for each lake listed. Lake acreage used by MPCA in lake assessments are drawn from Bulletin 25 or bathymetric maps, whichever source is most current, at the time the lake sampling station is established in STORET. The MDNR public waters inventory, which encompasses Bulletin 25, is an additional source of identification numbers and is updated routinely as new water bodies are identified (e.g., mine pit lakes). While the Public Waters Inventory may include water bodies less than 10 acres in size, MPCA assessments for the 303(d) list will only consider lakes of 10 acres or greater.

Typically, the listing of impaired waters is by individual NHD reach or individual lake. The major exception to this is the listing of river reaches for contaminants in fish tissue. Over the time it takes fish, particularly game fish, to grow to "catchable" size and accumulate pollutants to unacceptable levels there is a good chance some have moved considerable distance from the site where they were sampled. The impaired reach is defined by the location of significant barriers to fish movement such as dams upstream and downstream of the sampled reach. Thus, the impaired reaches often include several NHD reaches.

The state of Minnesota uses the figure of 91,944 stream miles. This figure is from a 1981 report from the MDNR Office of Planning. That report references a total of 37,793 watercourses, or some 147,930 kilometers (91,944 miles) of streams, rivers and ditches indexed in the MDNR Stream Inventory and Data Retrieval Systems Program. The database contains the center trace of most of the watercourses shown on the large scale (1:24,000 or 1:62,500) topographic maps covering Minnesota. The 77,456 stream miles figure in the NHD is based on the 1:100,000 scale NHD linework. MPCA and MDNR staff agree that the discrepancies come in the forms of fewer intermittent stream/rivers, fewer ditches, and less sinuosity due to the larger, less detailed NHD scale.

B. Data Management

The MPCA stores surface water monitoring data in USEPA's STORET system. In the last few years, STORET has undergone an extensive modernization process led by the USEPA.

It is MPCA policy that all WQ monitoring data required or paid for by MPCA be entered into STORET. Projects funded by MPCA include 319 projects, CWP projects, and more recently, TMDL projects.

It is also MPCA policy to use all credible and relevant monitoring data collected by others for its assessment activities. Because of this policy, many local projects not funded by MPCA choose to submit data to the MPCA in STORET-ready format. These projects will then also have their data accessible to a variety of users through the MPCA's Environmental Data Access Initiative. In the spring of 2004, a call for data was sent out to agencies and organizations that either collected water monitoring data or used data collected by others, asking if they would be interested in submitting their data to the MPCA.

C. **Integrated Assessment Process**

Integrated Assessment Methodology

Tables III-1 and III-2 summarize the fundamental data and information requirements for 305(b) and 303(d) use-support and impairment determinations for all categories of pollutants. Pre-assessments are made automatically following the methodology reflected in Tables III-1 and III-2. As reflected in these tables, there are some water bodies for which a 305(b) assessment will indicate impairments, but for which there is insufficient data to determine a TMDL impairment.

Table III-1. Summary of Data Needed for Water Quality Assessments for 305(b) Report and 303(d) List for Use Support and Impairment Determinations, for Pollutants with Numeric Standards.

Pollutant Category **305(b) Report, or 303(d) List**	**Minimum Number of Values*, and Data Treatment**	**Exceedance Thresholds: Number or Percent Exceedances of Chronic Standards** **Use Support or Listing Category**		
Pollutants with Toxicity-based Standards	Number of Exceedances ®	£ 1	na	³ 2
305(b)	5 values in 3 years	Fully supporting	na	Not supporting
303(d)	5 values in 3 years	Not listed	na	Listed
Pollutants with Human Health-based Standards	Number of Exceedances ®	£ 1	na	³ 2
305(b)	5 values in 3 years	Not assessed for 305(b)	na	Not assessed for 305(b)
303(d)	5 values in 3 years	Not listed	na	Listed
Conventional Pollutants and Water Quality Characteristics	Percent Exceedance ®	< 10 %	10 – 25 %	> 25 %
305(b)	10 values in 10 years	Fully supporting	Partially supporting	Not supporting
303(d)	10 values in 10 years	Not listed	Listed	Listed
Fecal Coliform, Step 1 200 orgs./100 ml	Percent Exceedance ®	< 10 %	³ 10 %	na
305(b)	10 values in 10 years	Fully supporting	Step 2	na
303(d)	10 values in 10 years	Not listed	Step 2	na
Fecal Coliform, Step 2 200 orgs./100 ml	*Number of months with Exceedances ®* (geometric mean)	No months	1 or 2 months	> 2 months
305(b)	Geometric mean of 5 values over 10 years for each month	Full supporting	Partially supporting	Not supporting
303(d)	Geometric mean of 5 values over 10 years for each month	Not listed	Listed	Listed
Fecal Coliform, Step 2 2000 orgs./100 ml	Percent Exceedance ®	< 10 %	10 – 25 %	> 25 %
305(b)	10 values in 10 years	Full supporting	Partially supporting	Not supporting
303(d)	10 values in 10 years	Not listed	Listed	Listed

Values are individual or single data points. Exceedance thresholds are of individual values unless noted otherwise. Na = not applicable. There is no "partially supporting" or "review" category for toxics and fish tissue contaminants, no "not supporting" or "listed" category for step 1 of fecal coliform assessments, and no specific minimum data requirements for biological and fish tissue contaminant assessments.

Table III-2. Summary of Data Needed for Water Quality Assessments for 305(b) Report and 303(d) List for Use Support and Impairment Determinations, for Pollutants with Narrative Standards.

Pollutant Category **305 (b) Report, or 303(d) List**	**Minimum Number of Values*, and Data Treatment**	**Exceedance Thresholds:** • **Eutrophication Guideline values** • **IBI Scores** • **Contaminant Levels in Fish Tissue** **Use Support or Listing Category**		
Eutrophication (lakes) Northern Lakes and Forests Ecoregion	Total phosphorus →	< 30 µg/L	30 – 35 µg/L	> 35 µg/L
	Chl-a →	< 10 µg/L	10 – 12 µg/L	> 12 µg/L
	Secchi disk →	≥ 1.6 meters	1.6 – 1.4 meters	< 1.4 meters
305(b)	1 total phosphorus, chl-a or Secchi disk	Full supporting	Partially supporting	Potentially Not supporting to Not supporting
303(d)	12 total phosphorus, 12 chl-a and 12 Secchi disk	Not listed	Review, to determine to list or not list	Listed
Eutrophication (lakes) North Central Hardwood Forests Ecoregion	Total phosphorus →	< 40 µg/L	40 – 45 µg/L	> 45 µg/L
	Chl-a →	< 15 µg/L	15 – 18 µg/L	> 18 µg/L
	Secchi disk →	≥ 1.2 meters	1.2 – 1.1 meters	< 1.1 meters
305(b)	1 total phosphorus, chl-a or Secchi disk	Full supporting	Partially supporting	Potentially Not supporting to Not supporting
303(d)	12 total phosphorus, 12 chl-a and 12 Secchi disk	Not listed	Review, to determine to list or not list	Listed
Eutrophication (lakes) Northern Glaciated Plains and Western Corn Belt Plains Ecoregions	Total phosphorus →	< 70 µg/L	70 – 90 µg/L	> 90 µg/L
	Chl-a →	< 24 µg/L	24 – 32 µg/L	> 32 µg/L
	Secchi disk →	≥ 1.0 meters	1.0 – 0.7 meters	< 0.7 meters
305(b)	1 total phosphorus, chl-a or Secchi disk	Full supporting	Partially supporting	Potentially Not supporting to Not supporting
303(d)	12 total phosphorus, 12 chl-a and 12 Secchi disk	Not listed	Review, to determine to list or not list	Listed

Values are individual or single data points. Exceedance thresholds are of individual values unless noted otherwise.
** Assessment of mercury fish tissue data not limited to most recent 10 years. Na = not applicable. There is no “partially supporting” or “review” category for toxics and fish tissue contaminants, no “not supporting” or “listed” category for step 1 of fecal coliform assessments, and no specific minimum data requirements for biological and fish tissue contaminant assessments.

Table III-2 (continued)

Pollutant Category **305 (b) Report, or 303(d) List**	**Minimum Number of Values*, and Data Treatment**	**Exceedance Thresholds:** • **IBI Scores** • **Contaminant Levels in Fish Tissue** **Use Support or Listing Category**		
Biological Community (fish)	**IBI score → (old method)**	**Excellent, good or fair**	**na**	**Poor or very poor**
	IBI score → (new method)	IBI ≥ basin-specific threshold IBI	Discrepant results within stream segment	**IBI < basin-specific threshold IBI**
305(b)	See Section IX.B.	Fully supporting	Partially supporting	**Not supporting**
303(d)	See Section IX.B	Not listed	Listed	**Listed**
Fish tissue Contaminants**	Tissue concentration →	≤ 0.2 ppm Hg or PCBs	na	**0.2 ppm Hg or PCBs**
305(b)	Water bodies with fish consumption advice	Information	na	**Information**
303(d)	**mean concentration, by lake by species by size, over most recent 5-year period having data**	**Not listed**	**na**	**Listed**

Values are individual or single data points. Exceedance thresholds are of individual values unless noted otherwise.
** Assessment of mercury fish tissue data not limited to most recent 10 years. Na = not applicable. There is no “partially supporting” or “review” category for toxics and fish tissue contaminants, no “not supporting” or “listed” category for step 1 of fecal coliform assessments, and no specific minimum data requirements for biological and fish tissue contaminant assessments.

These pre-assessments are then reviewed by professional judgment teams, as part of 305(b) and 303(d) efforts. Incorporation of professional judgment teams recognizes the value and necessity of including professional judgment as a “formal” step in assessments. No assessment guidance and protocol, no matter how detailed, can address all the unforeseen aspects of the multi-step assessment process. Under the process, a professional judgment team is formed for each basin. The team is made up, for example, of regional MPCA basin coordinators knowledgeable about local WQ issues, MPCA monitoring and data assessment staff, and staff from organizations outside the MPCA whose data were used in the assessments, if appropriate. The professional judgment teams meet to review how the data were used and interpreted, and whether outside data were used appropriately. They determine whether the data (possibly data combined from more than one source) are adequate and appropriate for making statements about use-support and about causes of impairment (such as low dissolved oxygen (DO) or high P, etc).

MPCA staff and a professional judgment team compare monitoring data from all sources to the WQS for a specific stream reach or lake to assess protection of beneficial uses. If data are available to assess more than one type of standard that protect the same beneficial use, exceedance of any applicable standard normally indicates impairment. This concept is called “independent application.” In general, independent application means that a water body should meet multiple assessment tests (standards) to be considered un-impaired for a given use. This is consistent with the national and state goal to protect the “chemical, physical and biological integrity” of surface waters, and it is consistent with USEPA guidance. USEPA’s discussion of independent application is the integration of assessments of: 1) chemical-specific data, 2) biological assessments, and 3) whole effluent toxicity testing (USEPA 1991). The independent tests must apply to the same beneficial use. Independent application does not apply when assessing different uses, such as aquatic life (toxicity), fish consumption (human health), swimming or aesthetics. Assessments for different uses are carried out separately.

The professional judgment team's first step in making impairment decisions is to review the results of an "automated" pre-assessment of the available chemical and biological data. The pre-assessment is a computerized screening of the data which identifies water bodies meeting minimum data requirements, appropriate periods of record, and showing the necessary exceedances of impairment thresholds. Following a review of the pre-assessment results, the team considers a wide range of factors that can affect WQ, and use impairment. For examples the team may consider:

- The quality and quantity of all available data,
- The magnitude, duration and frequency of exceedances,
- Timing of exceedances,
- Naturally occurring conditions that affect pollutant concentrations and toxicity,
- Weather and flow conditions,
- Consistency of the preliminary assessment with information on other numeric or narrative WQS,
- Known influences on WQ in the watershed, and
- Any changes in the watershed that have changed WQ.

The MPCA assembles the professional judgment teams and chairs the meetings; and the MPCA takes responsibility for all team decisions regarding impairment. While consensus on impairment decisions is the goal, and is normally achieved, if consensus can't be obtained, the MPCA will make the final decision. All professional judgment decisions are recorded on a professional judgment group "transparency" form for assessed streams (see Figure III-1), so that readers can understand how the decision was reached. The form is housed in a database which allows for better tracking of assessment decisions over multiple reporting cycles.

Each water body is assigned to an integrated assessment report category, as shown in the flow chart in Figure III-2.

Figure III-1. Professional Judgment Group “Transparency” Form.

Example

Transparency Documentation

AUID: 07010108-506

Assessment Cycle: 2006

Aquatic Life Assessment: NS

Swimming Assessment: NA

Review For Delisting: No

More Monitoring: No

Comments:
Main Comments: TMDL plan for DO that includes this reach exists in draft.
4/27/05:Due to a station-AUID assignment error, data for station S002-909 was not included in the preliminary assessment. The data set for this site alone shows a dissolved oxygen sag attributable to the affect of extensive riparian wetlands that is well-documented and analyzed in the TMDL study report section 9.4.3.2. When combined with the data from the other site on the reach, daily averaging dampens the exceedances, indicating no DO impairment overall. Because the study and plan already addresses the disparity, the reach will not be split.

This segment was split in August 2005 as a result of an approved TMDL plan for Low DO.

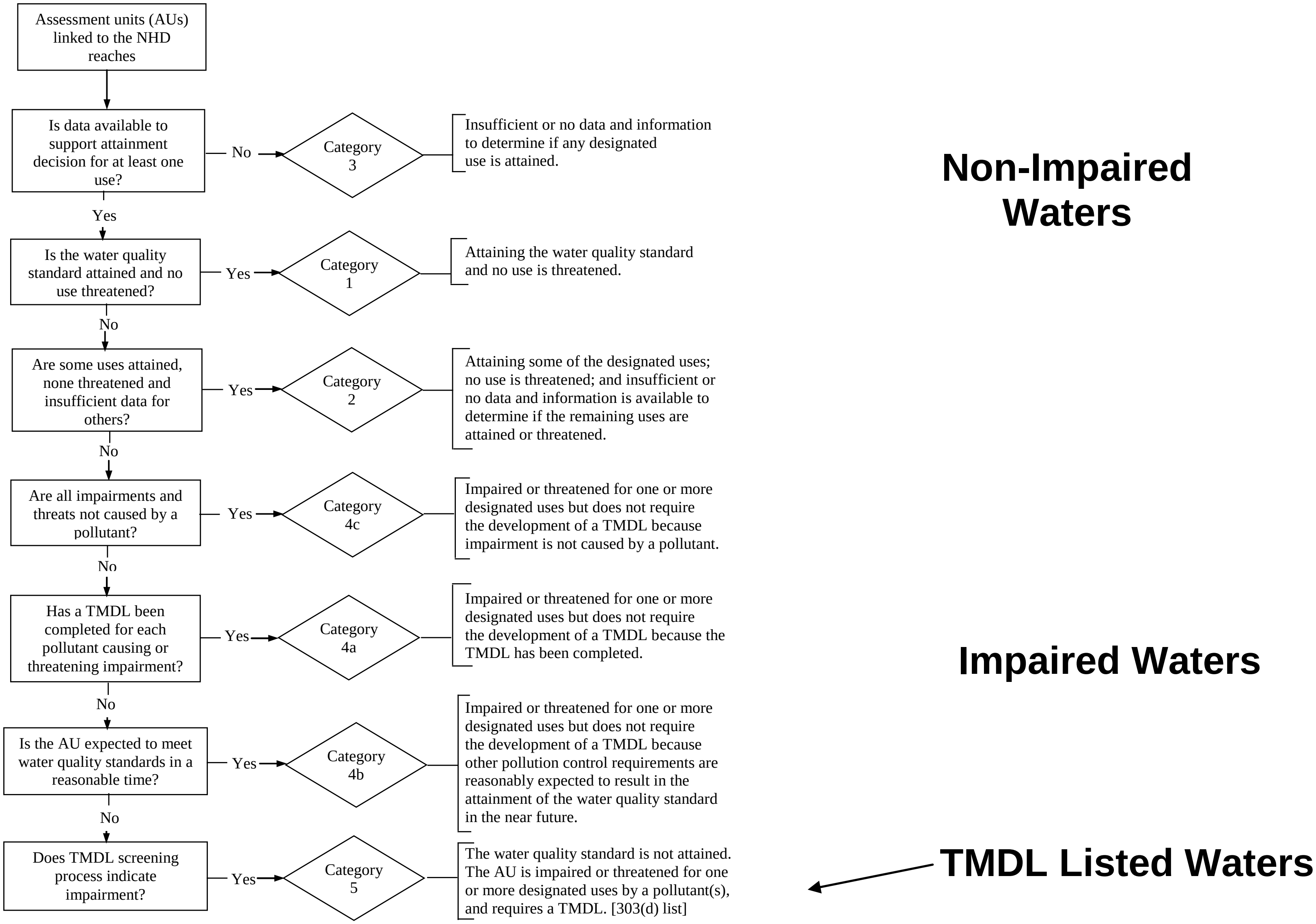
Impairment ID: 230

Impairment Name: Fishes Bioassessments (Streams)

Impairment ID: 322

Impairment Name: Oxygen, Dissolved

Figure III-2. Flowchart of Non-Impaired Waters, Impaired Waters and TMDL Listed Waters.



Chapter Three IMPAIRED WATERS LIST

CURRENT STATUS

The table below contains the pollutants listed in the MPCA's 2006 Impaired Waters List (Appendix II) and the number of impairments in streams and lakes caused by each. Only 10 percent of river miles and 14 percent of lakes in Minnesota have sufficient data for the MPCA to determine whether they are impaired. Details on the draft 2006 impaired waters list is contained in the 3rd column. (Subsequent to the writing of this report, Minnesota's draft 2006 impaired waters list was approved by the USEPA in early June, 2006. A regional fecal coliform TMDL plan was approved shortly after submission of the draft list in April and as part of the approval, 24 reaches were removed.)

Bioaccumulative toxics include PCBs, dichlorodiphenyltrichloroethane, dieldrin, dioxin and toxaphene. Impairments due to mercury in water and fish tissues account for 92 percent of the bioaccumulative total and 65 percent of all the impairments on the 2004 impaired waters list.

	2004 Approved List	2006 Draft List
Pollutant	**# impairments**	# impairments
Ammonia	13	**8**
Bioaccumulative toxics & Mercury	1367	**1469**
Chlorides	3	**4**
Excess nutrients	153	**208**
Fecal coliform	102	**163**
Impaired biotic communities	112	**144**
Low dissolved oxygen	45	**54**
pH	2	**5**
Temperature	1	**1**
Turbidity	118	**218**
TOTAL	1916	2274

A separate 303(d) impaired waters list is being submitted to USEPA, but it is MPCA's intent to use version 21.4 of the USEPA ADB for integrated reporting. The category 5 assessment units in the ADB will match with the submitted impaired waters list.

PUBLIC PROCESS FOR THE IMPAIRED WATERS LIST

For the approved 2004 impaired waters list, a series of informational public meetings throughout the state were scheduled two months before the draft list was due. At the same time, notice of the availability of a draft list for review and comment was placed in the *State Register* (for January 12, 2003), plus letters were again mailed to more than 300 individuals and groups.

For the draft 2006 impaired waters list, the draft list was placed on the MPCA web site on December 19, 2005. The public was informed by a statewide MPCA press release and letters to over 300 individuals and groups on the MPCA TMDL mailing list. Seven public meetings were held between January 26th and February 8th, 2006. The 30-day formal public comment period was between January 23 and February 24, 2006.

WHAT IS A TMDL STUDY?

For each pollutant that causes a water body to fail to meet applicable WQS, the CWA requires the states to conduct a study called a TMDL Study.

A TMDL study identifies both point and NPSs of each pollutant that violates standards. WQ sampling and computer modeling determine how much each pollutant source is contributing to the problem. An allocation process involving stakeholders determines how much each source must reduce its contribution to assure the standards are again met.

An impaired water body may have several TMDL studies, each one determining reductions for a different pollutant. After a TMDL is written, a detailed implementation plan is developed to meet the TMDL's pollutant load allocation and achieve the needed reductions to restore WQ. Depending on the severity and scale of the impairment, restoration may require 10-20 years and millions of dollars.

Approximately 290 projects are planned to complete TMDLs on over 800 impairments for conventional pollutants. As of the first quarter of 2006, five TMDL projects have been completed, addressing 48 impairments (listings), and another 53 projects are *underway* (covering just over 200 listings) Another innovative statewide TMDL that is underway on mercury covers 1,239 listings (see mercury section below).

A. <u>Strategies the MPCA Employs in Developing the Impaired Waters Restoration Process</u>

<u>Policy Discussions with Stake Holders</u>

The MPCA has conducted policy discussions with stakeholders, and will continue to do so.

Responsibility for keeping our water resources healthy resides with individual citizens, businesses, and a number of state and local government agencies, including the MPCA, Minnesota Department of Natural Resources (MDNR), the Minnesota Department of Agriculture (MDA), BWSR, counties, cities, soil and water conservation districts, and watershed districts.

Despite all these players, WQ improvements are not happening rapidly enough. All of these entities must come together to meet the challenge of impaired waters. The good news is a diverse advisory group, facilitated by the Minnesota Environmental Initiative, along with the Clean Water Cabinet (created as part of Governor Pawlenty's Clean Water Initiative), have taken steps to get us there. The Stakeholder Group is comprised of a coalition of interests representing local government, agriculture, environmental organizations, and industry and state agencies. The group recommended a design, called a policy framework, for a state impaired waters program to the MPCA and identified the partnerships that will be required for implementing the program. Topics such as funding options, a plan for priority setting, and strategies for identifying and restoring impaired waters were addressed. The MPCA is testing or implementing portions of the policy framework that it is able to with its current level of resources.

In addition the policy framework, the MPCA has been working with the stakeholder group on a legislative proposal to help meet the enormous funding needs of the impaired waters program. At current funding levels, the MPCA anticipates that the federal deadlines for completing TMDLs will be missed, the backlog of projects will grow, and restoration efforts will be delayed. The legislative proposal to address these growing needs, called the CWLA, has been introduced in the state Legislature during the last two legislative sessions, but has not yet been passed into law. During the 2005 session, there was general agreement on the policy framework with revisions by the legislature, but the funding hindered the ability to pass this legislation.

Partnering with Local Government

Local units of government – cities, counties, soil and water conservation districts, and watershed management organizations – play a large and growing role in NPS pollution abatement across the state. The MPCA is ultimately responsible for completing and submitting TMDLs to the USEPA. However, these stakeholders play a critical role in the development and implementation of TMDLs. Our first priority is to use ready and qualified LUG and watershed organizations with jurisdiction in the impaired watershed to develop TMDLs to lead a project. These entities need to have the expertise to do the work, especially for monitoring, land use inventory, choosing reduction scenarios, developing implementation plans and public outreach.

We believe that locally driven projects are most likely to succeed in achieving WQ goals because communities often best understand the sources of WQ problems and effective solutions to those problems. Through contracts with the MPCA, local governments and watershed organizations will likely lead or play a supporting role in over three-fourths of Minnesota's TMDLs. Other projects, particularly the most complex ones, will often be led by MPCA or other state agencies. The MPCA provides oversight, technical assistance, and training to ensure regulatory and scientific requirements are met.

Using Private Consultants

The MPCA and local government often use private consultants to perform specific steps of TMDL studies where needed and where they will be most effective. Consultants are helpful in supplementing MPCA and local staff resources, particularly for technical work. In many cases, consultants assist with data collection, modeling and development of draft reports.

The MPCA normally hires consultants through a state master contract. However, the MPCA also has used contractors hired and funded by the USEPA, and will continue to partner with USEPA in this way as needed, particularly when national expertise is needed for particularly complex TMDL studies and projects where impaired waters are shared with tribes, Canada or other states.

Strategies for Waters Impaired by Mercury and Other Toxic Pollutants

Mercury can be carried great distances on wind currents before it eventually falls on our land and water bodies. In fact, about 90 percent of the mercury deposited from the air in Minnesota comes from other states and countries. Therefore, the traditional TMDL approach to addressing impairments will not work for mercury, as Minnesota can't control the many sources of this toxic pollutant outside our borders.

The MPCA placed the draft mercury TMDL on a 90-day public notice and is reviewing public comments on a statewide TMDL on mercury that covers all 1,239 listings in Minnesota. Over 980 comments were received. Because of the large number of comments and because several commenters submitted very thoughtful comments, draft responses will not be available until late Spring.

Strategies for Waters Impaired by Mercury and other Toxic Pollutants

Given the growing number of TMDL studies, limited staffing, and available funding, the MPCA is developing plans to increase the efficiency and effectiveness of its impaired waters activities, including:

- Watershed Approaches: The MPCA has several TMDL projects either planned or underway that will cover multiple impairments within an entire watershed (several stream reaches or lakes) or across an entire region (several watersheds or an entire basin).

- Protocol Development: The MPCA is working to better provide technical expertise to MPCA staff and stakeholders on technical work related to TMDLs and restoration projects. For example, guidance or protocol documents are being prepared by the MPCA to create more standardized approaches to TMDLs in Minnesota. Currently, guidance documents are being created for TMDLs involving fecal coliform bacteria, DO, turbidity and excess nutrients in lakes. Challenging issues on stormwater sources and TMDLs are also being addressed. The agency is also discussing different ways to support the application of these protocols to TMDL projects through standing technical staff teams.

- Coordination with state and federal agencies: The cornerstone strategies of the CWLA (mentioned above) is to better fund and utilize *existing* state and federal programs with WQ programs. On the state level, the MPCA is coordinating closely with the MDNR, BWSR, and the MDA on many of these programs. On the federal level, the MPCA is working closely with the Natural Resource Conservation Service, the USGS, and other agencies. Finally the MPCA has worked with USEPA on direct assistance on some TMDLs, particularly for those impaired waters that Minnesota shares with tribes, other states and Canada.

Goal Setting and Performance Measurement

The MPCA has set some basic measures for its impaired waters effort. Working with stakeholders, the Agency will continue to discuss measurable goals for the program which are based on both shorter-term administrative (e.g., productivity and cost effectiveness) targets and longer-term environmental outcomes. We will be evaluating our program regularly to measure progress against these goals.

Currently, progress is being reported on a quarterly basis in meeting an overall goal of "restoring Minnesota's impaired waters to their best and highest use." There are four major indicators used to track progress:

1. Assessment of Minnesota waters for impairments;
2. Production of TMDL reports and implementation plans;
3. Engaging local partners in WQ restoration; and
4. Restoration of waters in Minnesota that are impaired by conventional pollutants.

Quarterly progress for each indicator is scored and the analysis is provided on the reasoning behind the score and what can be done to maintain/improve the score.

In general, scoring for all four indicators indicates that the program is not on track. For example, due to insufficient resources, only 10% of rivers and streams and 16% of lakes have been fully assessed. In addition, as noted previously, current capacity does not exist to produce TMDL reports in a timely manner and the MPCA's TMDL backlog is growing. The lack of capacity also delays the implementation of plans leading to the restoration of WQ.

Again, as noted previously, concern about resource needs has led to stakeholder leadership to develop and continue to work for the passage of legislation called the CWLA.

B. Relationship of 305(b) Report to 303(d) List

Introduction

The purpose of the 305(b) report is to convey the use support status of all surface waters statewide, while the purpose of the 303(d) list is to identify impaired waterbodies for which a plan will be developed to remedy the pollution problem(s) (the TMDL).

Based on this difference, when discussing waterbodies that do not meet WQS, the term "non-support" is associated with the 305(b) report and the term "impaired" with the 303(d) list. Beginning in 2004, an integrated 305(b) reporting and 303(d) listing process, known as the integrated process, was initiated. It followed the Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the CWA, provided by USEPA in July, 2003. For 2006 Minnesota again used the above guidance in their integrated assessment process since an updated guidance was not available at the time of the assessment process. The integrated reporting process establishes that a list of impaired waters be generated on April 1 of every even-numbered year. This time frame coordinates submittal of 303(d) TMDL lists with 305(b) reporting and paves the way for using categorization of surface waters as the means for developing a 303(d) list. The categorization of surface waters ties listing of impaired waters to the assessment of the waters of the State and is described in the following section. The integrated process has changed how impaired waters are determined. In the past, waterbodies were considered impaired based on a commonly held conceptual model about the link between 305(b) and 303(d), that the 305(b) report contained the complete and comprehensive list of all waterbodies impaired for any reason. This list of waterbodies, assessed as "not supporting" and "partially supporting" in the 305(b) report, were then passed through a "303(d) filter" which screened out certain waterbodies. The waterbodies that made it through the "filter" constituted a shorter 303(d) TMDL list of impaired waters. The 303(d) "filter" was composed of any additional data or information required for the 303(d) assessment to arrive at an impairment determination.

Under this model the 303(d) list was always a subset of the 305(b) list of non- and partially supporting waters. Generally, this model held true for the assessment of lakes for nutrient enrichment, but it did not hold true for the assessment of rivers and streams. This model broke down for rivers mainly because waterbodies could be determined to be impaired and listed on the 303(d) list, based on data not used in the 305(b) assessments. This difference reflected the use of local or site-specific data, as well as statewide data, in 303(d) assessments versus the use, in general, of mostly statewide data in the 305(b) assessments. For example, data for bioaccumulative pollutants collected in St. Louis Bay was used just in 303(d) but not 305(b) assessments (MPCA 1999).

The integration of 303(d) listing and 305(b) reporting has changed the assessment process for rivers and streams by considering all available data during the 305(b) assessments. Since the 303(d) list of impaired waters comes directly from the categorization of assessed waters there is no separation of mostly statewide data used for 305(b) assessments and local or site-specific data used in the past for 303(d) listing. All available data are used. This integration does not change how lakes are assessed for nutrient enrichment because the methodology requires a certain amount of data be available to consider a lake impaired for the purposes of 303(d) listing.

Integration does affect how surface waters are categorized for purposes of 305(b) reporting. Data used for both the 305(b) report and the 303(d) list need to be adequate both with respect to quality and quantity. However, as indicated, waterbodies may be categorized in the 305(b) report to reflect non- and partial support, where additional data must to be collected before a definitive impairment categorization for the 303(d) list can be made. Table III-2 summarizes, in general, the types and sources of data used in the two assessments. The reader is advised to see the appropriate Sections of this Guidance for details at: www.pca.state.mn.us/publications/wq-iw1-06.pdf. *Note in Table III-2 that the same types of data are used to identify both candidates and "finalists" for the 303(d) list.*

C. Integration of 305(b) and 303(d)

As alluded to in the previous section, the process of 303(d) listing and 305(b) reporting of assessed surface waters has been integrated following the guidance provided by USEPA (USEPA 2003).[1] It begins with the collection and assessment of all available data using the guidelines in the Assessment and Listing Guidance to make determinations of impaired, not impaired, insufficient information, or not assessed for each assessment unit based on use support assessments. An assessment unit is defined as a surface water body or portion thereof for which monitoring data are available.

Once an assessment has been made, the assessment unit is categorized into one of the five main categories or sub-categories. The categorization of an assessment unit occurs automatically

[1] NOTE: Guidance Manual for Assessing the Quality of Minnesota Surface Waters for the Determination of Impairment 305(b) Report and 303(d) List. October 2005

within the ADB (Version 2.1) provided by USEPA and is based on the data provided. Since the 2004 Guidance from USEPA indicates states may elect to add additional subcategories to those provided with the ADB, assessments in 2006 were placed in one of the following categories or subcategories.

Category/ Subcategory	Description
1	All designated uses are met and no use threatened.
2	Some uses are met, none are threatened and insufficient data to assess other uses.
3A	No data or information to determine if any designated use is attained.
3B	Sufficient data are available for a 305(b) assessment of non- or partial support, but insufficient data and information to determine TMDL impairment.
3C	Data available that currently has no assessment tools to allow its use in assessing.
3D	Sufficient data are available for a 305(b) assessment of full support, but insufficient data and information to assess for category 1 or 2.
4A	Impaired or threatened but all needed TMDLs have been completed.
4B	Impaired or threatened but doesn’t require a TMDL because it is expected to attain standards in the near future.
4C	Impaired or threatened but doesn’t require a TMDL because impairment not caused by a pollutant.
4D	Impaired or threatened but does not require a TMDL because impairment is a result of natural causes.
5A	Impaired or threatened by multiple pollutants and no TMDL plans approved.
5B	Impaired or threatened by multiple pollutants and some TMDL plans approved but not all.
5C	Impaired or threatened by one pollutant.

All assessment units falling into category 5 become the 303(d) TMDL list. This list is subject to review and public comment before submittal to USEPA, which may result in the reassessment of a particular assessment unit into one of the other categories.

D. <u>Levels of Use Support – 305(b) and 303(d)</u>

The purpose of meeting WQS is to protect the beneficial uses associated with the standards. All surface waters in Minnesota are protected for aquatic life and recreation. To accomplish this in the integrated process, three use supports are assessed. These use supports are called aquatic life, aquatic consumption, and aquatic recreation.

The AQL assessments are aimed at protecting the organisms that reside in the surface waters of the State, while the AQC’s goal is to protect consumers of the aquatic life. This allows the integrated process to include in the 305(b) portion site specific data formerly used only in the

303(d) listing process such as fish consumption advisories.

The aquatic recreation use support (AQR) is assessed for protection of recreation in surface waters. The combined assessments of these three use supports are aimed at being consistent with the goal in the CWA that the nation's waters should be "fishable and swimmable" wherever attainable.

Based on the assessment of the WQ data and other relevant information compared to the standards for a given pollutant or WQ characteristic, the use supports may be assessed as:

- Fully supported,
- Partially supported,
- Not supported (= non-support) or
- Not assessed.

As stated previously, an assessment unit's overall integrated assessment is "impaired", "not impaired", "insufficient information", or "not assessed" based on the worst case use support assessment. An overall "not impaired" assessment implies that no use support was assessed as partially or not supported and at least one use support was assessed as fully supporting. An overall "impaired" assessment indicates that at least one use support is not supported or at least one use support was assessed for 305(b) purposes as partially supported and secondary analysis indicated enough data were available to assign an overall impairment assessment. A "not assessed" overall assessment occurs when no data are available to make any use support assessment, (i.e. subcategory 3A). An "insufficient information" assessment generally was reserved for assessment units placed in either subcategory 3B, 3C, or 3D.

The categorization of an assessment unit is an added step that occurs in the integrated process. It does not change the way assessments are reported in the 305(b) process. Assessment units fully supporting all assessed use supports are listed as "fully supporting" in the 305(b) report and they do not appear on the 303(d) list. Generally, a determination of partial support of a use means that the river reach or lake is listed as "partially supporting" in the 305(b) report, and it may be listed as "impaired" on the 303(d) list. A determination of non-support indicates an impaired condition and the waterbody is placed on the "not supporting" list for the 305(b) report, and it may go on the 303(d) list. Generally, a waterbody is listed unless a secondary analysis determines there are insufficient information for listing, in which case the waterbody is placed in subcategory 3B.

A use is considered not assessed if there are insufficient or no data to determine support. For some assessments, lake eutrophication for example, the "partial support" category is a trigger for further analysis of that waterbody before an impairment decision is made (if it meets minimum data requirements). The term potentially supporting may be initially used in assessing impairment of aquatic recreation use (fecal coliform bacteria), where a two step screening process is applied to determine whether there is adequate data to make an assessment of partial or non-support. The MPCA plans in the future to maintain a list of waterbodies for which insufficient data are available to make a complete assessment, but the available data suggest some impairment. This list will help establish priorities for allocating future monitoring resources.

E. Data Used for Both 305(b) and 303(d) Assessments

In general, assessment of data for conventional WQ characteristics of streams, such as DO, turbidity, and fecal coliform, and for two frequently measured toxic pollutants, un-ionized ammonia and chloride, requires the same quantity and quality of data for a determination of impairment for both the 305(b) report and the 303(d) list. New to the 2006 assessment process was citizen stream monitoring data. These data are transparency tube readings used as a surrogate measure for turbidity. Data for trace metals (arsenic, cadmium, chromium, copper, lead, nickel, selenium and zinc) must be collected using “clean” techniques for both the 305(b) and 303(d) assessments. Metals data collected without the use of the more rigorous clean techniques may be used as a screening tool to identify sites where additional monitoring may be needed.

The biological monitoring program includes limited chemical monitoring as well as habitat assessment. The chemical data are rarely used for either 305(b) or 303(d) assessments because of the small amount of data provided. Habitat data are used to support the biological data. These data are taken into consideration during the professional judgment phase of the 303(d) listing process (Table III-2).

F. Data Used Only for 305(b) Assessments

USEPA encourages states to assess as many waterbodies as resources permit when preparing the 305(b) report, recognizing that there are various levels of confidence associated with assessments involving varying quantities of data. To that end, and to facilitate the integrated assessment process, all available data are considered initially for 305(b) including site-specific data formerly used only for 303(d) assessments. Assessments for lake eutrophication for the 305(b) report can be based on fewer observations and data for fewer variables than are required for 303(d) listing. In fact, a preliminary 305(b) assessment may be based on a single value for TP, chl-a or SD.

Similarly, a preliminary 305(b) assessment for turbidity can be based upon 20 observations of any combination of transparency, TSS and turbidity when professional corroboration of stream transparency tube data is not available. This information provides a useful screening tool for persons concerned about a particular lake or stream.

G. Data Used Only for 303(d) Assessments

As indicated in Section E, all data are considered for 303(d) reporting in the integrated assessment process.

H. Data Quality

The integrated assessment process requires a quality rating or confidence level be assigned to the data used to make use support assessments. The rating options available in the ADB (Version 2.1) are low, fair, good, or excellent for each type of data (physical/chemical, biological, pathogens, etc). In an effort to use "all available data" in the integrated process, Minnesota conducted a public call for data in 2004 to obtain data from stakeholders who normally do not provide the State with monitoring data. Collected data were incorporated in with data from the MPCA and from other groups who routinely provide data, and were used for the 2006 integrated assessment process. Public calls for data in the future are dependent upon budget restraints and availability of staff to compile the data. Use support assessments are carried out separately for lakes and streams and the rating process for each type of assessment is as follows:

1. Data quality for lake assessments

The data used in these assessments was derived from STORET, so we assume that certain "quality control" thresholds were already established for the data. Hence our definition of "quality" will focus on the relative amount of information available for the assessment (see Table II-1). In the case of our aquatic recreational use assessments, TP is the primary variable used so we place the greatest emphasis on the amount of TP data available for the assessment. The "quality" terms were drawn from USEPA guidance. In general we feel that assessments based on multiple measurements are more reliable than those based on only a few measurements. The rationale for assigning the respective "quality" definitions corresponds roughly to typical lake-monitoring regimens (e.g. monthly sampling during the summer season), whereby four TP samples often represent one summer; eight samples two summers and 12 samples two-three summers. In the case of 303(d) assessments, 12 or more TP, chl-a and Secchi measurements are usually required to determine if a lake should be placed on the 303(d) list, and was considered "excellent" quality data for assessment. In general the thresholds were similar for the "monitored" (recent) and the "evaluated" (old) data with the exception that there would be no "excellent" evaluated data as these data are more than ten years old.

2. Data quality for stream assessments

The data for stream assessments include data drawn from STORET as well as other data that are made available through a specified cut off date. The cutoff date will depend on when the date of the first professional judgment group assessment meeting is scheduled and will occur early enough to allow for the compilation of pre-assessment data before the meeting. The quality of data used in these assessments is based on the four tiered rating system available in the ADB with a rating assigned to each type of data used in each use support assessment. For AQL data quality ratings are:

- Excellent – both biological and physical/chemical data available;
- Good – either biological or physical/chemical data available in sufficient quantities, which the professional judgment group deems enough to make a good assessment;
- Fair – physical/chemical data available in sufficient quantities, which the professional judgment group deems enough to make a fair assessment;
- Low – only a few physical/chemical parameters available in minimum quantities needed to make an assessment.

AQC assessments at this time use fish consumption advisory data from the MDH, which we have assigned a 'good' quality rating.

For AQR data quality ratings, some general guidelines are given below.

- Excellent – 6-7 months of data with at least 5 observations;
- Good – ~3-5 months of data with at least 5 observations;
- Fair – ~1-2 months of data with at least 5 observations;
- Low – no months with at least 5 observations, very few additional data points above the minimum 10 required.

In addition, other factors considered in rating the quality of aquatic recreation data include looking at the dates when samples were collected (years and months). A lower quality rating is generally given where all the data are collected in one calendar year and/or where the dataset does not include months that typically have higher fecal coliform counts (June – September).

I. Wetlands Update

Minnesota is fortunate to have a rich diversity of wetlands and nearly 50% of our historic wetlands remain on the landscape. Minnesota continues to protect this important resource from draining and filling activities primarily through the State Wetland Conservation Act (WCA). Central to the WCA, is the enactment of state policy to achieve a "no net loss" and to increase the "quantity, quality and biological diversity of wetlands in the state" (Minn. Statutes 103A.201).

Under the WCA, permits are reviewed and issued by LUG with mitigation being required to compensate for acres lost through draining and filling actions. As a part of implementing the WCA, the BWSR compiles wetland related loss and gain data, collected from various government and nongovernmental organizations. The BWSR uses this data to write and publish periodic wetland reports. The most current wetland report was published in August 2005 and includes data from the years 2001 to 2003. This report is available at: (http://www.bwsr.state.mn.us/wetlands/publications/wetlandreport.pdf).

In the 2005, report the BWSR highlights the complexity of no net loss accounting including issues such as losses due to permit exemptions and certain types of non-wetland mitigation credits such as credit for buffers and wetland enhancements. The report makes the point that several thousand acres of wetland and upland are restored each year through various conservation programs or organizations, which is separated from the regulatory program efforts. Table III-3 summarizes the wetland program results by agency as reported in the 2005 BWSR report. From the data presented in Table III-3, it appears that significant protection successes have resulted from the regulatory programs as well as significant increases in wetland acres results resulting from the numerous non-regulatory programs.

Table III-3. Summary of wetland activity outcomes for regulatory and non-regulatory programs. from 2001 to 2003 as published by the Minnesota Board of Water and Soil Resources.

	Agency	Program	Acres Gained	Acres Lost	Program Totals
REGULATORY	BWSR	Wetland Conservation Act	1,930[1,5]	986[2]	**944**
		Local Road-WCA/Section 404	681	468	**213**
	MDNR	Public Waters Permit	1.4	0.7	**0.7**
		Parks, Trails and Waterways	141	26	**115**
	Mendota	WCA/Section 404	352	195	**157**
	USACOE[3]	Clean Water Act – Section 404	2,322	2,137	**185**
	USDA[4]				
NON-REGULATORY	BWSR	Reinvest in MN/Conservation Reserve Enhancement Program	49,956[5]		**49,956**
	MDNR	Wildlife Management Areas	741		**741**
	USFWS	Partners for Fish and Wildlife	19,809[5,6]		**19,809**
		Waterfowl Production Areas/Refuges	16,773[5]		**16,773**
	USDA –FSA	Conservation Reserve Program	64,137[5,6]		**64,137**
	USDA – NRCS	Wetlands Reserve Program	19,094[5,6]		**19,094**
		Reinvest in MN/Wetland Reserve Program	**2,983[5]**		**2,983**

[1] Includes the net balance in the banking system from 2001-2003 of 464 acres.
[2] Does not include exemption data reported by LUG; 1,708 acres from 2001-2003.
[3] Does not include exempt activities or projects over which the USACOE does not have jurisdiction.
[4] The USDA has a regulatory program, however data is not available for this program. Also the National Resources Inventory, conducted by the USDA Natural Resources Conservation Service reports a net gain of wetlands nationally, during the period 1997-2002.
[5] Data includes wetlands and associated upland habitat.
[6] Acres are in limited term contracts.

Table III-4. Reported wetlands avoided, mitigated, restored & impacted from WCA regulation 2001 – 2003.

WCA Activity	2001	2002	2003	Totals
Number of Landowner contacts to LUG	17,086	18,507	17,561	**53,145**
Avoided/minimized (in acres)	3,943	3,052	3,150	**10,145**
Impacted (in acres)	(273)	(330)	(283)	**(986)**
Replacement (in acres)	525	347	584*	**1,466**[1]
Exempt (in acres)	(610)	(619)	(479)	**(1,708)**
Impact + Exempt	(883)	(949)	(862)	**(2,694)**
Impact + Exempt – Replacement = Net loss	**(348)**	**(602)**	**(417)**	**(1,367)**

[1]does not include a net balance of 464 acres of wetlands in the wetland bank during 2001 – 2003.
[*]Total includes 139 acres of upland public value credits.

However several exemptions exist in the WCA and activities eligible for exemptions are not required to be reported to local governments though many project advocates request exemption determinations. Table III-4 presents data by year showing the acres of wetlands reported to have been avoided, impacted, and replaced through mitigation and the reported exemptions. It is clear that the exemptions are resulting in significant wetland losses. With the exemption data that has been reported included there is a net loss of wetlands in every year as shown in the bottom row of Table III-4 (impact + exempt – replacement row). This raised issues questions of whether the no-net loss goal should be met strictly within the regulatory program or if the conservation restorations can be included in the no-net-loss analysis. As a result the Clean Water Cabinet has commissioned an assessment of the WCA and specifically is examining the effect of the exemptions within this legislation. This assessment is currently underway and is expected to be completed by December 2006.

Relatively little data are available concerning the status and trends in wetland quality across the state. Essentially all that is known about Minnesota wetland quality comes from anecdotal observations, experience with a few local projects to improve or restore wetland habitat, data collected for local comprehensive wetland management plans, and limited data from initial efforts to develop wetland quality assessment methods. Though as reported in past 305(b) reports the MPCA continues to develop biological assessment methods for depressional wetlands and have very nearly achieved a statewide dataset for this indicator.

COMPREHENSIVE WETLAND ASSESSMENT, MONITORING AND MAPPING STRATEGY

The need to develop a broad-based comprehensive assessment of Minnesota's wetlands has been recognize for a long time. In the fall of 2002, an interagency coalition submitted a grant application to USEPA requesting the resources to develop a wetland monitoring strategy for Minnesota. With funding from USEPA, work began in October 2003 to develop a wetland monitoring strategy for Minnesota. The goal of the wetland monitoring strategy is to:

Develop a broadly understood, scientifically sound strategy for monitoring and assessment of the statewide status and trends in wetland quantity and quality.

There are five objectives under this goal:

1. To establish accurate baseline data on wetland quantity and quality statewide and in each of four geographic regions: the Prairie Parkland, Eastern Broadleaf Forest, the Laurentian Mixed Forest, and the Paleozoic Plateau and by the following wetland classes found in Minnesota based on Cowardin et al (1979) and non-wetland classes:

Wetland Classes	
Palustrine emergent	Palustrine aquatic bed
Palustrine forested	Palustrine unconsolidated bottom
Palustrine scrub-shrub	

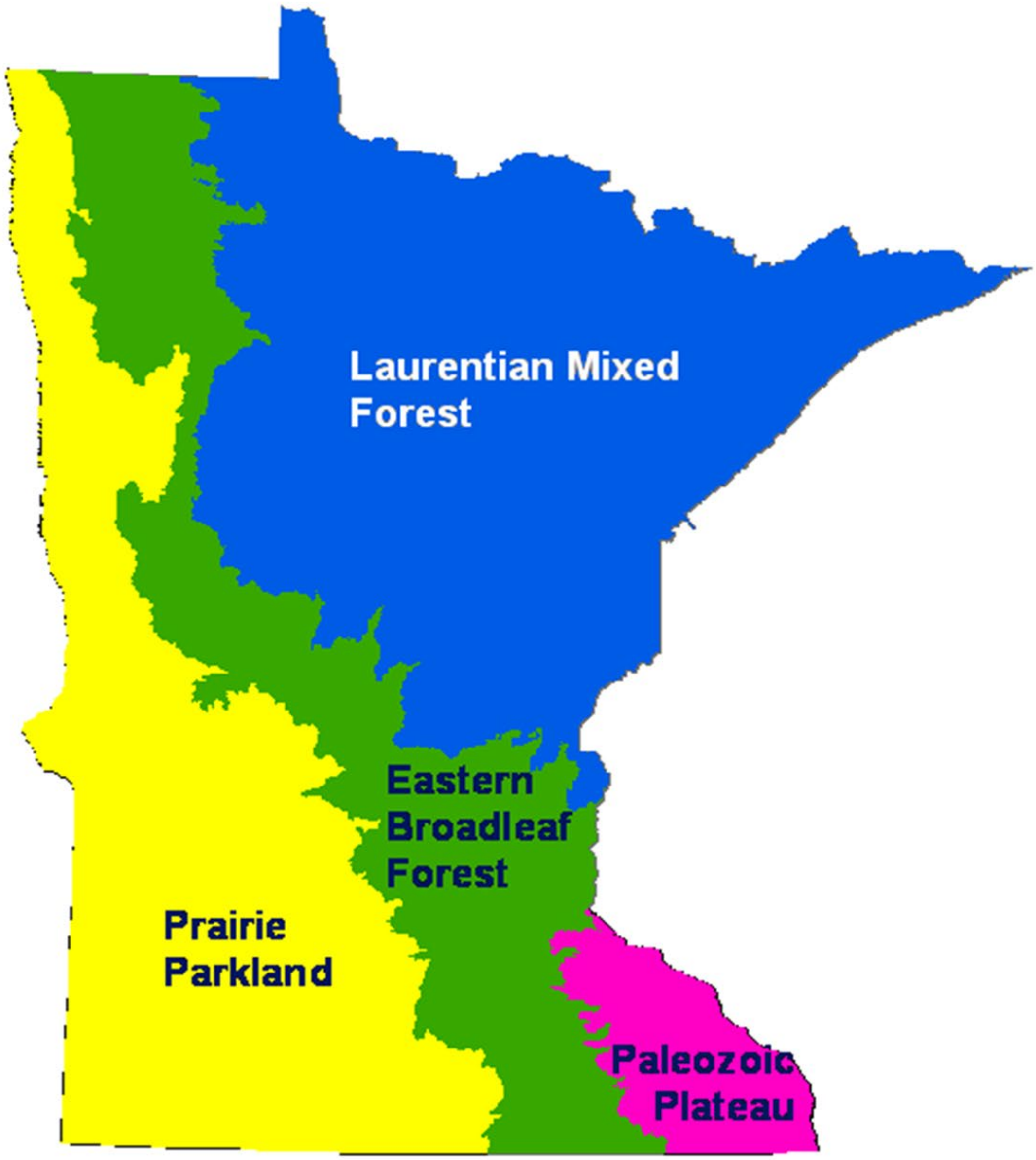
Non-wetland classes	
Agricultural	Urban
Silvicultural	Rural development
Natural	Deep water (aggregation of Lacustrine and Riverine waters)
Other	

2. Associate changes in wetland quantity and quality with specific causal mechanisms, such as urban and rural development, agricultural and silvicultural activities, transportation, mining, natural factors, conservation programs and other activities.

3. Provide statewide reports of status and trends in Minnesota wetland quantity every three to five years beginning in 2009 and provide wetland quality status and trends reports every two to three years in select regions beginning in 2009. These reports will be used to assess the effectiveness of wetland regulatory and non-regulatory programs and will provide a sound basis for future state wetland policy and management decisions.

4. To accurately assess future changes (trends) in wetland quantity and quality statewide and in the geographic regions presented in Figure III-3 by wetland class.

Figure III-3. Proposed Geographic Reporting Regions for CWAMMS.



5. Contribute to the long term understanding of Minnesota's wetland health (functions), distribution, structure and processes.

Recognizing the need for a comprehensive approach to wetland assessment, monitoring and mapping and procedures for evaluating no-net loss wetland in Minnesota, the wetland monitoring strategy is now called, the CWAMMS.

Three distinct approaches are recommended to effectively assess the full complexity of monitoring the status and trends of wetland quantity and quality statewide.

1. Online Programmatic Accounting System
   This approach sets forth development of a spatially referenced database to store, manage and query regulatory program activities and wetland conservation program activities alike. Ideally this database would be accessed online so that permit applicants would input data directly and project reviews would be done online. All data must be tied to a geo-referenced address, which could be live linked to the polygon coverage stored within the National Wetland Inventory (NWI). This geo-database would actually exist as several databases linked together through a data warehouse such that separate agencies would continue to manage and maintain their in-house databases.

2. Updating the National Wetland Inventory in Minnesota
   In most of Minnesota, the NWI database dates back to the mid 1980's and for the Northeast the mid 1970's. Agency cooperators under the CWAMMS have been able to do several pilot projects to explore the potential of various current remote sensing and mapping technologies. Of the three approaches this is the most capital intensive and will likely only be able to be accomplished through a collaboration through the Governors GIS Council, local, state and federal partners. It has been suggested that potential funding might be able to be secured through a competitive appropriation from Legislative Commission on Minnesota's Resources or its replacement process. It is recommended that not only does the NWI need to be updated, but a process for maintaining and keeping it current needs to be designed.

3. Probabilistic Survey Sample
   The third approach is a sample survey designed to minimally yield a 90% confidence with not greater than a $\pm$ 20%. Error rate. This assessment approach is currently funded though a USEPA Non-regulatory Wetland Demonstration Pilot Grant and a legislative appropriation to MDNR. Data collection for this new survey is beginning in the spring of 2006 with plans to collect current imagery from over 1,800 1 mi^2 plots. This survey is expected to cost $400,000 for each of the next three years; after that the costs are expected to be cut approximately in half due to the existence of a new current base layer. It is expected that the first report from this survey will be available in 2009.

Many details remain to be determined regarding recommendations to monitor status and trends in wetland quality. Work continues on wetland quality assessment methods at three scales: at the landscape, at a qualitative field scale and at an intensive field scale. It is likely that much of the data will be collected in conjunction with the random survey.

Assessing wetland status and trends quantity and quality is a complex task that will require a combination of approaches. The approaches will be integrated to improve the true understanding and confidence, in wetland status and trends statewide. The recommendations in the CWAMMS blend well and support the 2006 Governors Wetland Vision and Strategies for Minnesota (http://cwc.state.mn.us/documents/Wetlands.vision.pdf). They complement the Working Lands Initiative and ongoing efforts to develop a wetland restoration strategy for the state and will enable Minnesota to effectively evaluate the success of these measures in a comprehensive way. The CWAMMS will be implemented through the collaborative efforts of local governments, state and federal agencies and non-governmental organizations. Specific roles and responsibilities for all participants have been identified.

Chapter Four TRENDS ANALYSIS

POLLUTANT TRENDS FOR MINNESOTA RIVERS AND STREAMS

The best available information on pollutant trends in rivers and streams comes from Minnesota Milestone sites. These are a series of 80 monitoring sites across the state with high-quality, long-term data. While the sites are not necessarily representative of Minnesota's rivers and streams, as a whole they do provide a valuable historical record for many of the state's waters. Monitoring results over the period of record, which in some cases goes back to the 1950s, show significant reductions across the state for BOD, TSS, P, ammonia and fecal coliform bacteria. These results reflect the considerable progress made during that time in controlling municipal and industrial point sources of pollution. Nitrite/nitrate levels, on the other hand, show increases at many of the Minnesota Milestone sites, perhaps reflecting continuing nonpoint-source problems. Table III-6 and Figure III-4 through Figure III-9, on the following pages, provide further detail. (Statistical analysis was performed using Excel and Systat software).

Table III-6. Pollutant Trends at Minnesota Milestone Sites

Basin	Station	Length of Record	Biochemical Oxygen Demand	Total Suspended Solids	Total Phosphorus	Nitrite/ Nitrate	Unionized Ammonia	Fecal Coliforms
Cedar - Des Moines	CD-10	1967 - present	decrease	no trend	decrease	increase	decrease	decrease
	CD-24	1967 - present	decrease	no trend	decrease	no trend	decrease	no trend
	OK-25.6	1973 - present	decrease	insuf data	increase	increase	decrease	insuf data
	SR-1.2	1961 - present	decrease	decrease	no trend	increase	decrease	no trend
	WDM-3	1967 - present	no trend	no trend	decrease	increase	decrease	decrease
Lake Superior	BRU-0.4	1973 - present	decrease	insuf data	decrease	insuf data	insuf data	insuf data
	BV-4	1973 - present	no trend	decrease	decrease	no trend	increase	decrease
	KN-0.2	1973 - present	insuf data	decrease	decrease	increase	insuf data	decrease
	LE-0.2	1973 - present	insuf data	decrease	decrease	insuf data	insuf data	decrease
	POP-0	1973 - present	insuf data	insuf data	decrease	insuf data	increase	insuf data
	SLB-1	1974 - present	decrease	decrease	decrease	decrease	no trend	decrease
	SL-9	1953 - present	decrease	decrease	decrease	no trend	decrease	decrease
	SL-38	1953 - present	decrease	no trend	decrease	no trend	decrease	decrease
	SL-110	1967 - present	decrease	no trend	decrease	no trend	no trend	decrease
Minnesota	BE-0	1967 - present	decrease	no trend	decrease	increase	decrease	decrease
	CEC-23.2	1974 - present	decrease	no trend	decrease	increase	decrease	decrease
	CO-0.5	1967 - present	decrease	no trend	no trend	increase	decrease	decrease
	MI-3.5	1974 - present	decrease	no trend	no trend	no trend	decrease	no trend
	MI-64	1955 - present	decrease	no trend	decrease	no trend	decrease	decrease
	MI-88	1955 - present	decrease	no trend	decrease	no trend	decrease	decrease
	MI-133	1957 - present	decrease	no trend	decrease	increase	decrease	decrease
	MI-196	1967 - present	decrease	no trend	decrease	increase	decrease	decrease
	MI-212	1957 - present	insuf data	insuf data	insuf data	increase	decrease	insuf data
	PT-10	1971 - present	decrease	decrease	decrease	increase	decrease	decrease
	RWR-1	1974 - present	decrease	no trend	decrease	increase	decrease	no trend
	WA-6	1968 - present	decrease	no trend	decrease	increase	decrease	decrease
	YM-0.5	1967 - present	decrease	no trend	no trend	increase	decrease	decrease
Missouri	PC-1.5	1963 - present	decrease	no trend	decrease	increase	decrease	decrease
	RO-0	1962 - present	decrease	no trend	decrease	increase	decrease	no trend

Rainy	BF-0.5	1971 - present	insuf data	decrease	decrease	increase	insuf data	decrease
	KA-10	1967 - present	decrease	decrease	decrease	no trend	no trend	decrease
	LF-0.5	1971 - present	insuf data	insuf data	insuf data	increase	insuf data	decrease
	RA-12	1958 - present	decrease	decrease	decrease	increase	no trend	decrease
	RA-83	1953 - present	decrease	decrease	decrease	increase	no trend	decrease
	RA-86	1974 - present	decrease	decrease	decrease	increase	insuf data	insuf data
	RP-0.1	1971 - present	insuf data	decrease	decrease	increase	decrease	insuf data
	WR-1	1958 - present	insuf data	insuf data	decrease	increase	decrease	insuf data
Red	OT-1	1953 - present	decrease	no trend	decrease	increase	decrease	decrease
	OT-49	1967 - present	decrease	decrease	decrease	insuf data	decrease	decrease
	RE-298	1953 - present	decrease	no trend	no trend	increase	decrease	decrease
	RE-403	1967 - present	decrease	no trend	no trend	increase	no trend	decrease
	RE-452	1971 - present	no trend	increase	no trend	increase	decrease	decrease
	RE-536	1953 - present	no trend	no trend	no trend	increase	decrease	decrease
	RL-0.2	1953 - present	decrease	decrease	decrease	no trend	decrease	decrease
	RL-23	1955 - present	decrease	insuf data	decrease	insuf data	decrease	decrease
	SK-1.8	1971 - present	decrease	insuf data	insuf data	insuf data	decrease	insuf data
	TMB-19	1971 - present	decrease	insuf data	decrease	insuf data	decrease	decrease
St. Croix	KE-11	1967 - present	decrease	decrease	decrease	no trend	decrease	decrease
	SC-17	1967 - present	decrease	decrease	decrease	increase	no trend	decrease
	SC-23	1953 - present	decrease	decrease	decrease	insuf data	insuf data	decrease
	SC-111	1957 - present	decrease	decrease	decrease	no trend	no trend	decrease
	SN-10	1971 - present	decrease	decrease	decrease	insuf data	insuf data	decrease
	SUN-5	1974 - present	decrease	insuf data	insuf data	insuf data	increase	insuf data
Upper Miss -- Lower Portion	CA-13	1953 - present	decrease	decrease	decrease	no trend	decrease	decrease
	GB-4.5	1981 - present	decrease	no trend	no trend	increase	decrease	no trend
	RT-3	1958 - present	decrease	no trend	decrease	increase	decrease	decrease
	ST-18	1955 - present	decrease	no trend	decrease	no trend	decrease	decrease
	UM-698	1958 - present	decrease	no trend	decrease	increase	decrease	no trend
	UM-714	1962 - present	decrease	decrease	decrease	no trend	decrease	decrease

	UM-738	1974 - present	decrease	no trend	decrease	increase	decrease	no trend
Upper Miss -- Lower Portion (continued)	UM-815	1958 - present	decrease	no trend	decrease	increase	decrease	decrease
	UM-826	1975 - present	decrease	increase	decrease	increase	decrease	decrease
	UM-840	1973 - present	decrease	increase	no trend	increase	decrease	decrease
	VR-32.5	1981 - present	increase	decrease	no trend	increase	decrease	no trend
	WWR-26	1974 - present	decrease	no trend	no trend	increase	decrease	no trend
	ZSF-5.7	1973 - present	decrease	no trend	decrease	increase	decrease	no trend
Upper Miss -- Upper Portion	CR-0.2	1953 - present	decrease	no trend	no trend	increase	decrease	decrease
	LPR-3	1974 - present	no trend	no trend	no trend	increase	decrease	decrease
	RUM-0.6	1953 - present	decrease	decrease	decrease	insuf data	insuf data	decrease
	RUM-34	1955 - present	decrease	decrease	decrease	increase	decrease	decrease
	SA-0	1953 - present	no trend	no trend	no trend	no trend	decrease	decrease
	UM-859	1953 - present	decrease	no trend	decrease	increase	decrease	decrease
	UM-895	1976 - present	no trend	no trend	decrease	increase	decrease	no trend
	UM-914	1967 - present	decrease	no trend	no trend	increase	no trend	decrease
	UM-930	1953 - present	decrease	decrease	decrease	increase	decrease	no trend
	UM-982	1967 - present	decrease	no trend	decrease	increase	decrease	decrease
	UM-1172	1974 - present	decrease	no trend	decrease	increase	decrease	decrease
	UM-1186	1967 - present	decrease	decrease	decrease	increase	decrease	decrease
	UM-1292	1967 - present	decrease	decrease	decrease	increase	decrease	decrease
	UM-1365	1965 - present	decrease	decrease	decrease	increase	decrease	decrease
Milestone sites (having sufficient data) showing:								
Decreasing pollutant trend			**89%**	**41%**	**78%**	**1%**	**83%**	**82%**
Increasing pollutant trend			**1%**	**4%**	**1%**	**75%**	**4%**	**0%**
No trend			**10%**	**54%**	**21%**	**23%**	**13%**	**18%**
Milestone sites (out of 80) having insufficient data:			8	10	4	11	9	9

(Insufficient data means p>.05 and n<80)
((Logs of) TSS, TP, BOD, and fecal coliforms analyzed using Pearson's correlation coefficient and p values; NH_3 and NO_2/NO_3 analyzed using Kendall's Tau B and p values)
(Nov, Dec, Jan, and Feb data not used; NH_3 data prior to 1979 not used)

Figure III-4

Figure III-5

Figure III-6

Figure III-7

Figure III-8

Figure III-9

WATER QUALITY TRENDS FOR MINNESOTA LAKES

In addition to characterizing trophic status, detecting changes (trends) in WQ over time is a primary goal for many lake-monitoring programs. Detecting trends requires many measurements each summer and several years' worth of data. An ideal database for trend analysis consists of eight or more measurements per summer with eight or more years of data at a consistent site in the lake. One of the best parameters for characterizing the trophic status of a lake and trend detection is Secchi transparency. Secchi transparency is the preferred parameter for many reasons: low cost, it is easily incorporated in volunteer monitoring programs and it allows for the collection of a large number of samples in a given sampling period on many lakes. A variety of statistical tests can be used to perform trend analysis. Kendall's tau-b is a statistical test that has been used in previous MPCA 305(b) reports to Congress (MPCA, 1990 and 1992) for assessing trends in Secchi transparency over time. Kendall's tau-b is a nonparametric test which computes correlation coefficients between variables (Gilbert, 1987) — in this case, summer-mean (June-September) Secchi transparency versus year. The Kendall's tau-b (R_k) ranges from $-1 \leq$ tau-b ≤ 1. The closer the value is to ± 1, the stronger the trend. Our null hypothesis is that there is no change (*i.e.*, no trend) in mean summer Secchi transparency over time. Positive R_k values in our analysis would suggest an increasing trend in transparency. Negative R_k values would conversely suggest a decreasing trend in transparency.

For our 2004 trend analysis, we ran Kendall statistical tests using WQ Stat Plus™ software on lakes with 4 or more transparency readings per summer (June – September) and 8 or more years of data. We used a probability (p) level of p £ 0.1. At this p-level, there is a 10 percent chance of identifying a trend when it does not exist. There were 822 lakes in Minnesota that met the minimum requirements for trend analysis. Of the 822 assessed lakes, 246 of them exhibited a statistically significant improvement in transparency over time. In contrast, only 46 lakes exhibited a statistically significant decline in transparency. The majority (64 %) of the assessed lakes (530 lakes) exhibited no change in transparency over time.

See http://www.pca.state.mn.us/water/basins/305(b)lake.html for lake-specific trend information. Table III-7 (below) follows USEPA's recommended format for reporting on trends in lake WQ.

Table III-7. Trends In Lake Water Quality.

Description	Number of Lakes	Acres of Lakes
Assess for Trends	822	**0**
Improving	246	**0**
Stable	530	**0**
Degrading	46	**0**
Fluctuating	0	**0**
Trend Unknown	**0**	**0**

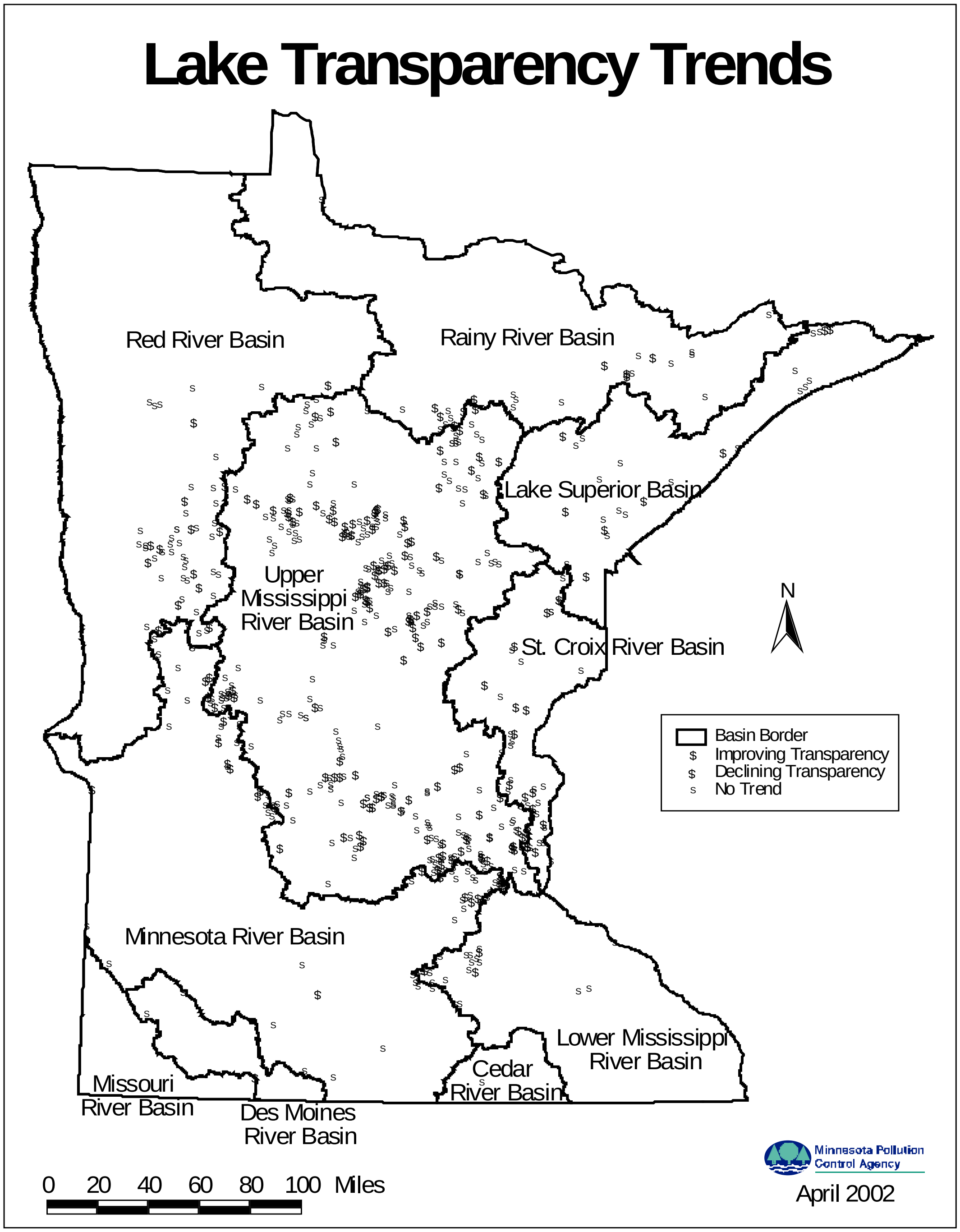


Figure III-10

Chapter Five PUBLIC HEALTH /AQUATIC LIFE CONCERNS

A. Lake Superior Beach Monitoring and Notification Program

The BEACH Act, passed in October of 2000, requiring States that border coastal or Great Lakes waters to develop beach monitoring and public notification programs. The BEACH Act also requires that States adopt USEPA's new criteria for pathogen and pathogen indicators by April 2004. Minnesota is in the process of adopting revised rules and is planning on having them out for public review in early 2006 and adopted by the fall of 2006.

In 2004, Minnesota was awarded $204,490 for implementation of the beach monitoring and notification program. The purpose of this project is to monitor selected beaches along the Great Lakes in accordance with BEACH Act requirements, allow for prompt notification to the public whenever bacterial levels exceeds USEPA's established standards, and investigate alternative methods for public notification. This information is used to investigate long-term trends in WQ and to establish a beach monitoring and public notification plan that will assist communities along the lake shore to improve their ability to monitor and notify beach users of risks associated with high bacteria levels.

Program Overview

This project brought together a Beach Team of state and local-level environmental and public health officials, local health officials, and other interested parties to design a beach monitoring and notification program. Approximately 58 miles of public beach miles and a total of 79 coastal beaches were identified along the Lake Superior (Appendices III A & III B). The definition of "beach" for the purpose of Minnesota BEACH Act implementation is:

"A publicly owned shoreline or land area, located on the shore of Lake Superior, that is used for swimming or other water contact recreational activity."

The coastal beaches were geo-located using GPS technologies and maps were created for all beaches. Additional GIS data layers were added to include the location of all wastewater treatment outfalls along with their proximity to the beaches. Additional information was collected for each beach for evaluation: the potential for impacts from storm water runoff, bather and waterfowl loads, and the location of outfalls and farms. This information was used to rank and classify beaches as "high," "medium," or "low" priority.

A standard sampling protocol was developed and standard advisory signs were designed based on feedback from Beach Team members and public meetings held in coastal communities (Appendix III-C).

The Beach Website was designed to include all public beaches monitored under the BEACH Act program. This site also provides information on beach logistics, amenities, and local weather. The website management is contracted through the Natural Resources Research Institute, a research facility of the University of Minnesota.

Goals and Objectives

The purpose of this project in 2005 was to continue a consistent coastal beach water monitoring program to reduce the risk of exposure of beach users to disease-causing microorganisms in water. Selected beaches along Lake Superior were monitored in accordance with BEACH Act requirements with prompt notification to the public whenever bacterial levels exceed USEPA's established standards (Appendix III-D).

Work Completed in 2005

The 2005 beach season was the third full season a consistently implemented beach-monitoring program was conducted in the coastal area of Minnesota. A total of 39 beaches were sampled. There were 1044 monitoring visits during the 2005 beach season. Out of these samples, 92 of them exceeded the WQ limit of 235 CFU/100 mL for *E. coli*. Below is a graph (Figure III-11) depicting exceedances per urban and rural area per county in 2005, and a chart (Figure III-12) comparing the exceedances over the first 3 beach seasons.

Figure III-11. Comparison of no. visits, no. of exceedances, no. advisories for 2005.

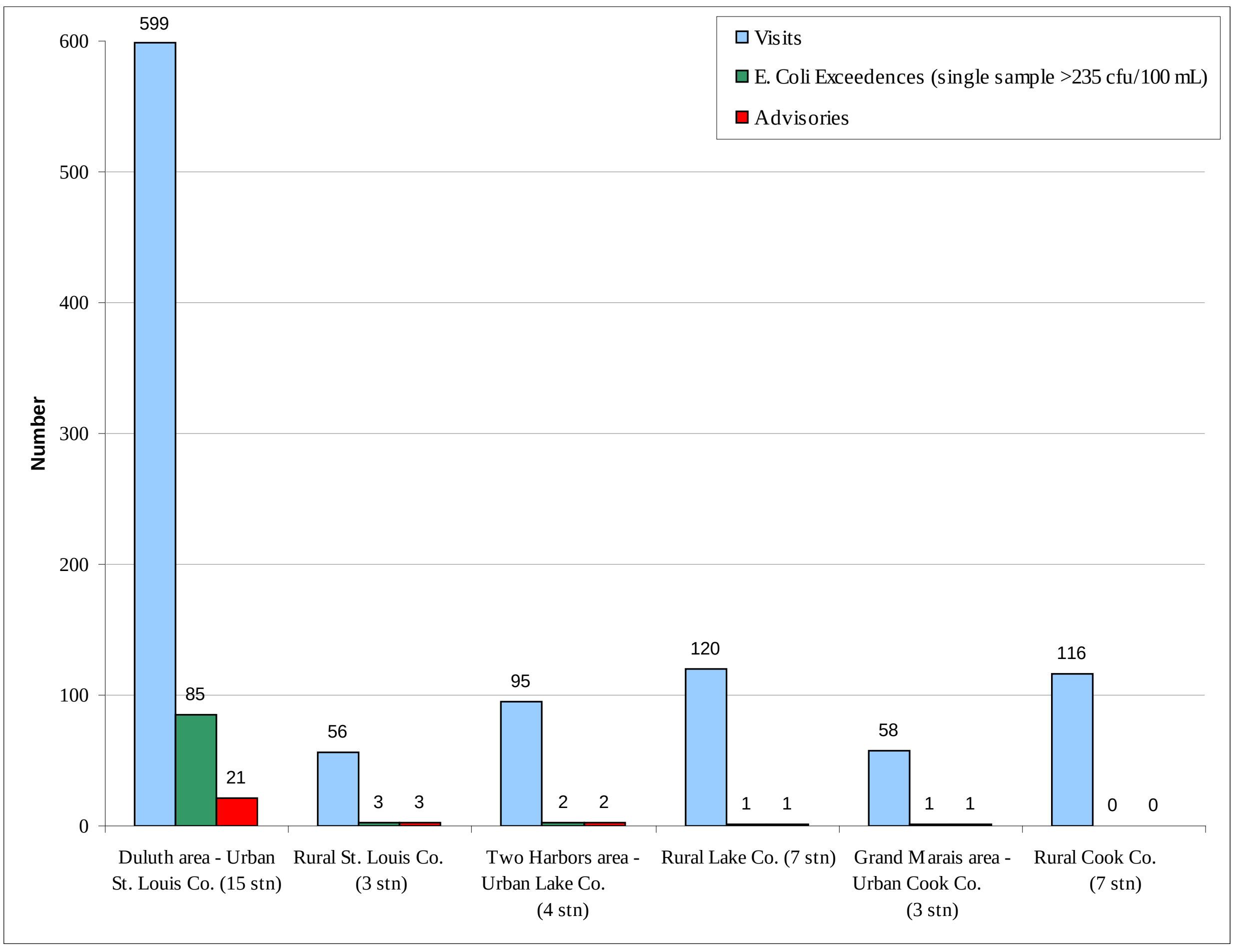


Figure III-12. Comparing Exceedances.

	2003			2004			2005		
	No. Beaches	No. Exceeded	No. Advisories	No. Beaches	No. Exceeded	No. Advisories	No. Beaches	No. Exceeded	**No. Advisories**
Duluth Area Urban St. Louis County	12	16	13	15	48	13	15	85	**21**
Rural St. Louis County	3	3	2	3	3	3	3	3	**3**
Two Harbors Area Urban Lake Co	2	1	2	2	5	5	3	2	**2**
Rural Lake County	8	0	0	8	2	2	8	1	**1**
Grand Marais Area Urban Cook Co	3	1	1	3	3	2	3	1	**1**
Rural Cook County	7	1	1	7	0	0	7	0	**0**
Total	**35**	**22**	**19**	**38**	**61**	**25**	**39**	**92**	**28**

Implementation of Monitoring Program

- 39 sites were monitored once a week, May-October, for both *E. coli* and fecal coliform.
- 9 of the sites were monitored twice a week.
- 12 of the monitoring sites had one or more advisories posted during the monitoring season.
- Four of the monitored beaches were under advisory for most of July, August, and September and into October.
- There were few rain and wind events during the "swimming" season but there was one large rain/wind event in October in which we did some localized monitoring. This event caused a great deal of overflow events and bacteria to temporarily pollute the lake in the Duluth area.
- Participation in research DNA fingerprinting of the water, sediment, and periphytin at two Duluth area beaches.
- Organized and participated in 2005 Beach Sweep trash pick-up in the Duluth area at two beaches with the Beach Team members and MPCA Duluth Office staff.

Continued Implementation of Advisory Notification Program

- Email news releases when advisories are posted and removed.
- "Water Contact Not Recommended" advisories signs are placed on the beach
- "Water Contact Not Recommended" advisory is posted on webpage (www.MNBeaches.org)
- Local beach hotline with recorded message (218-725-7724).
- "Water Contact Not Recommended" advisory email distribution list.

Education and Outreach Activities

- Developed webpage address and hotline business cards, magnets, beach balls, carabineer key chains, sand pails, and small hand sanitizer bottles for distribution at public events and while on the beaches monitoring.
- Made presentations at 6 public meeting/conferences.
- ~5 internet news stories.
- ~10 newspaper articles.
- ~10 radio interviews.
- ~2 television interviews.
- Applied for and received small coastal grant for addition of data visualization tool to webpage.

Maintained/Updated Database

- Database maintained in compliance with USEPA BEACH Act Data Element requirements, as well as USEPA STORET database.

Beach Program staff met with the Beach Team three times during 2005 to discuss the program and look for ways to make improvements in the program. As a result of the spring meetings staff applied for and received a Lake Superior Coastal Grant for the addition of a Data Visualization Tool to the www.MNBeaches.org webpage. The tool should be implemented in early 2006 and will allow users to visualize changes in bacteria counts over time compared to temperature, precipitation, and wave height and wind direction. The tool will enhance the use of ambient surface water data by professionals at resource agencies, consulting firms, NGOs and universities; by teachers and students, and by the general public.

Success Stories and Concurrent Research Projects

The principal success of the Lake Superior Beach Program Monitoring Program is the continued public awareness the advisories bring to on-going water pollution issues. Residents and tourists are starting to realize that bacteria problems can occur in any part of the Lake Superior Basin, but occurs with more frequency in the more urban areas and during storm events. Residents and visitors are picking up after their dogs on a more regular basis. They continue to be vocal about sewage overflows and demand they be corrected. The coastal cities are installing large holding tanks, back-up generators, and home sump pumps to slow and/or stop the storm related sewage overflows. Even though all these positive activities are happening the education and notification of the public needs some improvement and expansion, as evident by the number of surfers in the sewage overflow areas in October and the sunbathers (in the water) next to the advisory sign.

UMD DNA Fingerprinting

The project entitled "Sources of *Escherichia coli* Fecal Bacteria Contributing to Beach Closures", which will investigate the sources of *E. coli* bacteria contributing to beach closures in the Duluth-Superior harbor, was funded by Sea Grant. This project is being done in collaboration with the Western Lake Superior Sanitary District and the MPCA's Lake Superior Beach Program.

One of the objectives of the project is to increase the size, diversity, and robustness of Rep-PCR DNA fingerprint database of *E. coli* fecal bacteria by sampling geese and ducks from the Lake Superior region and Herring gulls and terns from the Duluth-Superior harbor. This will be valuable information for the New Duluth Boat Club beach site. This site had "water contact not recommended" advisories posted for 55 days during the 2003 season, 66 days in 2004, and 47 days in the 2005 season. The New Duluth Boat Club site has many potential sources of *E. coli* fecal bacteria including a resident flock of geese that frequents the site. It will be very helpful to find out if the geese are the primary cause of the high bacteria counts or if they are just a small part of the problem.

The second objective of the project is to isolate waterborne *E. coli* fecal bacteria at three sites in the Duluth-Superior harbor during three successive seasons to: a) determine the potential sources of fecal contamination at beaches and landings, and b) estimate seasonal variation in the sources of fecal bacteria at sites frequently closed to public use due to elevated fecal contamination. Obviously the source of contamination is of great concern to everyone who uses the lake whether for drinking water, swimming, kayaking, fishing or other water contact. Without source tracking, is it difficult to address the fecal contamination issue beyond keeping people out of the water when indicator bacteria counts are above current standards.

The MPCA is providing access to the bacteria measurements in the Duluth-Superior Harbor. Beach monitoring staff is coordinating water sampling at the New Duluth Boat Club and Southworth Marsh sites with the project staff in order to confirm sources of bacteria in the Beach program WQ samples.

This project's objectives augment the MPCA efforts in the Lake Superior Beach Program, and thus present a great opportunity for partnering. The Lake Superior Beach Monitoring and Notification Program focuses on assessing the health of the Lake Superior Beaches for the water recreating public. This "Sources of *Escherichia coli* Fecal Bacteria Contributing to Beach Closures" project will assist in finding answers to questions the Beach Program cannot answer about the sources of fecal indicator bacteria.

<u>Program Deficiencies</u>

Funds for Source Tracking

Beach staff continues to work with city and sanitary district staff, and local researchers to find the sources of the bacteria, but all entities are limited in staff, dollars and time in which they can commit to tracking the source. Minnesota has been involved in the research of DNA fingerprinting of the water, sediments, and periphytin at of a couple of the more polluted beaches in the Duluth area. This research will continue in 2006. Minnesota Beach staff and the beach team are anxiously waiting for the results of this research, but because this research is occurring at only 2 of our more pollution prone beaches, source tracking will continue to be a priority for future funding.

Funds to Expand Program to In-land Lakes

Minnesota is the "Land of 10,000 Lakes." Our lakes provide shelter, food and water to countless wildlife, from tadpoles to moose. They also are a major recreation source for the citizens of Minnesota, for fishing, swimming, hunting and other sports. There are hundreds of public and private beaches on these inland lakes that are utilized to a much greater extent than the beaches on Lake Superior. These inland lakes are also where more of the public health concerns and beach advisories occur. The Lake Superior Beach Program has been developed so it could easily be implemented by inland beach managers, but with the funding limitations faced by governments, very few new programs are started and many are being discontinued or cut back because of budget shortcomings. Minnesota beach program staff would like to see the BEACH Act and funding expanded to include in-land lakes.

<u>2006 Beach Season Scope of Work</u>

- The overall objective of this Program is to continue implementing a comprehensive beach monitoring and public notification plan for beaches adjacent to Lake Superior. The 154 miles of Lake Superior's Minnesota shore line include 79 coastal recreational water access points which have been identified, 39 of which will be monitored one or more times a week. More sites are being investigated to add to the monitoring and notification plan.

- The MPCA has developed and supports a Microsoft Access database to store field, notification, and lab data. Field data is provided by county staff via fax, and then manually entered by MPCA staff. Notification data is manually entered by MPCA staff. Lab data is submitted via e-mail in an Excel spreadsheet and transferred into the Beaches database. Current Beach status information is available via www.MNBeaches.org. All beach data is available by request.

- Monitoring data will continue to be submitted to Minnesota's local STORET, and then transferred to USEPA's STORET annually. Notification data is currently submitted annually to USEPA via CDX.

- Signs, the MPCA Beach webpage (www.MNBeaches.org), beach hot line (218-725-7724), e-mail alerts, Earth 911 webpage and news releases to the media will be utilized to alert the public to the hazards. Interested parties and managers of sites are also called when an advisory is posted and again when the advisory is removed.

- A central aim of the Beach Team is to produce a comprehensive communication plan to inform the public of beach water health risks and WQ issues in general. Several products are being developed for prior beach seasons in Minnesota and will be updated for the 2006 season.

- Beach program staff will continue to take comments at public meetings and is including a comment form on the new web page to allow public feedback opportunities all year long. Staff will continue to work with the local and state-wide media to provide information to the public and ask for comments from the public. Many comments are received via email and phone calls as well as at public meetings, festivals and other events.

- Beach staff will organize and participated in 2006 Beach Sweep trash pick-up in the Duluth area with the Beach Team members and MPCA Duluth Office staff.

- Minnesota is in the process of adopting revised rules and is planning on having them out for public review in early 2006 and adopted by the fall of 2006.

B. Effects of Atmospheric Pollution on Water Quality

Introduction

The atmosphere as a significant source of pollution to surface water is a relatively recent idea, first demonstrated for acid rain (sulfur dioxide and nitrogen oxides: SO_2 and NO_x), and later for mercury, PCBs, and nutrients such as N and P. Most pollutants in urban runoff are picked up by clean precipitation running off dirty surfaces; yet the dirt may have come from the atmosphere and the rain may already contain some of pollutants, such as P, N, mercury, pesticides, and PCBs. The development of impervious surfaces (paving, etc.) and storm sewers has the effect of increasing the efficacy of transport to surface water of deposited airborne pollutants. Consequently, impervious surfaces alone may create a NPS pollution problem for surface water, even without considering the watershed activities that contribute pollutants, such as lawn care, pet feces, eroded soil, and vegetative litter.

The importance of atmospheric loading will vary, depending on the pollutant and the nature of the watershed. In urbanized and agricultural watersheds, nutrient loading from the atmosphere may be negligible. But in the same watersheds, the atmosphere may be the main source of toxic pollutants, such as PCBs and mercury.

There are two situations where atmospheric deposition may be especially important sources of NPS pollution to surface water. First, lakes with a small watershed to lake surface area ratio can receive a large proportion of their loading from the atmosphere. For example, a study of Lake Mille Lacs suggests that precipitation (wet and dry fall) may contribute approximately 48 percent of the annual P loading to the lake. (Lake Mille Lacs occupies 53 percent of its total watershed area.) Similarly, airborne dust is thought to deliver the majority of P loading to Lake Superior. Second, some pollutants may be primarily delivered by the atmosphere even when there is significant human activity in the watershed. For instance, the geological source material in most watersheds does not contain a significant source of mercury. Mercury in a waterbody is most likely a result of atmospheric deposition. In addition, environmentally significant levels often accumulate in soils due to atmospheric deposition. If soil is eroded or inundated (say, through impoundment), there may be significant increases in mercury contamination to aquatic systems in the watershed.

Definitions

POINT SOURCE EMISSIONS TO AIR CAN BECOME NONPOINT SOURCE POLLUTION

Atmospheric deposition of pollutants is implicitly NPS pollution in this document. Yet, the emission source to the atmosphere may well be a point source such as an emission stack. It is worth pointing out that even if modeling or measurement studies verify a direct relationship between a point source of air emissions and deposition to a water body, water managers may still consider that source of pollution to be nonpoint, because it is delivered by the atmosphere.

Air managers identify three basic categories of emission: point sources, area sources, and mobile sources. Each category is further subdivided into subcategories. Point sources are permanently fixed stacks of known diameter, elevation, temperature, and exit velocity.

Area sources include windblown dust from stockpiles or tilled fields, fugitive emissions from a landfill or the numerous valves and connections at a refinery, and forest fires. Mobile sources are divided into on-road sources such as traffic emissions and dust from unpaved roads, and off-road sources such as lawn mowers, portable generators, chain saws, and snowmobiles.

WET DEPOSITION

Pollutants in the atmosphere can be scavenged by precipitation or act as condensation nuclei for precipitation formation and thereby be deposited to surface water and land in the form of rain or snow.

DRY DEPOSITION

Particles in the air are deposited onto surface water and land surfaces at a rate that depends on the particle size, wind speed, and other factors. Gaseous pollutants can also be deposited to water and land.

INDIRECT VERSUS DIRECT DEPOSITION

Air pollutants are not only deposited directly to the surface of waterbodies, but are also deposited to watersheds and then enter surface waters indirectly, through storm water runoff, tributaries, and groundwater seepage. Where the watershed is large relative to the open water, indirect loading can exceed direct loading.

VOLATILIZATION

Previously deposited gaseous and semi-volatile chemicals, such as mercury and PCBs, can be re-emitted to the atmosphere as the result of many factors, including chemical reactions and changes in temperature or wind speed.

Types of Airborne Pollution That Can Affect Surface Water

Any change in the physics or chemistry of the atmosphere can negatively affect surface water. For example, depletion of stratospheric ozone could increase the damage to aquatic life from increased ultraviolet radiation. Global warming is projected to virtually eliminate the cold water fishery in Minnesota, while simultaneously reducing the duration of ice-cover and therefore winterkills.

A wide variety of materials are deposited from the atmosphere that can affect the surface water. Some airborne materials are toxic (e.g. mercury, PCBs, lead, dioxin), some are nutrients (e.g., P and N), and some interact with other pollutants (e.g., calcium carbonate in wind-blown soil can neutralize acid rain, or sulfate deposition may stimulate the methylation of mercury in low-sulfate systems).

The following is a description of the different types of changes in the atmosphere that can affect surface water.

CARBON DIOXIDE AND OTHER GREENHOUSE GASES

Scientists believe that emissions of certain gases to the atmosphere are causing warming and possibly other changes in the climate. The greenhouse gases include the naturally occurring compounds carbon dioxide, methane, and nitrous oxide. Humans also release synthetic greenhouse gases that contribute significantly to climate change (chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

Carbon dioxide is released to the atmosphere when solid waste, fossil fuels (oil, natural gas, and coal), and wood and wood products are burned. Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from the decomposition of organic wastes in municipal solid waste landfills, and the raising of livestock. Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels.

Greenhouse gases that are not naturally occurring include by-products of foam production, refrigeration, and air conditioning called CFCs, as well as HFCs and PFCs generated by industrial processes.

Each greenhouse gas differs in its ability to absorb heat in the atmosphere. HFCs and PFCs are the most heat-absorbent. Methane traps over 21 times more heat than carbon dioxide, and nitrous oxide absorbs 270 times more heat than carbon dioxide.

Global warming has already caused significant reductions in the duration of ice cover in Minnesota. Models show that winterkills will get rarer. As summer temperatures rise, summer kills will become more common and in some lakes cold water fisheries will shift to warm water. There will be harder to predict effects on other temperature- and CO2-sensitive processes, such as mercury methylation and plant growth. Since chemical reaction rates and the growth rates of bacteria, plants, and cold-blooded animals are all highly dependent on temperature, there may be many unanticipated effects of global warming.

CHLOROFLUOROCARBONS AND OTHER OZONE-DEPLETING SUBSTANCES

When CFCs reach the stratosphere, the ultraviolet radiation from the sun causes them to break apart and release chlorine atoms which react with ozone, starting chemical cycles of ozone destruction that deplete the ozone layer. One chlorine atom can break apart more than 100,000 ozone molecules.

Other chemicals that damage the ozone layer include methyl bromide (used as a pesticide), halons (used in fire extinguishers), and methyl chloroform (used as a solvent in industrial processes). As methyl bromide and halons are broken apart, they release bromine atoms, which are 40 times more destructive to ozone molecules than chlorine atoms.

Reductions in stratospheric ozone levels lead to higher levels of Ultra Violet Radiation (UVB) reaching the Earth’s surface. Studies have shown that in the Antarctic, the amount of UVB measured at the surface can double during the annual ozone hole. Another study confirmed the relationship between reduced ozone and increased UVB levels in Canada during the past several years.

Ozone levels vary by season and latitude. In the middle latitudes (most of the populated world), ozone levels have fallen about 10% during the winter and 5% in the summer. Since 1979, they have fallen about 5% per decade when averaged over the entire year. Depletion is generally worse at higher latitudes, i.e. further from the Equator.

In the marine environment, solar UVB radiation has been found to cause damage to early developmental stages of fish, shrimp, crab, amphibians and other animals. The most severe effects are decreased reproductive capacity and impaired larval development. Even at current levels, solar UVB radiation is a limiting factor in some systems. It is uncertain what effect enhanced UVB radiation would have on the Minnesota environment.

MERCURY

Mercury vapor emissions from combustion sources result in ambient air concentrations below those of concern for direct human health effects through inhalation. Once in the atmosphere, mercury vapor is slowly converted to a divalent form that is water soluble, and subject to wash out in precipitation. Its concentration in rain is usually above the ambient surface WQ standard of 6.9 nanograms per liter (ng/L) (1.3 ng/L in the Lake Superior basin). Some proportion (usually between 1 to 20%) of this mercury is converted to methyl mercury by sulfate-reducing bacteria in the aquatic system or its watershed. Methyl mercury is bioaccumulated to a great degree in the aquatic food chain. Methylation rates appear to be higher in wetlands than other environments by one or two orders of magnitude. Mercury is probably the most pervasive type of atmospheric NPS pollution in Minnesota, causing fish consumption restrictions on over 90 percent of the lakes tested in the state.

ACID RAIN

Sulfuric Acid:

Sulfuric acid presents the potential for acidification of surface water, although there is no known permanent damage in Minnesota. There is evidence that increased loading of sulfate stimulates the growth of bacteria that convert sulfate to sulfide in wetlands, which also increases the proportion of mercury that is methylated.

Nitric Acid:

Nitric acid presents the potential for acidification of surface water, although there is no known permanent damage in Minnesota. Nitric acid acts as nutrient in nitrogen-poor lakes, such as oligotrophic lakes in northern Minnesota.

WIND-BLOWN SOIL

Generally, the size spectrum of wind blown soil particles is sufficiently large that it is not a human health concern for inhalation. However, some components of wind blown soil can have impact on surface water.

Calcium carbonate:

Calcium carbonate, a base, neutralizes acid rain in the atmosphere.

Calcium sulfate:

Calcium sulfate, which is pH-neutral, can contribute sulfate to sulfate-poor systems, which may stimulate the methylation of mercury.

Phosphorus:

P is held tightly by soil, so that movement of wind blown soil to surface water can contribute to eutrophication.

Mercury:

Soil binds and efficiently holds mercury deposited from the atmosphere, so that the movement of soil to surface water can introduce large amounts of this metal. Lakes in agricultural areas receive high loading of mercury due to soil erosion, but it is unclear whether this mercury is always available for methylation. It is not known how much mercury is carried to lakes by wind blown soil.

Iron:

Iron is a limiting nutrient in oligotrophic systems, a phenomenon well documented for the Pacific Ocean and Lake Tahoe. The oligotrophic lakes in northern Minnesota may also respond to iron additions, although the critical experiments have never been performed. Soil contains significant quantities of iron, so wind blown soil could conceivably fertilize lakes.

ANTHROPOGENIC PARTICULATE MATTER IN THE ATMOSPHERE

Particulate matter is emitted by point sources, area sources, and mobile sources, and often contains materials that might affect surface waters.

Metals:

Heavy metals such as cadmium, lead, and silver can be emitted in quantities that are potentially significant to surface water.

Soot:

A product of incomplete combustion, soot provides a highly adsorptive surface that can scavenge pollutants such as mercury and dioxin from the atmosphere. Sources of soot include forest fires and poorly tuned combustion devices. Soot may enhance deposition of pollutants to nearby lakes.

Polychlorinated Biphenyls

In earlier times, PCBs were introduced into the environment from point sources, but now PCBs cycle from water bodies to the atmosphere and back to the water. PCBs present a challenge for remediation because they are semi-volatile, hydrophobic, bioaccumulate, and are extremely resistant to decay. The sale and new use of these chemicals were banned by law in 1979. The Great Lakes are at present net emitters of PCBs to the atmosphere. NPS impacts appear to be in oligotrophic lakes with long-lived lake trout, and perhaps urban areas possessing impervious surfaces that funnel deposition to surface water.

DIOXIN

Dioxin (dibenzo-p-dioxins) is a product of incomplete combustion, and also can be formed in processes that utilize chlorine such as paper bleaching. Air emissions of dioxin are extremely low and atmospheric deposition has not been satisfactorily measured. Direct discharge can result in dioxin accumulation in fish in the surface water.

PESTICIDES

Many pesticides have the potential to cause problems in aquatic systems. Potentially damaging pesticides that have significant deposition rates from the atmosphere include chlordane, DDT/DDE, dieldrin, hexachlorobenzene, alpha-HCH, lindane, and toxaphene. Because of restrictions, none of these currently have significant sources within the United States. However, volatilization from soils or wind blown soil can deposit significant quantities of these persistent chemicals. In some cases, the compounds are currently used in other countries and transported by the atmosphere to the US.

CHEMICALS THAT DISRUPT HORMONAL FUNCTION IN WILDLIFE AND HUMANS

Many chemicals released by human activity have the potential to disrupt of disrupting the endocrine system of animals, including fish, birds, mammals, and humans. Among these chemicals are persistent, bioaccumulative compounds that include some pesticides, and industrial chemicals such as DDT, lindane, octachlorostyrene, certain PCB congeners, 2,3,7,8-TCDD and other dioxins, 2,3,7,8-TCDF and other furans, atrazine, cadmium, and mercury. The impacts include thyroid dysfunction in birds and fish, decreased hatching success in birds, fish, and turtles, gross birth deformities, in birds, fish, and turtles, demasculinization and feminization of male fish, birds, and mammals, and defeminization and masculinization of female fish and birds. Many of these compounds are delivered by the atmosphere to aquatic systems.

AMMONIA

Like nitrate, atmospheric ammonia that is deposited to lakes and watersheds adds nitrogen to aquatic systems. The addition of nitrogen can contribute to eutrophication, a particular problem in N-limited, oligotrophic lakes in northern Minnesota. Additions of nitrogen may also affect species balances in other systems like prairies and wetlands. The largest sources of ammonia emissions to the atmosphere are: animal agriculture (81%), fertilizer application (10%), refrigeration (5%), and other activities (4%). In terms of total nitrogen emissions to the atmosphere in Minnesota, the major contributors are: animal agriculture (32%), mobile sources (22%), electric utilities (22%), and other fuel combustion (13%), and nitrogen fertilizers (11%).

EMERGING CONTAMINANTS

Two groups of persistent bioaccumulative toxic compounds, which have been categorized as emerging contaminants because scientific studies of their ecotoxicology are PFOS and PBDE. PFOS is a perfluorinated compound produced for numerous products and has been found in the tissues of fish and wildlife in remote areas. PBDEs are brominated flame retardants used in many household products and have also been found to be bioaccumulating in fish and wildlife. PBDEs are similar in structure to PCBs, but unlike PCBs, which are decreasing in environment, PBDEs are increasing. This has been clearly demonstrated in Great Lakes fish.

The dissemination of PFOS is expected to diminish. Some types of PBDEs have been banned, while others continue to be used and studied.

GEOGRAPHIC AREAS OF CONCERN

For most airborne pollutants, it is uncertain what factors might make some geographic regions more sensitive than others. However, it is clear that geological areas low in alkalinity are more sensitive to acid rain. For less obvious reasons, low alkalinity regions are also more sensitive to mercury deposition. These areas of Minnesota are of special concern and will be included in ongoing research into atmospheric deposition of pollutants.

BEST MANAGEMENT PRACTICES

BMPs usually control pollutants as near as reasonable to the pollution source. Atmospherically deposited pollutants generally migrate from sources outside the watershed, making the conventional concept of BMPs difficult to implement. The best BMPs to reduce atmospheric deposition are to halt the release of these pollutants into the atmosphere. Because of the diversity of sources, cessation of release is complicated and would require the coordination of the full spectrum of the economy, including agriculture, energy production, transportation, waste disposal, manufacturing, and government. Because the atmosphere carries some materials long distances, it may be necessary to address many of these atmospheric pollutants on a national and international basis. For instance, the MPCA estimates that 90% of the mercury deposited in Minnesota comes from out-of-state. It is therefore important to communicate the need for national level controls to the USEPA for mercury and other pollutants subject to long-distance atmospheric transport.

Existing BMPs for some other pollutants may lead to some surprising situations. For instance, it is increasingly common to use wetlands to trap sediments and associated nutrients in storm water before the pollutants can get to a lake or stream. However, the high biological activity of wetlands may lead to some negative consequences for persistent bioaccumulative chemicals. For instance, mercury deposited to terrestrial systems binds strongly to soil particles. Eroded soil may be caught in a wetland, where the mercury would be subject to biological activity. Because of the heightened activity of anaerobic bacteria that convert sulfate to sulfide, methylation rates are perhaps 100 times higher in wetlands than in lakes. Use of wetlands to clean runoff may therefore enhance methyl mercury loading to surface water, which would increase the concentration of mercury in fish.

BMPs for a particular atmospheric pollutant should be selected only after its cycle and fate have been evaluated. Otherwise, we may find ourselves exacerbating the effects of a particular pollutant, as in the hypothetical case of mercury, above. Another example of the consequences of an incomplete understanding might be attempting to reduce PCBs in Lake Superior by reducing inputs. The PCB burden in Lake Superior is determined by volatilization back to the atmosphere, not external loading. Although research on the environmental fate and budgets of persistent chemicals may be expensive, it is less expensive than making management decisions based on erroneous assumptions, resulting in expensive but ineffective treatment.

PROGRAMS AND AUTHORITIES

- NPDES permits – pretreatment requirements,
- Pollution prevention,
- WQS,
- Air emission controls,
- Fish consumption advisories,
- Recycling and product screening (e.g., Mercury [Hg] switches in consumer items, such as shoes),
- Market incentives, and
- Statutes and Rules (e.g., ch. 7050).
- Minn. Stat. § 116.454, authorized the MPCA to initiate a statewide air toxics monitoring network and air toxics inventory in calendar year 1993.
- The Acid Deposition Control Act (Minn. Stat. § 116.42-116.45) was passed in 1982 and was the first of its kind in the nation; it required the MPCA to (1) identify the areas of the state containing resources sensitive to acid deposition, (2) develop a standard to protect these resources, (3) adopt a control plan to reduce sulfur dioxide emissions, and (4) ensure that all Minnesota sources subject to the control plan are in compliance by January 1, 1990.
- Minn. Stat. 116.915 subd. 1—known as the 1999 mercury reduction law called for specific mercury reductions and established mercury emission goals for 2001 and 2005; those goals were achieved.
- The CWA, Section 303(d), requiring TMDLs for targeted impaired waters, led to the MPCA drafting a Statewide Mercury TMDL, which was made available for public review and comment in 2005 and is expected to be submitted to USEPA for approval in 2006.

Sequence for implementation of NPS effort for atmospheric pollutants

1	Identify WQ problem.
2	Determine air pollution as the cause.
3	Determine source of air pollution (e.g., area or facility).
4	Evaluate the relative efficacy of BMPs within the watershed in contrast to air emission reductions.

The 2006 through 2010 (January 31, 2006 through December 31, 2010) 5-year Action Plan provided below summarizes the milestones identified in the preceding sections. Many of the 2006 through 2010 milestones listed below, as well as the implementation of specific projects, are contingent upon adequate funding and local involvement.

2006 – 2010 Milestones (Action Steps)	06	07	08	09	10	Funding Source(s)	Lead Agency(ies)
1. Quantify deposition of metals (cadmium, lead, iron, etc.) and phosphorus in select watersheds.	X	X	X	X	X	MPCA, TMDL	MPCA
2. Develop monitoring effort for effect of global warming on surface water; ice cover times and water temperature.	X	X	X	X	X	General Fund	MPCA
3. Quantify proportion of phosphorus and mercury deposited from atmosphere that results from wind erosion of soil.		X				TMDL	MPCA
4. Evaluate why lakes vary greatly in mercury contamination of fish, given that atmospheric deposition is relatively homogeneous.	X	X	X	X	X	TMDL, USGS	MPCA, USGS
5. Evaluate effect of nonpoint sulfate loading on mercury methylation.	X	X	X	X	x	USEPA	MPCA, Science Museum
6. Quantify relationship between emissions of pollutants and deposition to surface water & watersheds.	X	X	X	X	X	General Fund	MPCA
7. Evaluate methylation of mercury in wetlands used as BMPs for trapping storm water runoff.	X	X	X	X	X	General Fund; USEPA	MPCA
8. Investigate the impact of atmospheric deposition of “hormonal copycats” on aquatic organisms.	X					General Fund	MPCA
9. Investigate whether aquatic resources near emission sources experience increased impacts.			X			General Fund	MPCA
10. Develop land based BMPs for watersheds to minimize the impact of pollutants deposited from the atmosphere.		X	X	X		General Fund	MPCA
11. Study the effect of UV radiation on the health of aquatic organisms.	X					General Fund	MPCA
12. Determine if non-mercury air pollutants can increase Hg in water by accelerating the atmospheric deposition of Hg.	X	X	X	X	X	General Fund	MPCA

C. Agricultural Nutrients –Methemoglobinemia

N and P represent significant sources of WQ degradation in Minnesota. Excessive concentrations of Nitrate-Nitrogen (NO_3-N) are toxic to both humans and animals. The USEPA's MCL standard for nitrate-N is 10 mg L^{-1}. Humans, particularly infants, exposed to concentrations in excess of the MCL can develop methemoglobinemia. Methemoglobinemia is a blood disorder in which the ability to convert methemoglobin to hemoglobin is deficient. Methemoglobin does not carry oxygen; consequently, humans with methemoglobinemia may have episodes of breathing trouble and develop bluish mucous membranes. The most recent reported case of methemoglobinemia in Minnesota was a non-fatal case that occurred in 1979. However, the number of reported cases is probably underreported because the state does not have a methemoglobinemia medical registry. Studies in Spain, China, and Taiwan have linked gastric cancer to long-term exposure of elevated nitrate-N concentrations in adults.

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IV. Appendices

Appendix I

Table 1. Current Minnesota Condition Monitoring Efforts

Activity Name	**Start**	**Monitoring Design/Description**	**Purpose**	***Indicators***
Rivers and Streams				
MPCA Milestone Monitoring	1953 (some sites)	Fixed station design with periodic grab sampling for a suite of conventional chemical/physical parameters. Samples collected monthly for ten months of the year. Currently 80 sites, 20 with flow. 32 sites monitored each year on a rotating basin basis.	Compare basic water chemistry to WQS, looking at trends at a consistent set of sites.	*Dissolved oxygen, temperature, pH, nitrite/nitrate nitrogen, ammonia nitrogen, conductivity, turbidity, and fecal coliform bacteria and/or E. coli (collected for special projects and when sample holding times can be met)* *When continuous flow data is available: total phosphorus, chl-a, pheophytin* *5-day biochemical oxygen demand, residue, total non-filterable (total suspended solids), suspended volatile solids* *When appropriate: trace metals*
MPCA Integrated Monitoring in Streams (w/DNR)	1990	Statistically-based design with random site selection. Periodic grab samples for integrative biological, physical, chemical parameters. Sampling at 200 sites per year, on a rotating basin basis. More than	Used for biocriteria development, trend monitoring, 305(b) and 303(d) assessments and reporting, evaluation of water quality permit limits, and evaluating WQS.	*Composite index of fish and invertebrate community characteristics; dissolved oxygen, conductivity,*

		XX site monitored in five basins.		*nutrients, turbidity, stream flow, bottom type, bank stability*
Activity Name	**Start**	**Monitoring Design/Description**	**Purpose**	***Indicators***
MPCA River Nutrient Studies (w/USGS)		Fixed station with periodic grab sample, physical/chemical parameters. Samples collected at about 20 river sites. Combined with USGS flow records.	Data set used to provide basis for standards, nutrient criteria. Also used for research, model development.	*Nutrients, chl-a and related data*
MPCA Trace Metals in Streams	1996	Probabilistic monitoring with fixed station design collected on a rotating basin basis. Samples collected at locations to represent basin characteristics. Basin-focused measurement of metals in whole water and dissolved-phase of streams. Data available for six basins to date.	Used for water body assessments, including 305(b) use assessments and 303(d) listing, assist in the development of WQS and effluent limits, and to estimate typical metal concentrations in surface waters of the basin.	*Hg, As, Cd, Cr, Cu, Pb, Ni, Zn and hardness in whole water and dissolved-phase of streams.*
Citizen Stream Monitoring Program	1998	Self-selected volunteer effort, periodic sampling. Citizen monitoring of river water clarity using a transparency tube. Approximately 500 volunteers; goal to increase to 650.	Monitor the transparency of MN rivers and streams for baseline conditions, goal setting, trend identification and targeting more intensive monitoring.	*Transparency*
MPCA Basin Assessments	2002	Condition monitoring conducted as a component of basin management. Upper Mississippi River initiative currently underway. Fixed station with continuous (automated) monitoring. Eight stations in the basin. First two years focused on major tributaries.	Assess condition of basin tributaries and main stem rivers. Used to identify trends and exceedances of standards. Also serves as effectiveness monitoring on a basin scale.	*Nonpoint parameters: nutrients, TSS, BOD and fecal*
Lakes				
MPCA Intensive Study Lakes (with DNR and MDH)	Fish tissue sampling began in '68	Collect predator fish and one-year-old panfish for mercury and other contaminants. About 100 lakes, monitored approximately every five years.	Identify trends in fish-tissue mercury concentrations. Also used for 305(b) and 303(d) assessments.	*Mercury*
MPCA Lake Trend Analysis	1985	Ecoregion-based monitoring design using fixed-station reference lakes. Lakes chosen based in part on Citizen Lake Monitoring Program trends.	Characterize trophic status for each ecoregion in Minnesota. Used to develop status and trend reports for Minnesota lakes, and also for 305(b) and 303(d) assessments. Used to develop WQ criteria for lakes.	*pH, conductivity, Secchi disk, temperature (profile), dissolved oxygen (profile), total phosphorus, total Kjeldahl nitrogen, nitrate/nitrite nitrogen,*

				residue, total non-filterable (total suspended solids), alkalinity, chloride, color, turbidity, chl-a
Activity Name	**Start**	**Monitoring Design/Description**	**Purpose**	***Indicators***
MPCA Lake Assessment Program (with local lake associations)	1985	Fixed station design; monthly sampling May-September. Collect nutrient, chl-a and related data at lakes. More than 160 studies since 1985.	Used to develop status and trend reports for Minnesota lakes and for 305(b) reporting. Also used to recommend actions for local lake management efforts.	*Secchi disk transparency, nutrients, chlorophyll a, solids, pH, color, plus a depth profile of oxygen and temperature. Fisheries and lake level measures provided by DNR.*
Citizen Lake Monitoring Program	1973	Self-selected volunteer effort, periodic sampling. Citizen monitoring of lake water clarity using Secchi disk. About 1200 volunteers; goal of 1450. Limited chemistry at some sites.	Monitor the transparency of MN lakes for baseline conditions, goal setting and targeting, and trend identification.	*Secchi disk transparency*
MPCA Short-term Special Studies	Varies	Lake and stream studies to look at emerging issues (pharmaceuticals, wastewater compounds, etc.), other critical toxic pollutants (e.g., mercury) or special areas (Lake Superior streams). Designs vary based on the conditions studied.	Used to provide understanding of identified issues.	Indicators vary depending on conditions being studied.
Wetlands				
MPCA[15] Wetland Monitoring	1996	MPCA samples wetland aquatic plants and invertebrates to develop an Index of Biotic Integrity (IBI) for each wetland. Focus is on developing IBIs for depressional wetlands statewide before attempting to focus on other types of wetlands.	IBI is a good indicator of the condition of Minnesota's wetlands. To be used for status and trends. Also used for problem investigation, effectiveness monitoring. Can be used in permit issuance and possibly	Aquatic plants, aquatic invertebrates to the species level, general chemistry, sediment toxicity.

[15] A note on wetlands: Currently, the MPCA is not assessing wetlands for TMDL listing purposes. To meet its newly-established goal of assessing 25% of the state's depressional wetlands by 2014, the MPCA will begin with a dual approach. By June 30, 2005, the MPCA will sample 50 to 75 depressional wetlands on forested land, from which an IBI report will be developed. The MPCA will also work with its partner agencies (Department of Natural Resources, Board of Water and Soil Resources, U.S. Fish and Wildlife Service and EPA) to develop a long-term monitoring plan for Minnesota wetlands. This plan will be completed by June 30, 2005 and will include a focus on wetland inventory needs using remote sensing techniques. The plan will be attached to the final strategy.

			in TMDL process in the future.	
Activity Name	**Start**	**Monitoring Design/Description**	**Purpose**	***Indicators***
Wetland Health Evaluation Program	1996	Self-selected volunteer effort, periodic sampling in two metro-area counties (Dakota and Hennepin). MPCA provides annual training.	Data used in water resource and city planning decision making.	Aquatic plants, aquatic invertebrates to the family level.

Table 2. Problem Investigation Monitoring Designs and Indicators:

Activity Name	**Start**	**Description/Monitoring Design**	**Purpose**	**Indicators**
TMDL studies	1999	Monitoring associated with completing TMDL studies. Monitoring conducted by local groups and MPCA. Designs vary depending on parameter	Develop TMDL allocations.	Fecal coliform, turbidity, dissolved oxygen, ammonia, chloride, pH, temperature, impaired biota, excess nutrients, mercury and PCB in water, mercury and PCB in fish tissue, various toxics in the St. Louis River.
Clean Water Partnership Phase I	1987	Locally-based monitoring projects, funded through MPCA. Flow-based monitoring of watershed inputs to a lake, river or wetland to determine loadings in areas of local concern.	Determine the major sources of a WQ concern develop goals and identify strategies for achieving goals. Provide input data for models.	Depends on project. Most common are those related to runoff – nutrients, nitrogen, phosphorus, sediment, flow and hydrological modifications.
Special studies	1998	Small, short-term projects providing needed timely information. Sites and designs vary by year.	To develop short-term, timely information needed for decision-making.	
Fishkill investigations and discharge violations	1950s	Case-specific monitoring designs, usually involving upstream and downstream sampling and sampling of candidate cause, if suspected. WQ and released material sample collection. Fish and wildlife collections made in conjunction with DNR.	Incident response, WQ impact documentation and enforcement case development (supporting emergency response, NPDES and feedlot programs)	Case-specific parameters. For manure & wastewater releases: general chemistry (pH, conductivity, TSS, turbidity, chloride, sulfate, BOD5), nutrients, metals, and fecal coliform, for manure fecal strep. For industrial or releases of unknown origin: most of above plus more comprehensive metals, VOCs, SVOCs and pesticides. Others as case requires.
Waste Load Allocations to Support NPDES Program	1977	Monitor chemical or physical parameter of concern on selected streams and rivers receiving discharges from municipal wastewater treatment plants. Typically two, 2 to 3 day surveys under low-flow conditions. Approximately 100 surveys, 500+ stations	Determine appropriate effluent limits for a discharge so that WQS are maintained and the designated uses protected. Effluent limits incorporated into NPDES permits.	Diurnal DO, temperature, pH, flow, time of travel, physical measure of stream channel, CBOD, nutrients, chlorophyll a, TSS, turbidity, conductivity, alkalinity, chloride, sometimes metals. Also composite sampling of wastewater effluent.
MPCA Lake Superior Beach Monitoring Project (with MDH, local organizations)	2003	Tiered monitoring at 36 Lake Superior beaches for bacteria.	Used to assure safe and healthy aquatic recreation and inform the public about risks of contracting waterborne diseases from exposure to contaminated water.	Fecal coliform and E. coli
Fluvial Geomorphology				

Table 3. Effectiveness Monitoring Designs

Activity	Start	Description/Monitoring Design	Purpose	*Indicator*
Stormwater Monitoring	2004	Monitoring design to be determined.	To evaluate effectiveness of MPCA's stormwater permitting programs and best management practices.	***Flow and chemistry***
Monitoring associated with TMDL implementation plans	2003	Monitoring by local groups or MPCA to evaluate effectiveness. At a minimum, monitoring meets delisting guidance in MPCA's *Guidance for Assessing WQ Impairments*. In addition, monitoring design is customized, based on parameter or BMP implemented.	To assess effectiveness of TMDL implementation plan/BMPs and ultimately to delist water body.	***Dependent on impairment: Fecal coliform, turbidity, dissolved oxygen, ammonia, chloride, pH, temperature, impaired biota, excess nutrients, mercury and PCB in water, mercury and PCB in fish tissue, or various toxics in the St. Louis River.***
NPDES effluent monitoring	1970s	Monitoring by permittees for parameters required in permits. Monitoring frequency varies by parameter and by size and type of facility, from continuous to a few samples per year. Includes tile-line discharge monitoring at NPDES feedlots.	Used for compliance determination, standards development and enforcement	***Parameters identified in individual permits. Typical parameters for domestic wastewater include: flow, CBOD, TSS, pH, Phosphorus, DO Fecal coliform, chlorine residual. Typical for industrial include flow, TSS, temperature. May be additional parameters based on situation.***
Up/down stream monitoring to support NPDES permit program.	Ongoing	Approximately 110 permittees do this monitoring, at 270 stations. Monitoring design based on permit issues, frequency of sampling ranges from once per week to conditional monitoring during low-	Used to evaluate effluent limits for an NPDES permit, compliance determination, and requirement of variance process.	***A number of parameters depending on situation (about 30 total for all permits). Typically***

		flow conditions.		***includes DO, temperature, pH, ammonia, phosphorus.***
Activity	**Start**	**Description/Monitoring Design**	**Purpose**	*Indicator*
Monitoring associated with feedlot regulatory activities		Case-specific monitoring design as part of enforcement case development.	To verify information for enforcement cases.	***Fecal and BOD***
Monitoring associated with ISTS regulatory activities	1980s	Occasional monitoring at cluster systems or large, multi-party drainfield systems in shoreland areas. Fixed station design, periodic sampling. Part of State Disposal System permit.	Impact of system on lake or other water body.	***Phosphorus***
Monitoring to evaluate Clean Water Partnership implementation projects, 319 projects, etc.	Late 1980s	Locally-based projects, jointly funded through MPCA and external organization. Monitoring designs vary by project and BMPs implemented. An example is the Whitewater River Watershed National Monitoring Project.[16]	To assess the effectiveness of NPS water-pollution-control efforts.	***Depends on project. Most common are those related to runoff – nutrients, nitrogen, phosphorus, sediment, flow and hydrological modifications.***
Basin Assessment	2002	See description under "Condition Monitoring"	To evaluate effectiveness of implementation projects at a basin scale.	***See Condition Monitoring***
Monitoring to support Closed Landfill discharge between ground water and surface water.	1994	Monitor surface water points for closed landfills where ground water discharges to a surface water body (river, wetland, lake). Monitoring frequency ranges from seasonal to annual.	Used to determine compliance with WQ rules for nonpoint discharge.	***Primarily VOCs and metals.***
Monitoring of storm water and surface water bodies adjacent to permitted solid waste facilities	1990s	Designs vary by site. Monitoring may involve routine WQ sampling for stormwater ponds, wetlands, streams, rivers or other surface water features in the vicinity of solid waste facilities.	Compliance with permit intervention limits.	***Stormwater related contaminants: turbidity, specific conductance, etc. Occasionally also for inorganics.***
MCES compliance monitoring	**1994**	**Monthly sampling of leachate, gas condensate, and contaminated groundwater discharged to MCES. Five metro-area landfills.**	**Used to determine compliance with MCES standards.**	**Metals and VOCs.**

[16] In *2002 Annual Report to the U.S. Environmental Protection Agency on Clean Water Act Section 319 and Clean Water Partnership Projects in Minnesota* (attached).

Appendix II- Draft 2006 Impaired Waters List

Reach	Description	Yr[12]	River ID#[9]	Prev ID#[13]	Lake ID#[10]	Affected use	Pollutant or stressor[3]	Target start[7]	Target completion[7]	Cate-gory[14]
LAKE SUPERIOR BASIN										
Amity Creek	Unnamed Cr to Lester R	04	04010102-511			Aquatic life	Turbidity	2005	2011	5C
Beaver River	Headwaters to Lk Superior	98	04010102-501			Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Beaver River	Headwaters to Lk Superior	02	04010102-501			Aquatic life	pH	2005	2011	5A
Beaver River	Headwaters to Lk Superior	96	04010102-501			Aquatic life	Turbidity	2005	2011	5A
Big Sucker Creek (Sucker River)	Unnamed Cr to Lk Superior	06	04010102-555			Aquatic life	Turbidity	2015	2020	5C
Brule River	Greenwood R to Lk Superior	98	04010101-502			Aquatic consumption	Mercury[1] Water Column	1999	2011	5C
Deer Creek	Headwaters to Nemadji R	04	04010301-531	503		Aquatic life	Turbidity	2004	2012	5C
French River	Headwaters to Lk Superior	04	04010102-506			Aquatic life	Turbidity	2005	2011	5C
Knife River	Headwaters to Lk Superior	98	04010102-504			Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Knife River	Headwaters to Lk Superior	02	04010102-504			Aquatic life	pH	2002	2007	5A
Knife River	Headwaters to Lk Superior	96	04010102-504			Aquatic life	Turbidity	2002	2007	5A
Lester River	T52 R14W S23 north line to Lk Superior	98	04010102-549			Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Lester River	T52 R14W S23 north line to Lk Superior	98	04010102-549			Aquatic life	Turbidity	2005	2011	5A
Miller Creek	Headwaters to Lk Superior	02	04010201-512			Aquatic life	Absence of trout	2003	2011	5A
Miller Creek	Headwaters to Lk Superior	02	04010201-512			Aquatic life	Temperature	2003	2011	5A
Nemadji River	T46 R17W S 33 south line to state border	04	04010301-555	505		Aquatic life	Turbidity	2004	2012	5C
Pigeon River	South Fowl Lk to Pigeon Bay	02	04010101-501			Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Poplar River	Superior Hiking Trail bridge to Lk Superior	98	04010101-613			Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Poplar River	Superior Hiking Trail bridge to Lk Superior	04	04010101-613			Aquatic life	Turbidity	2005	2011	5A
St Louis River	Headwaters (Seven Beaver Lk) to T58 R13W S36 west line	98	04010201-631			Aquatic consumption	Mercury[1]FCA	1999	2011	5C
St Louis River	T58 R13W S35 east line to Partridge R	98	04010201-644			Aquatic consumption	Mercury[1]FCA	1999	2011	5C
St Louis River	Partridge R to Embarrass R	98	04010201-526			Aquatic consumption	Mercury[1]FCA	1999	2011	5C
St Louis River	Embarrass R to East Two R	98	04010201-511			Aquatic consumption	Mercury[1]FCA	1999	2011	5C
St Louis River	East Two R to West Two R	04	04010201-554			Aquatic consumption	Mercury[1]FCA	2004	2017	5C
St Louis River	West Two R to Swan R	98	04010201-510			Aquatic consumption	Mercury[1]FCA	1999	2011	5C
St Louis River	Swan R to Whiteface R	98	04010201-525			Aquatic consumption	Mercury[1]FCA	1999	2011	5C
St Louis River	Whiteface R to Floodwood R	98	04010201-508			Aquatic	Mercury[1]FCA	1999	2011	5C

				consumption				
St Louis River	Floodwood R to East Savanna R	98	04010201-507	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
St Louis River	East Savanna R to Artichoke R[11]	98	04010201-506	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
St Louis River	Artichoke R to Stoney Bk[11]	98	04010201-505	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
St Louis River	Stoney Bk to Cloquet R[11]	98	04010201-504	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
St Louis River	Cloquet R to Pine R[11]	98	04010201-503	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
St Louis River	Cloquet R to Pine R[11]	98	04010201-503	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
St Louis River	Pine R to Knife Dam	98	04010201-517	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
St Louis River	Knife Dam to Potlatch Dam	98	04010201-524	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
St Louis River	Knife Dam to Potlatch Dam	06	04010201-524	Aquatic consumption	PCB FCA	2006	2021	5A
St Louis River	Potlatch Dam to Scanlon Dam	98	04010201-516	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
St Louis River	Potlatch Dam to Scanlon Dam	06	04010201-516	Aquatic consumption	PCB FCA	2006	2021	5A
St Louis River	Scanlon Dam to Thomson Reservoir	98	04010201-515	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
St Louis River	Scanlon Dam to Thomson Reservoir	06	04010201-515	Aquatic consumption	PCB FCA	2006	2021	5A
St Louis River	Thomson Reservoir to Fond du Lac Dam	98	04010201-523	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
St Louis River	Thomson Reservoir to Fond du Lac Dam	06	04010201-523	Aquatic consumption	PCB FCA	2006	2021	5A
St Louis River	Fond du Lac Dam to Mission Cr	02	04010201-513	Aquatic consumption	DDT	2002	2015	5A
St Louis River	Fond du Lac Dam to Mission Cr	02	04010201-513	Aquatic consumption	Dieldrin	2002	2015	5A
St Louis River	Fond du Lac Dam to Mission Cr	98	04010201-513	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
St Louis River	Fond du Lac Dam to Mission Cr	98	04010201-513	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
St Louis River	Fond du Lac Dam to Mission Cr	02	04010201-513	Aquatic consumption	PCB FCA	2002	2015	5A
St Louis River	Fond du Lac Dam to Mission Cr	02	04010201-513	Aquatic consumption	PCB Water Column	2002	2015	5A
St Louis River	Mission Cr to Oliver Bridge	02	04010201-532	Aquatic consumption	DDT	2002	2015	5A
St Louis River	Mission Cr to Oliver Bridge	02	04010201-532	Aquatic consumption	Dieldrin	2002	2015	5A
St Louis River	Mission Cr to Oliver Bridge	02	04010201-532	Aquatic consumption	Mercury[1] Water Column	2002	2015	5A
St Louis River	Mission Cr to Oliver Bridge	02	04010201-532	Aquatic	Mercury[1] FCA	2002	2015	5A

				consumption				
St Louis River	Mission Cr to Oliver Bridge	06	04010201-532	Aquatic consumption	PCB FCA	2006	2021	5A
St Louis River	Mission Cr to Oliver Bridge	02	04010201-532	Aquatic consumption	PCB Water Column	2002	2015	5A
St Louis River	Oliver Bridge to Pokegama R	04	04010201-533	Aquatic consumption	Mercury[1] FCA	2004	2017	5A
St Louis River	Oliver Bridge to Pokegama R	04	04010201-533	Aquatic consumption	PCB FCA	2004	2017	5A
St Louis River (St Louis Bay)	Pokegama R to mouth of St Louis Bay at Blatnik Bridge	02	04010201-501	Aquatic consumption	DDT	2002	2015	5A
St Louis River (St Louis Bay)	Pokegama R to mouth of St Louis Bay at Blatnik Bridge	02	04010201-501	Aquatic consumption	Dieldrin	2002	2015	5A
St Louis River (St Louis Bay)	Pokegama R to mouth of St Louis Bay at Blatnik Bridge	02	04010201-501	Aquatic consumption	Dioxin	2002	2015	5A
St Louis River (St Louis Bay)	Pokegama R to mouth of St Louis Bay at Blatnik Bridge	98	04010201-501	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
St Louis River (St Louis Bay)	Pokegama R to mouth of St Louis Bay at Blatnik Bridge	98	04010201-501	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
St Louis River (St Louis Bay)	Pokegama R to mouth of St Louis Bay at Blatnik Bridge	02	04010201-501	Aquatic consumption	PCB FCA	2002	2015	5A
St Louis River (St Louis Bay)	Pokegama R to mouth of St Louis Bay at Blatnik Bridge	02	04010201-501	Aquatic consumption	PCB Water Column	2002	2015	5A
St Louis River (St Louis Bay)	Pokegama R to mouth of St Louis Bay at Blatnik Bridge	02	04010201-501	Aquatic consumption	Toxaphene	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Duluth Ship Channel	02	04010201-530	Aquatic consumption	DDT	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Duluth Ship Channel	02	04010201-530	Aquatic consumption	Dieldrin	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Duluth Ship Channel	02	04010201-530	Aquatic consumption	Dioxin	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Duluth Ship Channel	06	04010201-530	Aquatic recreation	Fecal Coliform	2012	2021	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Duluth Ship Channel	98	04010201-530	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Duluth Ship Channel	98	04010201-530	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Duluth Ship Channel	02	04010201-530	Aquatic consumption	PCB FCA	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Duluth Ship Channel	02	04010201-530	Aquatic consumption	PCB Water Column	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Duluth Ship Channel	02	04010201-530	Aquatic consumption	Toxaphene	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Superior Entry	02	04010201-531	Aquatic consumption	DDT	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Superior Entry	02	04010201-531	Aquatic consumption	Dieldrin	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Superior Entry	02	04010201-531	Aquatic consumption	Dioxin	2002	2015	5A

St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Superior Entry	98	04010201-531		Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Superior Entry	98	04010201-531		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Superior Entry	02	04010201-531		Aquatic consumption	PCB FCA	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Superior Entry	02	04010201-531		Aquatic consumption	PCB Water Column	2002	2015	5A
St Louis River (St Louis Bay)	Mouth of St. Louis Bay at Blatnik Bridge to Superior Entry	02	04010201-531		Aquatic consumption	Toxaphene	2002	2015	5A
Talmadge River	Headwaters to Lk Superior	96	04010102-508		Aquatic life	Low Oxygen[2,5]	2005	2011	5A
Talmadge River	Headwaters to Lk Superior	04	04010102-508		Aquatic life	Turbidity	2005	2011	5A
Whiteface River	Whiteface Reservoir to Bug Cr	02	04010201-529		Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Whiteface River	Bug Cr to Paleface R	02	04010201-528		Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Whiteface River	Paleface R to St Louis R	02	04010201-509		Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Thomson Reservoir	Lake or Reservoir	98		09-0001-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Chub	Lake or Reservoir	98		09-0008-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sand	Lake or Reservoir	98		09-0016-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Superior	Lake or Reservoir	98		16-0001-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Superior	Lake or Reservoir	02		16-0001-00	Aquatic consumption	PCB FCA	2002	2015	5A
Moosehorn	Lake or Reservoir	98		16-0015-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Tom	Lake or Reservoir	98		16-0019-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Tom	Lake or Reservoir	98		16-0019-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Esther	Lake or Reservoir	98		16-0023-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Devilfish	Lake or Reservoir	98		16-0029-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Devilfish	Lake or Reservoir	98		16-0029-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Otter	Lake or Reservoir	98		16-0032-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Chester	Lake or Reservoir	98		16-0033-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
South Fowl	Lake or Reservoir	98		16-0034-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
John	Lake or Reservoir	98		16-0035-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
North Fowl	Lake or Reservoir	02		16-0036-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C

Pine	Lake or Reservoir	02	16-0041-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
East Pike	Lake or Reservoir	98	16-0042-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Moose	Lake or Reservoir	98	16-0043-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Trout	Lake or Reservoir	98	16-0049-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Carrot	Lake or Reservoir	98	16-0071-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Greenwood	Lake or Reservoir	98	16-0077-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Greenwood	Lake or Reservoir	98	16-0077-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
West Pike	Lake or Reservoir	98	16-0086-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Northern Light	Lake or Reservoir	98	16-0089-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Northern Light	Lake or Reservoir	98	16-0089-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mountain	Lake or Reservoir	98	16-0093-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Elbow	Lake or Reservoir	98	16-0096-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Elbow	Lake or Reservoir	98	16-0096-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Musquash	Lake or Reservoir	98	16-0104-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5C
Alder	Lake or Reservoir	98	16-0114-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crocodile	Lake or Reservoir	98	16-0119-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Swamper	Lake or Reservoir	98	16-0128-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Jim	Lake or Reservoir	98	16-0135-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clearwater	Lake or Reservoir	98	16-0139-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Devil Track	Lake or Reservoir	98	16-0143-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Devil Track	Lake or Reservoir	98	16-0143-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
East Bearskin	Lake or Reservoir	98	16-0146-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Flour	Lake or Reservoir	98	16-0147-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pit	Lake or Reservoir	98	16-0155-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Two Island	Lake or Reservoir	98	16-0156-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Dick	Lake or Reservoir	04	16-0157-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Little Trout	Lake or Reservoir	06	16-0170-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Lower Trout	Lake or Reservoir	02	16-0175-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Ball Club	Lake or Reservoir	98	16-0182-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Ball Club	Lake or Reservoir	98	16-0182-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Kemo	Lake or Reservoir	98	16-0188-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Thrush	Lake or Reservoir	98	16-0191-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Thrasher	Lake or Reservoir	98	16-0192-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mit	Lake or Reservoir	98	16-0193-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pine	Lake or Reservoir	98	16-0194-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wampus	Lake or Reservoir	98	16-0196-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Leo	Lake or Reservoir	02	16-0198-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Squint	Lake or Reservoir	98	16-0202-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Aspen	Lake or Reservoir	98	16-0204-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Swamp	Lake or Reservoir	98	16-0215-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Morgan	Lake or Reservoir	98	16-0220-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Vista	Lake or Reservoir	98	16-0224-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Hungry Jack	Lake or Reservoir	98	16-0227-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bearskin	Lake or Reservoir	98	16-0228-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rose	Lake or Reservoir	98	16-0230-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Duncan	Lake or Reservoir	04	16-0232-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
McDonald	Lake or Reservoir	98	16-0235-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
McDonald	Lake or Reservoir	98	16-0235-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Hand	Lake or Reservoir	04	16-0238-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Poplar	Lake or Reservoir	98	16-0239-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

South	Lake or Reservoir	98	16-0244-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dunn	Lake or Reservoir	98	16-0245-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mark	Lake or Reservoir	98	16-0250-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pike	Lake or Reservoir	98	16-0252-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Deer Yard	Lake or Reservoir	98	16-0253-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Vernon	Lake or Reservoir	02	16-0267-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Swan	Lake or Reservoir	02	16-0268-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Rush	Lake or Reservoir	98	16-0299-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Henson	Lake or Reservoir	02	16-0314-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Gaskin	Lake or Reservoir	98	16-0319-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cascade	Lake or Reservoir	98	16-0346-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Cascade	Lake or Reservoir	98	16-0347-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Brule	Lake or Reservoir	98	16-0348-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Winchell	Lake or Reservoir	98	16-0354-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Winchell	Lake or Reservoir	02	16-0354-00	Aquatic consumption	PCB FCA	2002	2015	5A
Barker	Lake or Reservoir	98	16-0358-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Caribou	Lake or Reservoir	98	16-0360-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clara	Lake or Reservoir	98	16-0365-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Holly	Lake or Reservoir	98	16-0366-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
White Pine	Lake or Reservoir	02	16-0369-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Christine	Lake or Reservoir	98	16-0373-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kinogami	Lake or Reservoir	06	16-0378-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Gust	Lake or Reservoir	98	16-0380-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lichen	Lake or Reservoir	98	16-0382-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bouder	Lake or Reservoir	06	16-0383-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C

Tait	Lake or Reservoir	98	16-0384-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Juno	Lake or Reservoir	02	16-0402-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Star	Lake or Reservoir	02	16-0405-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Homer	Lake or Reservoir	98	16-0406-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Homer	Lake or Reservoir	98	16-0406-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Upper Cone	Lake or Reservoir	02	16-0412-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Davis	Lake or Reservoir	98	16-0435-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crescent	Lake or Reservoir	98	16-0454-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Marsh	Lake or Reservoir	02	16-0488-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Moore	Lake or Reservoir	98	16-0489-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sawbill	Lake or Reservoir	98	16-0496-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Sawbill	Lake or Reservoir	98	16-0496-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Alton	Lake or Reservoir	98	16-0622-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dyers	Lake or Reservoir	02	16-0634-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Four Mile	Lake or Reservoir	98	16-0639-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Toohey	Lake or Reservoir	98	16-0645-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Finger	Lake or Reservoir	98	16-0646-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Timber	Lake or Reservoir	98	16-0654-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Elbow	Lake or Reservoir	98	16-0805-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Frear	Lake or Reservoir	98	16-0806-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Beauty	Lake or Reservoir	98	31-0028-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cross River	Lake or Reservoir	98	38-0002-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Benson	Lake or Reservoir	98	38-0018-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
East	Lake or Reservoir	02	38-0020-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Crooked	Lake or Reservoir	98	38-0024-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Thunderbird	Lake or Reservoir	98	38-0031-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ninemile	Lake or Reservoir	98	38-0033-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lupus	Lake or Reservoir	02	38-0038-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Wilson	Lake or Reservoir	98	38-0047-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Wilson	Lake or Reservoir	98	38-0051-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dam Five	Lake or Reservoir	98	38-0053-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Whitefish	Lake or Reservoir	98	38-0060-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Organ	Lake or Reservoir	02	38-0067-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Tetagouche	Lake or Reservoir	02	38-0231-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Nipisiquit	Lake or Reservoir	02	38-0232-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Johnson	Lake or Reservoir	02	38-0242-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Balsam	Lake or Reservoir	02	38-0245-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Lax	Lake or Reservoir	98	38-0406-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Katherine	Lake or Reservoir	98	38-0538-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cloquet	Lake or Reservoir	98	38-0539-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kane	Lake or Reservoir	98	38-0651-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Christianson	Lake or Reservoir	98	38-0750-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pine	Lake or Reservoir	98	69-0001-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Seven Beaver	Lake or Reservoir	98	69-0002-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pequaywan	Lake or Reservoir	98	69-0011-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Salo	Lake or Reservoir	98	69-0036-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bassett	Lake or Reservoir	98	69-0041-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big	Lake or Reservoir	98	69-0050-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Bear	Lake or Reservoir	04	69-0113-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Cadotte	Lake or Reservoir	98	69-0114-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Little Alden	Lake or Reservoir	04	69-0130-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Alden	Lake or Reservoir	04	69-0131-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Wolf	Lake or Reservoir	98	69-0143-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Otto	Lake or Reservoir	98	69-0144-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Linwood	Lake or Reservoir	98	69-0248-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Colby	Lake or Reservoir	98	69-0249-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wild Rice	Lake or Reservoir	98	69-0371-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Upper Comstock	Lake or Reservoir	02	69-0412-01	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Island Lake Reservoir	Lake or Reservoir	98	69-0372-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Boulder	Lake or Reservoir	98	69-0373-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Whiteface Reservoir	Lake or Reservoir	98	69-0375-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Whitewater	Lake or Reservoir	98	69-0376-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lower Comstock	Lake or Reservoir	02	69-0412-02	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
North Twin	Lake or Reservoir	98	69-0419-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
South Twin	Lake or Reservoir	06	69-0420-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Loon	Lake or Reservoir	98	69-0426-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wynne (Sabin)	Lake or Reservoir	98	69-0434-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Caribou	Lake or Reservoir	98	69-0489-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pike	Lake or Reservoir	02	69-0490-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Fish Lake Flowage	Lake or Reservoir	02	69-0491-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Embarrass	Lake or Reservoir	02	69-0496-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Leora	Lake or Reservoir	02	69-0521-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Strand	Lake or Reservoir	02	69-0529-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Bass	Lake or Reservoir	02	69-0553-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Lost	Lake or Reservoir	02	69-0556-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C

Coe	Lake or Reservoir	98		69-0562-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Esquagama	Lake or Reservoir	98		69-0565-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Murphy	Lake or Reservoir	98		69-0646-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pleasant	Lake or Reservoir	06		69-0655-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Ely	Lake or Reservoir	98		69-0660-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Silver	Lake or Reservoir	98		69-0662-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Virginia	Lake or Reservoir	98		69-0663-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Deep	Lake or Reservoir	02		69-0666-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Elbow	Lake or Reservoir	98		69-0717-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mashkenode	Lake or Reservoir	04		69-0725-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Six Mile	Lake or Reservoir	98		69-0840-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Moberg	Lake or Reservoir	06		69-0847-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Longyear	Lake or Reservoir	98		69-0857-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kelly	Lake or Reservoir	98		69-0901-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
West Two Rivers Reservoir	Lake or Reservoir	98		69-0994-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Forsyth Pit	Lake or Reservoir	98		69-1303-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gilbert Pit	Lake or Reservoir	98		69-1306-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Upper Twin Pond	Lake or Reservoir	98		69-1345-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Upper Twin Pond	Lake or Reservoir	02		69-1345-00	Aquatic consumption	PCB FCA	2002	2015	5A

UPPER MISSISSIPPI RIVER BASIN, Upper Portion

Ashley Creek	Headwaters to Sauk Lk	98	07010202-503		Aquatic life	Low Oxygen[2,5]	2006	2010	5C
Bass Creek	Headwaters to Eagle Cr	02	07010206-527		Aquatic life	Fish IBI	2008	2015	5C
Bassett Creek	Medicine Lk to Mississippi R	04	07010206-538		Aquatic life	Fish IBI	2006	2009	5C
Battle Brook	CD 18 to Elk Lk	06	07010203-535		Aquatic life	Invertebrate IBI	2016	2021	5C
Buffalo Creek	Headwaters to JD 15	02	07010205-502		Aquatic life	Fish IBI	2008	2015	5A
Buffalo Creek	Headwaters to JD 15	06	07010205-502		Aquatic life	Invertebrate IBI	2008	2015	5A
Buffalo Creek	Headwaters to JD 15	98	07010205-502		Aquatic	Mercury[1]FCA	1999	2011	5A

				consumption					
Buffalo Creek	JD 15 to S Fk Crow R	02	07010205-501	Aquatic life	Fish IBI	2008	2015	5A
Buffalo Creek	JD 15 to S Fk Crow R	06	07010205-501	Aquatic life	Invertebrate IBI	2008	2015	5A
Buffalo Creek	JD 15 to S Fk Crow R	98	07010205-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Buffalo Creek	JD 15 to S Fk Crow R	06	07010205-501	Aquatic life	Turbidity:TSS	2008	2014	5A
Buffalo Creek (Little Buffalo Creek)	Headwaters to Mississippi R	02	07010104-523	Aquatic life	Fish IBI	2010	2017	5A
Buffalo Creek (Little Buffalo Creek)	Headwaters to Mississippi R	06	07010104-523	Aquatic life	Invertebrate IBI	2010	2017	5A
Clearwater Creek	Bald Eagle Lk to Peltier Lk	02	07010206-519	Aquatic life	Fish IBI	2008	2015	5A
Clearwater Creek	Bald Eagle Lk to Peltier Lk	06	07010206-519	Aquatic life	Invertebrate IBI	2008	2015	5A
Clearwater River	CD 44 to Lk Betsy	96	07010203-549	Aquatic recreation	Fecal coliform	2004	2009	5A
Clearwater River	CD 44 to Lk Betsy	96	07010203-549	Aquatic life	Low Oxygen[2,5]	2004	2009	5A
Clearwater River	Clearwater Lk to Mississippi R	06	07010203-511	Aquatic life	Low Oxygen[2,5]	2008	2011	5C
Coon Creek	Unnamed Cr to Mississippi R	06	07010206-530	Aquatic life	Invertebrate IBI	2015	2018	5C
County Ditch 6	Unnamed Cr to Ashley Cr	02	07010202-521	Aquatic life	Fish IBI	2006	2013	5A
County Ditch 6	Unnamed Cr to Ashley Cr	06	07010202-521	Aquatic life	Invertebrate IBI	2006	2012	5A
Crooked Brook	CD 28 to Cedar Cr	06	07010207-575	Aquatic life	Low Oxygen[2,5]	2016	2019	5C
Crooked Lake Ditch	Unnamed Cr to Lk Osakis	06	07010202-552	Aquatic life	Invertebrate IBI	2006	2012	5C
Crow River	S Fk Crow R to Mississippi R	04	07010204-502	Aquatic recreation	Fecal coliform	2006	2012	5A
Crow River	S Fk Crow R to Mississippi R	02	07010204-502	Aquatic life	Fish IBI	2008	2017	5A
Crow River	S Fk Crow R to Mississippi R	02	07010204-502	Aquatic life	Turbidity	2006	2012	5A
Crow River, North Fork	Headwaters (Grove Lk) to Lk Koronis	06	07010204-508	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Crow River, North Fork	Lk Koronis to M Fk Crow R	06	07010204-504	Aquatic life	Invertebrate IBI	2010	2017	5A
Crow River, North Fork	Lk Koronis to M Fk Crow R	02	07010204-504	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Crow River, North Fork	M Fk Crow R to Jewitts Cr	02	07010204-507	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Crow River, North Fork	Jewitts Cr to Washington Cr	02	07010204-506	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Crow River, North Fork	Washington Cr to Meeker/Wright County Line	02	07010204-555	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Crow River, North Fork	Meeker/Wright County Line to Mill Cr	02	07010204-556	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Crow River, North Fork	Mill Cr to S Fk Crow R	02	07010204-503	Aquatic life	Low Oxygen[2,5]	2006	2012	5A
Crow River, North Fork	Mill Cr to S Fk Crow R	02	07010204-503	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Crow River, North Fork	Mill Cr to S Fk Crow R	04	07010204-503	Aquatic life	Turbidity	2006	2012	5A
Crow River, South Fork	Headwaters to Hutchinson Dam	02	07010205-540	Aquatic life	Fish IBI	2010	2017	5A
Crow River, South Fork	Headwaters to Hutchinson Dam	06	07010205-540	Aquatic life	Invertebrate IBI	2010	2017	5A
Crow River, South Fork	Headwaters to Hutchinson Dam	98	07010205-540	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Crow River, South Fork	Headwaters to Hutchinson Dam	06	07010205-540	Aquatic life	Turbidity:Ttube/TSS	2010	2017	5A
Crow River, South Fork	Hutchinson Dam to Bear Cr	98	07010205-510	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Crow River, South Fork	Hutchinson Dam to Bear Cr	06	07010205-510	Aquatic life	Turbidity:TTube	2010	2017	5A

Crow River, South Fork	Bear Cr to Otter Cr	98	07010205-511	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Crow River, South Fork	Bear Cr to Otter Cr	06	07010205-511	Aquatic life	Turbidity:Ttube/TSS	2010	2017	5A
Crow River, South Fork	Otter Cr to Buffalo Cr	98	07010205-512	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow River, South Fork	Buffalo Cr to N Fk Crow R	06	07010205-508	Aquatic recreation	Fecal coliform	2008	2014	5A
Crow River, South Fork	Buffalo Cr to N Fk Crow R	02	07010205-508	Aquatic life	Fish IBI	2008	2015	5A
Crow River, South Fork	Buffalo Cr to N Fk Crow R	98	07010205-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Crow River, South Fork	Buffalo Cr to N Fk Crow R	04	07010205-508	Aquatic life	Turbidity	2008	2014	5A
Crow Wing River	Headwaters (Eleventh Crow Wing Lk) to Shell R	98	07010106-523	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Shell R to Big Swamp Cr	98	07010106-516	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Big Swamp Cr to Cat R	98	07010106-515	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Cat R to Beaver Cr	98	07010106-514	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Beaver Cr to Farnham Cr	98	07010106-513	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Farnham Cr to Leaf R	98	07010106-512	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Leaf R to Partridge R	98	07010106-511	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Partridge R to Swan Cr	98	07010106-510	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Swan Cr to Mosquito Cr	98	07010106-509	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Mosquito Cr to Long Prairie R	98	07010106-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Long Prairie R to Seven Mile Cr	98	07010106-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Seven Mile Cr to Gull R	98	07010106-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crow Wing River	Gull R to Mississippi R	04	07010106-501	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Ditch (Ramsey/Washington Judicial Ditch1)	Headwaters to Bald Eagle Lk	04	07010206-565	Aquatic life	Low Oxygen[2,5]	2006	2009	5C
Eagle Creek	Headwaters to Long Prairie R	02	07010108-507	Aquatic life	Fish IBI	2006	2013	5C
Eagle Creek	Headwaters to Long Prairie R	06	07010108-507	Aquatic life	Invertebrate IBI	2006	2013	5A
Elk River	Headwaters to Mayhew Cr	02	07010203-508	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Elk River	Mayhew R to Rice Cr	02	07010203-507	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Elk River	Rice Cr to St Francis R	06	07010203-506	Aquatic life	Invertebrate IBI	2014	2021	5A
Elk River	Rice Cr to St Francis R	02	07010203-506	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Elk River	Rice Cr to St Francis R	06	07010203-506	Aquatic life	Turbidity:TTube	2014	2021	5A

Elk River	St Francis R to Orono Lk	02	07010203-548		Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Elk River	Orono Lk to Mississippi R	04	07010203-525		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Elm Creek	Headwaters (Lk Medina) to Mississippi R	04	07010206-508		Aquatic life	Low Oxygen[2,5]	2006	2009	5C
Farnham Creek	Unnamed Cr to Crow Wing R	02	07010106-522		Aquatic life	Fish IBI	2011	2017	5A
Farnham Creek	Unnamed Cr to Crow Wing R	06	07010106-522		Aquatic life	Invertebrate IBI	2011	2017	5A
Getchell Creek (County Ditch 2)	Unnamed Cr to Sauk R	06	07010202-562		Aquatic life	Invertebrate IBI	2011	2021	5C
Grove Creek	Unnamed Cr to N Fk Crow R	02	07010204-514		Aquatic life	Fish IBI	2010	2017	5A
Grove Creek	Unnamed Cr to N Fk Crow R	06	07010204-514		Aquatic life	Invertebrate IBI	2010	2017	5A
Grove Creek	Unnamed Cr to N Fk Crow R	04	07010204-514		Aquatic life	Low Oxygen[2,5]	2010	2017	5A
Hardwood Creek	Headwaters to Hwy 61	04	07010206-595	518	Aquatic life	Low Oxygen[2,5]	2004	2006	5C
Hardwood Creek	Hwy 61 to Peltier Lk	02	07010206-596	518	Aquatic life	Fish IBI	2003	2006	5A
Hardwood Creek	Hwy 61 to Peltier Lk	04	07010206-596	518	Aquatic life	Low Oxygen[2,5]	2004	2006	5A
Jewitts Creek (County Ditches 19, 18, & 17)	Headwaters (Lk Ripley) to N Fk Crow R	94	07010204-585	501	Aquatic life	Ammonia[2,5]	2005	2008	5A
Jewitts Creek (County Ditches 19, 18, & 17)	Headwaters (Lk Ripley) to N Fk Crow R	02	07010204-585	501	Aquatic life	Fish IBI	2006	2012	5A
Jewitts Creek (County Ditches 19, 18, & 17)	Headwaters (Lk Ripley) to N Fk Crow R	06	07010204-585	501	Aquatic life	Invertebrate IBI	2006	2012	5A
Jewitts Creek (County Ditches 19, 18, & 17)	Headwaters (Lk Ripley) to N Fk Crow R	94	07010204-585	501	Aquatic life	Low Oxygen[2,5]	2005	2008	5A
Long Prairie River	Headwaters (Lk Carlos) to end of wetland (CR65)	98	07010108-534	506	Aquatic consumption	Mercury[1]FCA	2002	2015	5B
Long Prairie River	End of wetland (CR65) to Spruce Cr	98	07010108-535	506	Aquatic consumption	Mercury[1]FCA	2002	2015	5B
Long Prairie River	Spruce Cr to Eagle Cr	02	07010108-505		Aquatic life	Fish IBI	2006	2013	5B
Long Prairie River	Spruce Cr to Eagle Cr	98	07010108-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5B
Long Prairie River	Eagle Cr to Turtle Cr	02	07010108-504		Aquatic life	Fish IBI	2006	2013	5B
Long Prairie River	Eagle Cr to Turtle Cr	98	07010108-504		Aquatic consumption	Mercury[1]FCA	1999	2011	5B
Long Prairie River	Turtle Cr to Moran Cr	98	07010108-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5B
Long Prairie River	Moran Cr to Fish Trap Cr	98	07010108-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5B
Long Prairie River	Fish Trap Cr to Crow Wing R	98	07010108-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5B
Mayhew Creek	Headwaters (Mayhew Lk) to Elk R	02	07010203-509		Aquatic life	Fish IBI	2009	2017	5A
Mayhew Creek	Headwaters (Mayhew Lk) to Elk R	06	07010203-509		Aquatic life	Invertebrate IBI	2009	2017	5A
Mill Creek	Buffalo Lk to N Fk Crow R	04	07010204-515		Aquatic life	Low Oxygen[2,5]	2006	2012	5C
Mill Creek	Headwaters to Sauk R	06	07010202-537		Aquatic recreation	Fecal coliform	2006	2009	5C
Minnehaha Creek	Lk Minnetonka to Mississippi R	04	07010206-539		Aquatic life	Fish IBI	2005	2007	5C
Mississippi River	Headwaters to Schoolcraft R	94	07010101-504		Aquatic life	Low Oxygen[2,5]	2001	2005	5C
Mississippi River	Vermillion R to Black Water/ Pokegoma Lk	94	07010101-501		Aquatic life	Low Oxygen[2,5]	2006	2010	5C

Mississippi River	Grand Rapids Dam to Prairie R	98	07010103-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Prairie R to Split Hand Cr	98	07010103-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Split Hand Cr to Swan R	98	07010103-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Swan R to Sandy R	98	07010103-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Sandy R to Willow R	98	07010103-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Sandy R to Willow R	98	07010103-501	Aquatic life	Turbidity	2006	2010	5A
Mississippi River	End of previous HUC (07010103 below Willow R) to Rice R	98	07010104-512	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Rice R to Little Willow R	98	07010104-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Rice R to Little Willow R	98	07010104-503	Aquatic life	Turbidity	2006	2010	5A
Mississippi River	Little Willow R to Pine R	98	07010104-517	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Pine R to Brainerd Dam	94	07010104-501	Aquatic life	Low Oxygen[2,5]	2004	2008	5A
Mississippi River	Pine R to Brainerd Dam	98	07010104-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Brainerd Dam to Crow Wing R	98	07010104-516	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Crow Wing R to Nokasippi R	98	07010104-515	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Nokasippi R to Crow Wing/Morrison Co border	98	07010104-576	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Crow Wing/Morrison Co border to Fletcher Cr	98	07010104-577	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Fletcher Cr to Little Elk R	98	07010104-513	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Little Elk R to Little Falls Dam	98	07010104-520	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Little Falls Dam to Swan R	98	07010104-519	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	End HUC (07010104 below Swan R) to Two R	98	07010201-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Two R to Spunk Cr	98	07010201-509	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Spunk Cr to Platte R	98	07010201-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Platte R to Little Rock Cr	98	07010201-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Little Rock Cr to Sartell Dam	98	07010201-513	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Sartell Dam to Watab R	98	07010201-514	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Watab R to Sauk R	98	07010201-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Sauk R to CSAH 7 in St Cloud	98	07010203- 501	Aquatic	Mercury[1]FCA	1999	2011	5C

			574		consumption				
Mississippi River	CSAH 7 in St Cloud to St Cloud Dam	98	07010203-575	501	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	St Cloud Dam to Clearwater R	98	07010203-513		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Clearwater R to Elk R	02	07010203-510		Aquatic recreation	Fecal coliform	2007	2014	5A
Mississippi River	Clearwater R to Elk R	02	07010203-510		Aquatic life	Fish IBI	2007	2014	5A
Mississippi River	Clearwater R to Elk R	98	07010203-510		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Elk R to Crow R	98	07010203-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Elk R to Crow R	02	07010203-503		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Crow R to NW city limits of Anoka	02	07010206-567		Aquatic recreation	Fecal coliform	2008	2015	5A
Mississippi River	Crow R to NW city limits of Anoka	98	07010206-567		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Crow R to NW city limits of Anoka	02	07010206-567		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	NW city limits of Anoka to Rum R	02	07010206-568		Aquatic recreation	Fecal coliform	2008	2015	5A
Mississippi River	NW city limits of Anoka to Rum R	98	07010206-568		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	NW city limits of Anoka to Rum R	02	07010206-568		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Rum R to Elm Cr	98	07010206-510		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Rum R to Elm Cr	02	07010206-510		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Elm Cr to Coon Rapids Dam	98	07010206-511		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mississippi River	Elm Cr to Coon Rapids Dam	02	07010206-511		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Coon Rapids Dam to Coon Cr	98	07010206-512		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Coon Rapids Dam to Coon Cr	02	07010206-512		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Coon Cr to Upper St Anthony Falls	06	07010206-509		Aquatic recreation	Fecal coliform	2008	2011	5A
Mississippi River	Coon Cr to Upper St Anthony Falls	98	07010206-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Coon Cr to Upper St Anthony Falls	02	07010206-509		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Upper St Anthony Falls to Lower St Anthony Falls	98	07010206-513		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Upper St Anthony Falls to Lower St Anthony Falls	02	07010206-513		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Lower St Anthony Falls to Lock & Dam #1 (RM 853.3 to RM 847.6)	02	07010206-503		Aquatic recreation	Fecal coliform	2008	2015	5A
Mississippi River	Lower St Anthony Falls to Lock & Dam #1 (RM 853.3 to RM 847.6)	98	07010206-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Lock & Dam #1 to Minnesota R	98	07010206-514		Aquatic consumption	Mercury[1]FCA	1999	2011	5A

Mississippi River	Lock & Dam #1 to Minnesota R	02	07010206-514		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Minnesota R to Metro WWTP (RM 844 to 835)	96	07010206-505		Aquatic recreation	Fecal coliform	2008	2015	5A
Mississippi River	Minnesota R to Metro WWTP (RM 844 to 835)	98	07010206-505		Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Mississippi River	Minnesota R to Metro WWTP (RM 844 to 835)	98	07010206-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Minnesota R to Metro WWTP (RM 844 to 835)	02	07010206-505		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Minnesota R to Metro WWTP (RM 844 to 835)	98	07010206-505		Aquatic life	Turbidity	2008	2011	5A
Mississippi River	Metro WWTP to Rock Island RR Bridge (RM 835 to 830)	98	07010206-504		Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Mississippi River	Metro WWTP to Rock Island RR Bridge (RM 835 to 830)	98	07010206-504		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Metro WWTP to Rock Island RR Bridge (RM 835 to 830)	02	07010206-504		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Metro WWTP to Rock Island RR Bridge (RM 835 to 830)	98	07010206-504		Aquatic life	Turbidity	2008	2011	5A
Mississippi River	Rock Island RR Bridge to Lock & Dam #2 (RM 830 to 815.2)	98	07010206-502		Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Mississippi River	Rock Island RR Bridge to Lock & Dam #2 (RM 830 to 815.2)	98	07010206-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Rock Island RR Bridge to Lock & Dam #2 (RM 830 to 815.2)	02	07010206-502		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Rock Island RR Bridge to Lock & Dam #2 (RM 830 to 815.2)	98	07010206-502		Aquatic life	Turbidity	2008	2011	5A
Mississippi River	Lock & Dam #2 to St Croix R (RM 815.2 to 811.3)	98	07010206-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Lock & Dam #2 to St Croix R (RM 815.2 to 811.3)	02	07010206-501		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Lock & Dam #2 to St Croix R (RM 815.2 to 811.3)	98	07010206-501		Aquatic life	Turbidity	2008	2011	5A
Moran Creek	Headwaters to Long Prairie R	06	07010108-511		Aquatic life	Low Oxygen[2,5]	2006	2013	5C
Platte River	Rice-Skunk Lakes Dam to Unnamed Cr (abv RR Bridge)	02	07010201-546		Aquatic life	Fish IBI	2005	2012	5C
Rice Creek	Unnamed Lk (02-0041) to Long Lk	04	07010206-583		Aquatic life	Fish IBI	2006	2009	5A
Rice Creek	Unnamed Lk (02-0041) to Long Lk	06	07010206-583		Aquatic life	Invertebrate IBI	2013	2016	5A
Rice Creek	Long Lk to Locke Lk	06	07010206-584		Aquatic life	Invertebrate IBI	2013	2016	5C
Rice Creek	Rice Lk to Elk R	06	07010203-512		Aquatic life	Low Oxygen[2,5]	2014	2021	5A
Rice Creek	Rice Lk to Elk R	06	07010203-512		Aquatic life	Turbidity:TTube	2014	2021	5A
Rice River	Headwaters (Porcupine Lk) to Section 5 Cr	02	07010104-505		Aquatic life	Fish IBI	2006	2013	5C
Rum River	Headwaters (Mille Lacs Lk) to Ogechie Lk	98	07010207-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rum River	Ogechie Lk to Shakopee Lk	04	07010207-583	508	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Rum River	Shakopee Lk to Lk Onamia	04	07010207-585	508	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Rum River	Lk Onamia to Tibbetts Bk	98	07010207-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Rum River	Tibbetts Bk to Bogus Bk	98	07010207-510	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rum River	Bogus Bk to W Br Rum R	98	07010207-511	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rum River	W Br Rum R to Stanchfield Cr	98	07010207-512	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rum River	Stanchfield Cr to Seelye Bk	98	07010207-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rum River	Seelye Bk to Cedar Cr	98	07010207-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rum River	Cedar Cr to Trott Bk	98	07010207-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rum River	Trott Cr to Madison/Rice St in Anoka	98	07010207-555	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rum River	Madison/Rice St in Anoka to Mississippi R	98	07010207-556	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rush Creek	Headwaters to Elm Cr	02	07010206-528	Aquatic life	Fish IBI	2006	2009	5C
Sand Creek	Unnamed Cr to Coon Cr	06	07010206-558	Aquatic life	Invertebrate IBI	2015	2018	5C
Sauk River	Headwaters (Lk Osakis) to Sauk Lk	94	07010202-502	Aquatic life	Low Oxygen[2,5]	2006	2010	5A
Sauk River	Headwaters (Lk Osakis) to Sauk Lk	98	07010202-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Sauk River	Sauk Lk to Melrose Dam	98	07010202-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sauk River	Melrose Dam to Adley Cr	06	07010202-506	Aquatic life	Invertebrate IBI	2011	2021	5A
Sauk River	Melrose Dam to Adley Cr	98	07010202-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sauk River	Adley Cr to Getchell Cr	98	07010202-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sauk River	Getchell Cr to State Hwy 23	98	07010202-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sauk River	State Hwy 23 to Horseshoe Lk	06	07010202-557	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Sauk River	Knaus Lk to Cold Spring Dam	98	07010202-517	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sauk River	Cold Spring Dam to Cold Spring WWTP	98	07010202-519	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Sauk River	Cold Spring Dam to Cold Spring WWTP	02	07010202-519	Aquatic consumption	PCB FCA	2002	2015	5A
Sauk River	Cold Spring WWTP to Mill Cr	98	07010202-520	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Sauk River	Cold Spring WWTP to Mill Cr	02	07010202-520	Aquatic consumption	PCB FCA	2002	2015	5A
Sauk River	Mill Cr to Mississippi R	94	07010202-501	Aquatic recreation	Fecal coliform	2004	2009	5A
Sauk River	Mill Cr to Mississippi R	98	07010202-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Sauk River	Mill Cr to Mississippi R	02	07010202-501	Aquatic consumption	PCB FCA	2002	2015	5A
Shingle Creek (County Ditch 13)	Headwaters (Eagle Cr/Bass Cr) to Mississippi R	98	07010206-506	Aquatic life	Chloride	2002	2006	5A

Shingle Creek (County Ditch 13)	Headwaters (Eagle Cr/Bass Cr) to Mississippi R	06	07010206-506		Aquatic life	Invertebrate IBI	2013	2015	5A
Shingle Creek (County Ditch 13)	Headwaters (Eagle Cr/Bass Cr) to Mississippi R	04	07010206-506		Aquatic life	Low Oxygen[2,5]	2004	2006	5A
Swan River	Swan Lk (31-0067) to Mississippi R	04	07010103-506		Aquatic life	Low Oxygen[2,5]	2006	2010	5A
Swan River	Swan Lk (31-0067) to Mississippi R	98	07010103-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Unnamed Creek	Unnamed Cr to Crow R	04	07010204-542		Aquatic life	Low Oxygen[2,5]	2005	2011	5C
Unnamed Creek	T120 R31W S32 south line to Jewitts Cr	04	07010204-552		Aquatic life	Fish IBI	2006	2012	5A
Unnamed Creek	T120 R31W S32 south line to Jewitts Cr	06	07010204-552		Aquatic life	Invertebrate IBI	2006	2012	5A
Unnamed Creek	Headwaters to Mississippi R	02	07010206-517		Aquatic life	Fish IBI	2008	2015	5C
Unnamed Creek	Headwaters to Mississippi R	06	07010206-557		Aquatic life	Invertebrate IBI	2015	2018	5C
Unnamed Ditch	Headwaters to Mississippi R	06	07010206-594		Aquatic life	Invertebrate IBI	2015	2018	5C
Unnamed Creek	Unnamed Cr to Unnamed Cr	06	07010204-543		Aquatic life	Invertebrate IBI	2008	2017	5C
Unnamed Creek	Unnamed Ditch to N Fk Crow R	04	07010204-527		Aquatic life	Low Oxygen[2,5]	2005	2011	5C
Unnamed Creek	Unnamed Cr to Unnamed Cr	06	07010202-554		Aquatic life	Invertebrate IBI	2011	2021	5C
Minnewawa	Lake or Reservoir	02		01-0033-00	Aquatic recreation	Excess nutrients	2006	2011	5A
Minnewawa	Lake or Reservoir	98		01-0033-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Big Sandy	Lake or Reservoir	02		01-0062-00	Aquatic recreation	Excess nutrients	2006	2011	5A
Big Sandy	Lake or Reservoir	98		01-0062-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Round	Lake or Reservoir	98		01-0070-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clear	Lake or Reservoir	98		01-0093-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dam	Lake or Reservoir	98		01-0096-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gun	Lake or Reservoir	98		01-0099-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Waukenabo	Lake or Reservoir	98		01-0136-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Hill	Lake or Reservoir	98		01-0142-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Esquagamah	Lake or Reservoir	98		01-0147-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Farm Island	Lake or Reservoir	98		01-0159-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Hanging Kettle	Lake or Reservoir	98		01-0170-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pickerel	Lake or Reservoir	98		01-0182-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Round	Lake or Reservoir	98		01-0204-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cedar	Lake or Reservoir	98		01-0209-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Moulton	Lake or Reservoir	98		01-0212-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Peltier	Lake or Reservoir	02	02-0004-00	Aquatic recreation	Excess nutrients	2005	2009	5C
George Watch	Lake or Reservoir	02	02-0005-00	Aquatic recreation	Excess nutrients	2009	2013	5C
Centerville	Lake or Reservoir	02	02-0006-00	Aquatic recreation	Excess nutrients	2005	2009	5C
Marshan	Lake or Reservoir	02	02-0007-00	Aquatic recreation	Excess nutrients	2005	2009	5C
Reshanau	Lake or Reservoir	06	02-0009-00	Aquatic recreation	Excess nutrients	2015	2018	5C
Howard	Lake or Reservoir	06	02-0016-00	Aquatic recreation	Excess nutrients	2015	2018	5C
Coon	Lake or Reservoir	06	02-0042-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Golden	Lake or Reservoir	02	02-0045-00	Aquatic recreation	Excess nutrients	2004	2007	5C
East Moore	Lake or Reservoir	02	02-0075-01	Aquatic recreation	Excess nutrients	2009	2013	5C
Unnamed (Highland)	Lake or Reservoir	04	02-0079-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Sandy	Lake or Reservoir	02	02-0080-00	Aquatic recreation	Excess nutrients	2008	2012	5C
George	Lake or Reservoir	98	02-0091-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mud	Lake or Reservoir	06	02-0097-00	Aquatic recreation	Excess nutrients	2016	2019	5C
Rogers	Lake or Reservoir	06	02-0104-00	Aquatic recreation	Excess nutrients	2016	2019	5C
Straight	Lake or Reservoir	98	03-0010-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Two Inlets	Lake or Reservoir	04	03-0017-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Boot	Lake or Reservoir	98	03-0030-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bad Medicine	Lake or Reservoir	98	03-0085-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kitchi	Lake or Reservoir	98	04-0007-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cass	Lake or Reservoir	98	04-0030-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Andrusia	Lake or Reservoir	98	04-0038-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big	Lake or Reservoir	98	04-0049-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
South Twin	Lake or Reservoir	98	04-0053-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wolf	Lake or Reservoir	02	04-0079-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Swenson	Lake or Reservoir	98	04-0085-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Turtle River	Lake or Reservoir	98	04-0111-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gull	Lake or Reservoir	98	04-0120-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bemidji	Lake or Reservoir	98	04-0130-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Stump	Lake or Reservoir	98	04-0130-01	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Bass	Lake or Reservoir	06	04-0132-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Carr	Lake or Reservoir	98	04-0141-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Marquette	Lake or Reservoir	98	04-0142-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Turtle	Lake or Reservoir	06	04-0159-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Julia	Lake or Reservoir	98	04-0166-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mayhew	Lake or Reservoir	98	05-0007-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Rock	Lake or Reservoir	98	05-0013-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Eagle	Lake or Reservoir	02	09-0057-00	Aquatic recreation	Excess nutrients	2006	2011	5A
Eagle	Lake or Reservoir	98	09-0057-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cross	Lake or Reservoir	98	09-0062-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Tamarack	Lake or Reservoir	98	09-0067-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnewashta	Lake or Reservoir	04	10-0009-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Virginia	Lake or Reservoir	04	10-0015-00	Aquatic recreation	Excess nutrients	2003	2006	5A
Virginia	Lake or Reservoir	06	10-0015-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Zumbra-Sunny	Lake or Reservoir	98	10-0041-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Parley	Lake or Reservoir	02	10-0042-00	Aquatic recreation	Excess nutrients	2003	2006	5C
Steiger	Lake or Reservoir	98	10-0045-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wassermann	Lake or Reservoir	02	10-0048-00	Aquatic recreation	Excess nutrients	2003	2006	5A
Wassermann	Lake or Reservoir	98	10-0048-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Oak	Lake or Reservoir	04	10-0093-00	Aquatic recreation	Excess nutrients	2007	2009	5C
Swede	Lake or Reservoir	04	10-0095-00	Aquatic recreation	Excess nutrients	2007	2009	5C

Eagle	Lake or Reservoir	02	10-0121-00	Aquatic recreation	Excess nutrients	2008	2012	5A
Eagle	Lake or Reservoir	06	10-0121-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Campbell	Lake or Reservoir	04	10-0127-00	Aquatic recreation	Excess nutrients	2007	2009	5C
Washburn	Lake or Reservoir	98	11-0059-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Stevens	Lake or Reservoir	98	11-0116-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Inguadona	Lake or Reservoir	98	11-0120-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Long	Lake or Reservoir	98	11-0142-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Six Mile	Lake or Reservoir	98	11-0146-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Winnibigoshish	Lake or Reservoir	98	11-0147-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Boy	Lake or Reservoir	98	11-0167-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Girl	Lake or Reservoir	98	11-0174-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Leech	Lake or Reservoir	98	11-0203-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Agate	Lake or Reservoir	98	11-0216-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Margaret	Lake or Reservoir	06	11-0222-00	Aquatic recreation	Excess nutrients	2008	2015	5C
Trillium	Lake or Reservoir	02	11-0270-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Baby	Lake or Reservoir	98	11-0283-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sylvan	Lake or Reservoir	98	11-0304-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gull	Lake or Reservoir	98	11-0305-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pleasant	Lake or Reservoir	04	11-0383-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Pine Mountain	Lake or Reservoir	98	11-0411-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Birch	Lake or Reservoir	98	11-0412-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ten Mile	Lake or Reservoir	98	11-0413-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pike Bay	Lake or Reservoir	98	11-0415-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Steamboat	Lake or Reservoir	06	11-0504-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Little Wolf	Lake or Reservoir	98	11-0505-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Elk	Lake or Reservoir	98	15-0010-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Itasca	Lake or Reservoir	98	15-0016-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Borden	Lake or Reservoir	06	18-0020-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Bay	Lake or Reservoir	98	18-0034-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Platte	Lake or Reservoir	06	18-0088-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Rabbit	Lake or Reservoir	02	18-0093-02	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Rabbit (East Portion)	Lake or Reservoir	06	18-0093-01	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Black Hoof	Lake or Reservoir	98	18-0117-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rice	Lake or Reservoir	98	18-0145-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Perry	Lake or Reservoir	98	18-0186-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Papoose	Lake or Reservoir	98	18-0206-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ruth	Lake or Reservoir	98	18-0212-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Edward	Lake or Reservoir	98	18-0305-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pelican	Lake or Reservoir	98	18-0308-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Whitefish	Lake or Reservoir	98	18-0310-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ossawinnamakee	Lake or Reservoir	98	18-0352-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
North Long	Lake or Reservoir	98	18-0372-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Round	Lake or Reservoir	98	18-0373-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lower Cullen	Lake or Reservoir	02	18-0403-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Rebecca	Lake or Reservoir	98	19-0003-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Spring	Lake or Reservoir	02	19-0005-01	Aquatic recreation	Excess nutrients	2004	2009	5C
Pickerel	Lake or Reservoir	02	19-0079-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Clifford	Lake or Reservoir	06	21-0003-00	Aquatic recreation	Excess nutrients	2006	2012	5C
Burgen	Lake or Reservoir	98	21-0049-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Victoria	Lake or Reservoir	98	21-0054-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Le Homme Dieu	Lake or Reservoir	98	21-0056-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Carlos	Lake or Reservoir	98	21-0057-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Winona	Lake or Reservoir	02	21-0081-00	Aquatic recreation	Excess nutrients	2005	2010	5C
Miltona	Lake or Reservoir	98	21-0083-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Andrew	Lake or Reservoir	98	21-0085-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mary	Lake or Reservoir	98	21-0092-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Latoka	Lake or Reservoir	98	21-0106-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ida	Lake or Reservoir	98	21-0123-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lobster	Lake or Reservoir	98	21-0144-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Powderhorn	Lake or Reservoir	02	27-0014-00	Aquatic recreation	Excess nutrients	2003	2006	5A
Powderhorn	Lake or Reservoir	06	27-0014-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Harriet	Lake or Reservoir	98	27-0016-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Hiawatha	Lake or Reservoir	02	27-0018-00	Aquatic recreation	Excess nutrients	2003	2006	5C
Nokomis	Lake or Reservoir	02	27-0019-00	Aquatic recreation	Excess nutrients	2003	2006	5A
Nokomis	Lake or Reservoir	98	27-0019-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Nokomis	Lake or Reservoir	02	27-0019-00	Aquatic consumption	PCB FCA	2002	2015	5A
Diamond	Lake or Reservoir	02	27-0022-00	Aquatic recreation	Excess nutrients	2003	2006	5C
Calhoun	Lake or Reservoir	98	27-0031-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crystal	Lake or Reservoir	02	27-0034-00	Aquatic recreation	Excess nutrients	2003	2005	5C
Sweeney	Lake or Reservoir	04	27-0035-01	Aquatic recreation	Excess nutrients	2006	2007	5C
Wirth	Lake or Reservoir	02	27-0037-00	Aquatic recreation	Excess nutrients	2011	2016	5A
Wirth	Lake or Reservoir	98	27-0037-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Brownie	Lake or Reservoir	04	27-0038-00	Aquatic recreation	Excess nutrients	2003	2006	5A
Brownie	Lake or Reservoir	98	27-0038-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cedar	Lake or Reservoir	98	27-0039-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Lake of the Isles	Lake or Reservoir	02	27-0040-00	Aquatic recreation	Excess nutrients	2003	2006	5A
Lake of the Isles	Lake or Reservoir	98	27-0040-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Twin	Lake or Reservoir	98	27-0042-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Twin	Lake or Reservoir	02	27-0042-00	Aquatic consumption	PCB FCA	2002	2015	5A
Upper Twin	Lake or Reservoir	02	27-0042-01	Aquatic recreation	Excess nutrients	2003	2005	5A
Middle Twin	Lake or Reservoir	02	27-0042-02	Aquatic recreation	Excess nutrients	2003	2005	5A
Lower Twin	Lake or Reservoir	02	27-0042-03	Aquatic recreation	Excess nutrients	2003	2005	5A
Meadow	Lake or Reservoir	02	27-0057-00	Aquatic recreation	Excess nutrients	2008	2012	5C
Ryan	Lake or Reservoir	02	27-0058-00	Aquatic recreation	Excess nutrients	2003	2005	5C
Magda	Lake or Reservoir	02	27-0065-00	Aquatic recreation	Excess nutrients	2008	2012	5C
Bass	Lake or Reservoir	02	27-0098-00	Aquatic recreation	Excess nutrients	2009	2013	5C
Pomerleau	Lake or Reservoir	02	27-0100-00	Aquatic recreation	Excess nutrients	2008	2012	5C
Schmidt	Lake or Reservoir	02	27-0102-00	Aquatic recreation	Excess nutrients	2008	2012	5C
Medicine	Lake or Reservoir	04	27-0104-00	Aquatic recreation	Excess nutrients	2005	2008	5A
Medicine	Lake or Reservoir	98	27-0104-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Parkers	Lake or Reservoir	98	27-0107-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Eagle/Pike	Lake or Reservoir	98	27-0111-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Pike	Lake or Reservoir	02	27-0111-02	Aquatic recreation	Excess nutrients	2008	2012	5A
Weaver	Lake or Reservoir	98	27-0117-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fish Hook	Lake or Reservoir	06	27-0118-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Cedar Island	Lake or Reservoir	04	27-0119-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Diamond	Lake or Reservoir	06	27-0125-00	Aquatic recreation	Excess nutrients	2013	2016	5C
French	Lake or Reservoir	04	27-0127-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Minnetonka	Lake or Reservoir	98	27-0133-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Christmas	Lake or Reservoir	98	27-0137-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Spurzem	Lake or Reservoir	06	27-0149-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Long	Lake or Reservoir	98	27-0160-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Independence	Lake or Reservoir	02	27-0176-00	Aquatic recreation	Excess nutrients	2004	2008	5A
Independence	Lake or Reservoir	04	27-0176-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5A
Little Long	Lake or Reservoir	02	27-0179-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
South Whaletail	Lake or Reservoir	06	27-0184-02	Aquatic recreation	Excess nutrients	2017	2021	5C
Sarah	Lake or Reservoir	98	27-0191-01	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Sarah	Lake or Reservoir	06	27-0191-01	Aquatic recreation	Excess nutrients	2017	2021	5A
Sarah	Lake or Reservoir	98	27-0191-02	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Sarah	Lake or Reservoir	06	27-0191-02	Aquatic recreation	Excess nutrients	2017	2021	5A
Rebecca	Lake or Reservoir	98	27-0192-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Haften	Lake or Reservoir	04	27-0199-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Northwood	Lake or Reservoir	04	27-0627-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Twin	Lake or Reservoir	06	27-0656-00	Aquatic recreation	Excess nutrients	2013	2016	5C
Grass	Lake or Reservoir	06	27-0681-00	Aquatic recreation	Excess nutrients	2013	2016	5C
Williams	Lake or Reservoir	02	29-0015-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Eleventh Crow Wing	Lake or Reservoir	02	29-0036-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Shingobee	Lake or Reservoir	02	29-0043-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Tenth Crow Wing	Lake or Reservoir	02	29-0045-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Midge	Lake or Reservoir	98	29-0066-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Grace	Lake or Reservoir	98	29-0071-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Eighth Crow Wing	Lake or Reservoir	06	29-0072-00	Aquatic recreation	Excess nutrients	2014	2021	5C
Kabekona	Lake or Reservoir	98	29-0075-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Third Crow Wing	Lake or Reservoir	02	29-0077-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
First Crow Wing	Lake or Reservoir	06	29-0086-00	Aquatic recreation	Excess nutrients	2014	2021	5C

Spider	Lake or Reservoir	98	29-0117-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Stony	Lake or Reservoir	06	29-0143-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Belle Taine	Lake or Reservoir	98	29-0146-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mantrap	Lake or Reservoir	98	29-0151-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Plantagenet	Lake or Reservoir	02	29-0156-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Long	Lake or Reservoir	02	29-0161-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Lower Bottle	Lake or Reservoir	02	29-0180-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Blue	Lake or Reservoir	02	29-0184-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Big Sand	Lake or Reservoir	98	29-0185-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
George	Lake or Reservoir	98	29-0216-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fish Hook	Lake or Reservoir	98	29-0242-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Potato	Lake or Reservoir	02	29-0243-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Portage	Lake or Reservoir	06	29-0250-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Portage	Lake or Reservoir	06	29-0250-00	Aquatic recreation	Excess nutrients	2014	2021	5A
Island	Lake or Reservoir	98	29-0254-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Beauty	Lake or Reservoir	04	29-0292-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Francis	Lake or Reservoir	02	30-0080-00	Aquatic recreation	Excess nutrients	2004	2008	5C
Green	Lake or Reservoir	98	30-0136-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Green	Lake or Reservoir	02	30-0136-00	Aquatic consumption	PCB FCA	2002	2015	5A
O'Brien	Lake or Reservoir	98	31-0032-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Horsehead	Lake or Reservoir	98	31-0047-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Swan	Lake or Reservoir	98	31-0067-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Buck	Lake or Reservoir	98	31-0069-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ox Hide	Lake or Reservoir	98	31-0106-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Snowball	Lake or Reservoir	98	31-0108-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Upper Panasa	Lake or Reservoir	98	31-0111-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lower Panasa	Lake or Reservoir	02	31-0112-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Wolf	Lake or Reservoir	98	31-0152-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crooked	Lake or Reservoir	98	31-0193-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Trout	Lake or Reservoir	98	31-0216-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
White Swan	Lake or Reservoir	98	31-0260-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Prairie	Lake or Reservoir	98	31-0384-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wabana	Lake or Reservoir	98	31-0392-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Trout	Lake or Reservoir	98	31-0410-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cutaway	Lake or Reservoir	98	31-0429-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Plantation	Lake or Reservoir	98	31-0439-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pokegama	Lake or Reservoir	98	31-0532-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Blandin	Lake or Reservoir	98	31-0533-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Forsythe	Lake or Reservoir	02	31-0560-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Blackwater	Lake or Reservoir	98	31-0561-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Guile	Lake or Reservoir	02	31-0569-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Long	Lake or Reservoir	02	31-0570-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Loon	Lake or Reservoir	02	31-0571-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Little Bass	Lake or Reservoir	02	31-0575-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Bass	Lake or Reservoir	98	31-0576-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lucky	Lake or Reservoir	98	31-0603-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rice	Lake or Reservoir	98	31-0717-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Deer	Lake or Reservoir	98	31-0719-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Moose	Lake or Reservoir	98	31-0722-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ball Club	Lake or Reservoir	98	31-0812-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Cut Foot Sioux	Lake or Reservoir	98	31-0857-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Decker	Lake or Reservoir	06	31-0934-00	Aquatic recreation	Excess nutrients	2014	2019	5C
O'Brien Reservoir #4	Lake or Reservoir	98	31-1225-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lewis	Lake or Reservoir	98	33-0032-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Elizabeth	Lake or Reservoir	98	34-0022-02	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Diamond	Lake or Reservoir	98	34-0044-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Diamond	Lake or Reservoir	06	34-0044-00	Aquatic recreation	Excess nutrients	2015	2019	5A
Calhoun	Lake or Reservoir	06	34-0062-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Long	Lake or Reservoir	06	34-0066-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Green	Lake or Reservoir	98	34-0079-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Kandiyohi	Lake or Reservoir	98	34-0086-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
George	Lake or Reservoir	02	34-0142-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Nest	Lake or Reservoir	98	34-0154-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mud	Lake or Reservoir	06	34-0158-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Hook	Lake or Reservoir	02	43-0073-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Marion	Lake or Reservoir	98	43-0084-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Francis	Lake or Reservoir	98	47-0002-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Jennie	Lake or Reservoir	98	47-0015-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Long	Lake or Reservoir	98	47-0026-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Spring	Lake or Reservoir	98	47-0032-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Swan	Lake or Reservoir	06	47-0038-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Washington	Lake or Reservoir	98	47-0046-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dunns	Lake or Reservoir	02	47-0082-00	Aquatic recreation	Excess nutrients	2008	2013	5A
Dunns	Lake or Reservoir	98	47-0082-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Richardson	Lake or Reservoir	02	47-0088-00	Aquatic recreation	Excess nutrients	2008	2013	5A

Richardson	Lake or Reservoir	98	47-0088-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnie-Belle	Lake or Reservoir	98	47-0119-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mille Lacs	Lake or Reservoir	98	48-0002-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Shakopee	Lake or Reservoir	98	48-0012-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sullivan	Lake or Reservoir	98	49-0016-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cedar	Lake or Reservoir	02	49-0140-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Adley	Lake or Reservoir	02	56-0031-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Grove	Lake or Reservoir	98	61-0023-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bald Eagle	Lake or Reservoir	02	62-0002-00	Aquatic recreation	Excess nutrients	2005	2008	5A
Bald Eagle	Lake or Reservoir	98	62-0002-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Kohlman	Lake or Reservoir	02	62-0006-00	Aquatic recreation	Excess nutrients	2004	2008	5C
Gervais	Lake or Reservoir	98	62-0007-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Keller	Lake or Reservoir	02	62-0010-00	Aquatic recreation	Excess nutrients	2004	2008	5C
Wakefield	Lake or Reservoir	02	62-0011-00	Aquatic recreation	Excess nutrients	2009	2013	5C
Round	Lake or Reservoir	02	62-0012-00	Aquatic recreation	Excess nutrients	2011	2016	5C
Beaver	Lake or Reservoir	02	62-0016-00	Aquatic recreation	Excess nutrients	2004	2008	5C
Sucker	Lake or Reservoir	98	62-0028-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
East Vadnais	Lake or Reservoir	98	62-0038-01	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pleasant	Lake or Reservoir	02	62-0046-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Bennett	Lake or Reservoir	06	62-0048-00	Aquatic recreation	Excess nutrients	2016	2019	5C
McCarron	Lake or Reservoir	06	62-0054-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Como	Lake or Reservoir	02	62-0055-00	Aquatic recreation	Excess nutrients	2005	2009	5A
Como	Lake or Reservoir	98	62-0055-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Owasso	Lake or Reservoir	98	62-0056-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Josephine	Lake or Reservoir	98	62-0057-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Little Johanna	Lake or Reservoir	04	62-0058-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Turtle	Lake or Reservoir	02	62-0061-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Long	Lake or Reservoir	02	62-0067-00	Aquatic recreation	Excess nutrients	2007	2011	5A
Long	Lake or Reservoir	98	62-0067-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Pike	Lake or Reservoir	02	62-0069-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Valentine	Lake or Reservoir	02	62-0071-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Snail	Lake or Reservoir	02	62-0073-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Island-South	Lake or Reservoir	02	62-0075-01	Aquatic recreation	Excess nutrients	2010	2014	5C
Island-North	Lake or Reservoir	02	62-0075-02	Aquatic recreation	Excess nutrients	2010	2014	5C
Johanna	Lake or Reservoir	02	62-0078-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Silver (West)	Lake or Reservoir	02	62-0083-00	Aquatic recreation	Excess nutrients	2009	2013	5C
North Star	Lake or Reservoir	02	62-0237-00	Aquatic consumption	PCB FCA	2002	2015	5C
Prairie	Lake or Reservoir	98	69-0848-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Day	Lake or Reservoir	98	69-0906-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Orono	Lake or Reservoir	98	71-0013-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Birch	Lake or Reservoir	06	71-0057-00	Aquatic recreation	Excess nutrients	2017	2021	5C
Grand	Lake or Reservoir	02	73-0055-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Schneider	Lake or Reservoir	04	73-0082-00	Aquatic recreation	Excess nutrients	2004	2010	5C
Great Northern	Lake or Reservoir	04	73-0083-00	Aquatic recreation	Excess nutrients	2004	2010	5C
Knaus	Lake or Reservoir	04	73-0086-00	Aquatic recreation	Excess nutrients	2004	2010	5C
Krays	Lake or Reservoir	04	73-0087-00	Aquatic recreation	Excess nutrients	2004	2010	5C
Bolting	Lake or Reservoir	04	73-0088-00	Aquatic recreation	Excess nutrients	2004	2010	5C
Zumwalde	Lake or Reservoir	04	73-0089-00	Aquatic recreation	Excess nutrients	2004	2010	5C
Sagatagan	Lake or Reservoir	02	73-0092-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Kreigle	Lake or Reservoir	02	73-0097-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C

Big Fish	Lake or Reservoir	98	73-0106-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
Cedar Island	Lake or Reservoir	04	73-0133-01	Aquatic recreation	Excess nutrients	2004	2010	5A
Cedar Island (Main)	Lake or Reservoir	06	73-0133-01	Aquatic consumption	Mercury[1] FCA	2006	2021	5A
Cedar Island (Mud Lake)	Lake or Reservoir	06	73-0133-02	Aquatic consumption	Mercury[1] FCA	2006	2021	5C
Koetter	Lake or Reservoir	04	73-0133-03	Aquatic recreation	Excess nutrients	2004	2010	5A
Cedar Island (Koetter Lake)	Lake or Reservoir	06	73-0133-03	Aquatic consumption	Mercury[1] FCA	2006	2021	5A
Cedar Island (East Lake)	Lake or Reservoir	06	73-0133-04	Aquatic consumption	Mercury[1] FCA	2006	2021	5C
Two Rivers	Lake or Reservoir	98	73-0138-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
Long	Lake or Reservoir	04	73-0139-00	Aquatic recreation	Excess nutrients	2004	2010	5C
Horseshoe	Lake or Reservoir	04	73-0157-00	Aquatic recreation	Excess nutrients	2004	2010	5A
Horseshoe	Lake or Reservoir	98	73-0157-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
Rice	Lake or Reservoir	98	73-0196-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
Koronis	Lake or Reservoir	98	73-0200-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
Maria	Lake or Reservoir	06	73-0215-00	Aquatic recreation	Excess nutrients	2015	2019	5C
Mary	Lake or Reservoir	02	77-0019-00	Aquatic consumption	Mercury[1] FCA	2002	2015	5C
Big Swan	Lake or Reservoir	98	77-0023-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
Big Birch	Lake or Reservoir	98	77-0084-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
Sauk	Lake or Reservoir	04	77-0150-00	Aquatic recreation	Excess nutrients	2004	2008	5A
Sauk	Lake or Reservoir	98	77-0150-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
Faille	Lake or Reservoir	06	77-0195-00	Aquatic recreation	Excess nutrients	2006	2012	5C
Osakis	Lake or Reservoir	04	77-0215-00	Aquatic recreation	Excess nutrients	2004	2012	5A
Osakis	Lake or Reservoir	98	77-0215-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5A
Stocking	Lake or Reservoir	98	80-0037-00	Aquatic consumption	Mercury[1] FCA	1999	2011	5C
Ravine	Lake or Reservoir	06	82-0087-00	Aquatic recreation	Excess nutrients	2016	2019	5C
Markgrafs	Lake or Reservoir	06	82-0089-00	Aquatic recreation	Excess nutrients	2014	2018	5C

Wilmes	Lake or Reservoir	06	82-0090-00	Aquatic recreation	Excess nutrients	2014	2018	5C
Battle Creek	Lake or Reservoir	02	82-0091-00	Aquatic recreation	Excess nutrients	2009	2013	5C
Colby	Lake or Reservoir	06	82-0094-00	Aquatic recreation	Excess nutrients	2014	2018	5C
Tanners	Lake or Reservoir	02	82-0115-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Fish	Lake or Reservoir	06	82-0137-00	Aquatic recreation	Excess nutrients	2013	2016	5C
Clear	Lake or Reservoir	02	82-0163-00	Aquatic consumption	Mercury1FCA	2002	2015	5C
Carver	Lake or Reservoir	98	82-0166-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
White Bear	Lake or Reservoir	98	82-0167-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Beebe	Lake or Reservoir	02	86-0023-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Pulaski	Lake or Reservoir	98	86-0053-02	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Buffalo	Lake or Reservoir	98	86-0090-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Maple	Lake or Reservoir	02	86-0134-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Silver	Lake or Reservoir	98	86-0140-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Locke	Lake or Reservoir	06	86-0168-00	Aquatic recreation	Excess nutrients	2013	2016	5C
Ann	Lake or Reservoir	02	86-0190-00	Aquatic recreation	Excess nutrients	2006	2011	5A
Ann	Lake or Reservoir	98	86-0190-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mary	Lake or Reservoir	04	86-0193-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Howard	Lake or Reservoir	98	86-0199-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Granite	Lake or Reservoir	02	86-0217-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Cedar	Lake or Reservoir	98	86-0227-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pleasant	Lake or Reservoir	98	86-0251-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clearwater	Lake or Reservoir	98	86-0252-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
French	Lake or Reservoir	98	86-0273-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
West Lake Sylvia	Lake or Reservoir	98	86-0279-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Louisa	Lake or Reservoir	02	86-0282-00	Aquatic recreation	Excess nutrients	2004	2009	5C

John	Lake or Reservoir	98		86-0288-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
East Lake Sylvia	Lake or Reservoir	98		86-0289-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Collinwood	Lake or Reservoir	98		86-0293-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

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Beaver Creek	E Fk Beaver Cr to Minnesota R	06	07020004-528	Aquatic recreation	Fecal coliform	2011	2015	5A
Beaver Creek	E Fk Beaver Cr to Minnesota R	06	07020004-528	Aquatic life	Turbidity:TSS/TTube	2011	2015	5A
Beaver Creek, West Fork	Headwaters to E Fk Beaver Cr	06	07020004-530	Aquatic recreation	Fecal coliform	2011	2015	5A
Beaver Creek, West Fork	Headwaters to E Fk Beaver Cr	06	07020004-530	Aquatic life	Turbidity:TSS	2011	2015	5A
Bevens Creek	Headwaters (Washington Lk) to Silver Cr	02	07020012-515	Aquatic life	Chloride	2003	2007	5A
Bevens Creek	Headwaters (Washington Lk) to Silver Cr	02	07020012-515	Aquatic recreation	Fecal coliform	2003	2007	5A
Bevens Creek	Headwaters (Washington Lk) to Silver Cr	02	07020012-515	Aquatic life	Turbidity	2003	2007	5A
Bevens Creek	Silver Cr to Minnesota R	02	07020012-514	Aquatic recreation	Fecal coliform	2003	2007	5A
Bevens Creek	Silver Cr to Minnesota R	02	07020012-514	Aquatic life	Turbidity	2003	2007	5A
Blue Earth River, East Branch	Headwaters to Brush Cr	04	07020009-554	Aquatic life	Fish IBI	2012	2017	5C
Blue Earth River, East Branch	Brush Cr to Blue Earth R	04	07020009-553	Aquatic life	Fish IBI	2012	2017	5C
Blue Earth River	W Br Blue Earth R to Coon Cr	94	07020009-504	Aquatic recreation	Fecal coliform	2004	2008	5A
Blue Earth River	W Br Blue Earth R to Coon Cr	04	07020009-504	Aquatic life	Fish IBI	2012	2017	5A
Blue Earth River	W Br Blue Earth R to Coon Cr	98	07020009-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Blue Earth River	W Br Blue Earth R to Coon Cr	02	07020009-504	Aquatic life	Turbidity	2005	2009	5A
Blue Earth River	Coon Cr to Badger Cr	04	07020009-518	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Blue Earth River	Badger Cr to E Br Blue Earth R	04	07020009-565	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Blue Earth River	E Br Blue Earth R to South Cr	02	07020009-508	Aquatic life	Fish IBI	2007	2015	5A
Blue Earth River	E Br Blue Earth R to South Cr	98	07020009-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Blue Earth River	E Br Blue Earth R to South Cr	02	07020009-508	Aquatic life	Turbidity	2005	2009	5A
Blue Earth River	South Cr to Center Cr	04	07020009-516	Aquatic life	Fish IBI	2012	2017	5A
Blue Earth River	South Cr to Center Cr	98	07020009-516	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Blue Earth River	Center Cr to Elm Cr	98	07020009-514	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Blue Earth River	Elm Cr to Willow Cr	02	07020009-515	Aquatic life	Fish IBI	2007	2015	5A
Blue Earth River	Elm Cr to Willow Cr	98	07020009-515	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Blue Earth River	Elm Cr to Willow Cr	02	07020009-515	Aquatic life	Turbidity	2005	2009	5A
Blue Earth River	Willow Cr to Watonwan R	98	07020009-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Blue Earth River	Watonwan R to Rapidan Dam	98	07020009-510	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Blue Earth River	Rapidan Dam to Le Sueur R	02	07020009-509	Aquatic consumption	Mercury[1] Water Column	2002	2015	5A
Blue Earth River	Rapidan Dam to Le Sueur R	02	07020009-509	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Blue Earth River	Rapidan Dam to Le Sueur R	04	07020009-509	Aquatic life	Turbidity	2004	2009	5A
Blue Earth River	Le Sueur R to Minnesota R	94	07020009-501	Aquatic recreation	Fecal coliform	2004	2008	5A
Blue Earth River	Le Sueur R to Minnesota R	02	07020009-501	Aquatic consumption	Mercury[1] Water Column	2002	2015	5A
Blue Earth River	Le Sueur R to Minnesota R	02	07020009-501	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Blue Earth River	Le Sueur R to Minnesota R	02	07020009-501	Aquatic life	Turbidity	2004	2009	5A
Bluff Creek	Headwaters to Minnesota R	04	07020012-510	Aquatic life	Fish IBI	2005	2009	5A
Bluff Creek	Headwaters to Minnesota R	02	07020012-510	Aquatic life	Turbidity	2005	2009	5A
Brush Creek	Headwaters to E Br Blue Earth R	04	07020009-555	Aquatic life	Fish IBI	2012	2017	5C
Buffalo Creek	Unnamed Cr to High Island Cr	06	07020012-578	Aquatic recreation	Fecal coliform	2006	2009	5A
Buffalo Creek	Unnamed Cr to High Island Cr	04	07020012-578	Aquatic life	Fish IBI	2012	2017	5A
Buffalo Creek/ County Ditch 59	High Island Ditch 5 to Unnamed Cr	06	07020012-598	Aquatic recreation	Fecal coliform	2006	2009	5C
Carver Creek	Headwaters to Minnesota R	02	07020012-516	Aquatic recreation	Fecal coliform	2003	2007	5A
Carver Creek	Headwaters to Minnesota R	02	07020012-516	Aquatic life	Turbidity	2003	2007	5A
Cedar Creek	T104 R33W S6 west line to Cedar Lk	06	07020009-560	Aquatic recreation	Fecal coliform	2007	2011	5A
Cedar Creek	T104 R33W S6 west line to Cedar Lk	94	07020009-560	Aquatic life	Low Oxygen[2,5]	2004	2007	5A
Cedar Creek	Cedar Lk to Elm Cr	06	07020009-521	Aquatic recreation	Fecal coliform	2007	2011	5A
Cedar Creek	Cedar Lk to Elm Cr	06	07020009-521	Aquatic life	Turbidity:TTube/ Turbidity	2008	2012	5A
Center Creek	George Lk to Lily Cr	06	07020009-526	Aquatic recreation	Fecal coliform	2007	2011	5C
Center Creek	Lily Cr to Blue Earth R	96	07020009-503	Aquatic life	Ammonia[2,6]	2004	2007	5A
Center Creek	Lily Cr to Blue Earth R	96	07020009-503	Aquatic recreation	Fecal coliform	2004	2008	5A
Center Creek	Lily Cr to Blue Earth R	02	07020009-503	Aquatic life	Fish IBI	2008	2015	5A
Center Creek	Lily Cr to Blue Earth R	02	07020009-503	Aquatic life	Turbidity	2005	2009	5A
Chaska Creek	Headwaters to Minnesota R	06	07020012-512	Aquatic recreation	Fecal coliform	2013	2020	5C
Chetomba Creek	T116 R37W S7 east line to Unnamed Ditch	04	07020004-577	Aquatic life	Fish IBI	2012	2017	5C
Chippewa River	Headwaters to Little Chippewa R	06	07020005-503	Aquatic recreation	Fecal coliform	2006	2008	5A
Chippewa River	Headwaters to Little Chippewa R	02	07020005-503	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Chippewa River	Headwaters to Little Chippewa R	06	07020005-503	Aquatic life	Turbidity	2009	2013	5A
Chippewa River	Little Chippewa R to Unnamed Cr	02	07020005-504	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Chippewa River	Unnamed Cr to E Br Chippewa R	06	07020005-505	Aquatic recreation	Fecal coliform	2015	2021	5A
Chippewa River	Unnamed Cr to E Br Chippewa R	06	07020005-505	Aquatic life	Fish IBI	2015	2021	5A
Chippewa River	Unnamed Cr to E Br Chippewa R	02	07020005-505	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Chippewa River	Unnamed Cr to E Br Chippewa R	06	07020005-505	Aquatic life	Turbidity	2009	2013	5A
Chippewa River	E Br Chippewa R to Shakopee Cr	02	07020005-506	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Chippewa River	Shakopee Cr to Cottonwood Cr	02	07020005-507	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Chippewa River	Cottonwood Cr to Dry Weather Cr	02	07020005-508	Aquatic consumption	Mercury[1]FCA	2002	2015	5A

Chippewa River	Cottonwood Cr to Dry Weather Cr	06	07020005-508	Aquatic life	Turbidity	2009	2013	5A
Chippewa River	Dry Weather Cr to Watson Sag Diversion	02	07020005-502	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Chippewa River	Watson Sag Diversion to Minnesota R	94	07020005-501	Aquatic recreation	Fecal coliform	1998	2004	5B
Chippewa River	Watson Sag Diversion to Minnesota R	02	07020005-501	Aquatic consumption	Mercury[1]FCA	2002	2015	5B
Chippewa River	Watson Sag Diversion to Minnesota R	02	07020005-501	Aquatic life	Turbidity:TSS	2004	2009	5B
Chippewa River, East Branch	Mud Cr to Chippewa R	06	07020005-514	Aquatic recreation	Fecal coliform	2006	2008	5A
Chippewa River, East Branch	Mud Cr to Chippewa R	06	07020005-514	Aquatic life	Turbidity	2009	2013	5A
Cobb River	T104 R23W S34 south line to Little Cobb R	04	07020011- 527 568	Aquatic life	Fish IBI	2012	2017	5C
Coon Creek	Lk Benton to Redwood R	04	07020006-511	Aquatic life	Fish IBI	2012	2017	5C
Cottonwood River	Headwaters to Meadow Cr	98	07020008-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cottonwood River	Meadow Cr to Plum Cr	98	07020008-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cottonwood River	Plum Cr to Dutch Charlie Cr	06	07020008-504	Aquatic recreation	Fecal coliform	2009	2012	5A
Cottonwood River	Plum Cr to Dutch Charlie Cr	98	07020008-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cottonwood River	Plum Cr to Dutch Charlie Cr	06	07020008-504	Aquatic life	Turbidity:TSS	2011	2015	5A
Cottonwood River	Dutch Charlie Cr to Dry Cr	98	07020008-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cottonwood River	Dry Cr to Mound Cr	98	07020008-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cottonwood River	Mound Cr to Coal Mine Cr	98	07020008-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cottonwood River	Coal Mine Cr to Sleepy Eye Cr	06	07020008-508	Aquatic recreation	Fecal coliform	2009	2012	5A
Cottonwood River	Coal Mine Cr to Sleepy Eye Cr	98	07020008-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cottonwood River	Coal Mine Cr to Sleepy Eye Cr	06	07020008-508	Aquatic life	Turbidity:TSS	2011	2015	5A
Cottonwood River	Sleepy Eye Cr to JD 30	98	07020008-509	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cottonwood River	JD 30 to Minnesota R	94	07020008-501	Aquatic recreation	Fecal coliform	2009	2012	5A
Cottonwood River	JD 30 to Minnesota R	98	07020008-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cottonwood River	JD 30 to Minnesota R	02	07020008-501	Aquatic life	Turbidity	2004	2009	5A
County Ditch 27	Unnamed Ditch to Unnamed Ditch	06	07020005-570	Aquatic recreation	Fecal coliform	2006	2008	5C
County Ditch 29	Headwaters to Unnamed Ditch	06	07020005-567	Aquatic recreation	Fecal coliform	2006	2008	5C
County Ditch 46A	Headwaters to Sevenmile Cr	06	07020007-516	Aquatic recreation	Fecal coliform	2010	2015	5A
County Ditch 46A	Headwaters to Sevenmile Cr	06	07020007-516	Aquatic life	Turbidity:Ttube/TSS	2010	2015	5A
Credit River	Headwaters to Minnesota R	02	07020012-517	Aquatic life	Turbidity	2006	2010	5C
Dry Weather Creek	Headwaters to Chippewa R	06	07020005-509	Aquatic recreation	Fecal coliform	2006	2008	5C
Dutch Charlie Creek	Highwater Cr to Cottonwood R	06	07020008-517	Aquatic recreation	Fecal coliform	2009	2012	5A
Dutch Charlie Creek	Highwater Cr to Cottonwood R	06	07020008-517	Aquatic life	Turbidity:TSS	2011	2015	5A
Dutch Charlie Creek	Headwaters to Highwater Cr	06	07020008-518	Aquatic life	Fish IBI	2015	2019	5A
Dutch Charlie Creek	Headwaters to Highwater Cr	06	07020008-518	Aquatic life	Turbidity:TTube	2011	2015	5A

Dutch Creek	Headwaters to Hall Lk	06	07020009-527	Aquatic recreation	Fecal coliform	2007	2011	5A
Dutch Creek	Headwaters to Hall Lk	06	07020009-527	Aquatic life	Turbidity:Ttube/TSS	2008	2012	5A
Echo Creek	Unnamed Cr to Minnesota River	06	07020004-604	Aquatic life	Fish IBI	2012	2017	5C
Elm Creek	S Fk Elm Cr to Cedar Cr	06	07020009-522	Aquatic recreation	Fecal coliform	2012	2017	5A
Elm Creek	S Fk Elm Cr to Cedar Cr	06	07020009-522	Aquatic life	Turbidity:TTube	2012	2017	5A
Elm Creek	Cedar Cr to Blue Earth R	96	07020009-502	Aquatic recreation	Fecal coliform	2004	2008	5A
Elm Creek	Cedar Cr to Blue Earth R	06	07020009-502	Aquatic life	Fish IBI	2012	2017	5A
Elm Creek	Cedar Cr to Blue Earth R	96	07020009-502	Aquatic life	Turbidity	2005	2009	5A
Emily Creek	Headwaters to Lac Qui Parle Lk	04	07020001-528	Aquatic life	Fish IBI	2012	2017	5C
Florida Creek	SD Border to W Br Lac Qui Parle R	06	07020003-521	Aquatic recreation	Fecal coliform	2012	2016	5A
Florida Creek	SD Border to W Br Lac Qui Parle R	06	07020003-521	Aquatic life	Fish IBI	2016	2021	5A
Florida Creek	SD Border to W Br Lac Qui Parle R	06	07020003-521	Aquatic life	Turbidity	2014	2018	5A
Hawk Creek	Headwaters (Foot Lk) to T119 R35W S18 south line	06	07020004-627	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Hawk Creek	T119 R35W S19 north line to T118 R37W S31 south line	06	07020004-508	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Hawk Creek	T117 R37W S6 north line to Chetomba Creek	06	07020004-510	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Hawk Creek	Chetomba Cr to Unnamed Cr	06	07020004-591	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Hawk Creek	Unnamed Cr to Unnamed Cr	06	07020004-568	Aquatic recreation	Fecal coliform	2009	2013	5A
Hawk Creek	Unnamed Cr to Unnamed Cr	06	07020004-568	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Hawk Creek	Unnamed Cr to Unnamed Cr	06	07020004-568	Aquatic life	Turbidity:TSS	2009	2013	5A
Hawk Creek	Unnamed Cr to Unnamed Cr	06	07020004-569	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Hawk Creek	Unnamed Cr to Spring Cr	06	07020004-570	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Hawk Creek	Spring Cr to Minnesota R	06	07020004-587	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Hawk Creek	Spring Cr to Minnesota R	04	07020004-587	Aquatic life	Turbidity:TSS	2004	2009	5A
High Island Creek	JD 15 to Unnamed Cr	02	07020012-535	Aquatic recreation	Fecal coliform	2002	2008	5A
High Island Creek	JD 15 to Unnamed Cr	06	07020012-535	Aquatic life	Turbidity	2006	2009	5A
High Island Creek	Unnamed Cr to Minnesota R	06	07020012-589	Aquatic recreation	Fecal coliform	2006	2009	5A
High Island Creek	Unnamed Cr to Minnesota R	04	07020012-589	Aquatic life	Fish IBI	2012	2017	5A
High Island Creek	Unnamed Cr to Minnesota R	06	07020012-589	Aquatic life	Turbidity	2006	2009	5A
High Island Ditch 2	Unnamed Cr to High Island Cr	06	07020012-588	Aquatic life	Turbidity:TTube	2006	2009	5C
Highwater Creek	Double Lk Outlet to Dutch Charlie Cr	06	07020008-519	Aquatic life	Fish IBI	2015	2019	5C
Judicial Ditch 3	Headwaters to Elm Cr	06	07020009-505	Aquatic recreation	Fecal coliform	2007	2011	5A
Judicial Ditch 3	Headwaters to Elm Cr	96	07020009-505	Aquatic life	Low Oxygen[2,5]	2004	2007	5A
Judicial Ditch 3	Headwaters to Elm Cr	02	07020009-505	Aquatic life	Turbidity:TSS	2005	2009	5A
Judicial Ditch 8	Unnamed Cr to Unnamed Ditch	04	07020005-546	Aquatic life	Fish IBI	2012	2017	5C
Judicial Ditch 22	Unnamed Cr to Silver Cr	06	07020012-629	Aquatic recreation	Fecal coliform	2011	2018	5C
Judicial Ditch 29	T111 R44W S16 south line to S Br Yellow Medicine R	06	07020004-550	Aquatic recreation	Fecal coliform	2007	2011	5C
Lac Qui Parle River	W Br Lac Qui Parle R to Tenmile Cr	06	07020003-501	Aquatic recreation	Fecal coliform	2012	2016	5A
Lac Qui Parle River	W Br Lac Qui Parle R to Tenmile Cr	94	07020003-501	Aquatic life	Low Oxygen[2,5]	2004	2008	5A
Lac Qui Parle River	W Br Lac Qui Parle R to Tenmile Cr	98	07020003-501	Aquatic	Mercury[1]FCA	1999	2011	5A

				consumption				
Lac Qui Parle River	W Br Lac Qui Parle R to Tenmile Cr	06	07020003-501	Aquatic life	Turbidity	2014	2018	5A
Lac Qui Parle River	Tenmile Cr to Minnesota R	98	07020003-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lac Qui Parle River	Headwaters (Lk Hendricks) to Lazarus Cr (Canby Cr)	06	07020003-505	Aquatic recreation	Fecal coliform	2012	2016	5A
Lac Qui Parle River	Headwaters (Lk Hendricks) to Lazarus Cr (Canby Cr)	06	07020003-505	Aquatic life	Fish IBI	2016	2021	5A
Lac Qui Parle River	Headwaters (Lk Hendricks) to Lazarus Cr (Canby Cr)	98	07020003-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Lac Qui Parle River	Headwaters (Lk Hendricks) to Lazarus Cr (Canby Cr)	06	07020003-505	Aquatic life	Turbidity	2014	2018	5A
Lac Qui Parle River	Lazarus Cr (Canby Cr) to W Br Lac Qui Parle R	06	07020003-506	Aquatic recreation	Fecal coliform	2012	2016	5A
Lac Qui Parle River	Lazarus Cr (Canby Cr) to W Br Lac Qui Parle R	98	07020003-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Lac Qui Parle River	Lazarus Cr (Canby Cr) to W Br Lac Qui Parle R	06	07020003-506	Aquatic life	Turbidity	2014	2018	5A
Lac Qui Parle River, West Branch	Lost Cr to Florida Cr	06	07020003-516	Aquatic recreation	Fecal coliform	2012	2016	5C
Lac Qui Parle River, West Branch	Unnamed Ditch to Lac Qui Parle R	06	07020003-513	Aquatic recreation	Fecal coliform	2012	2016	5A
Lac Qui Parle River, West Branch	Unnamed Ditch to Lac Qui Parle R	06	07020003-513	Aquatic life	Low Oxygen[2,5]	2006	2008	5A
Lazarus Creek (Canby Creek)	Canby Cr to Lac Qui Parle R	06	07020003-508	Aquatic recreation	Fecal coliform	2012	2018	5A
Lazarus Creek (Canby Creek)	Canby Cr to Lac Qui Parle R	06	07020003-508	Aquatic life	Turbidity	2014	2018	5A
Lazarus Creek	SD Border to Canby Cr	06	07020003-509	Aquatic life	Fish IBI	2016	2021	5C
Le Sueur River	Maple R to Blue Earth R	02	07020011-501	Aquatic consumption	Mercury[1] Water Column	2002	2015	5A
Le Sueur River	Maple R to Blue Earth R	02	07020011-501	Aquatic consumption	PCB Water Column	2002	2015	5A
Le Sueur River	Maple R to Blue Earth R	02	07020011-501	Aquatic life	Turbidity	2004	2009	5A
Lily Creek	Headwaters to Center Cr	06	07020009-525	Aquatic recreation	Fecal coliform	2007	2011	5A
Lily Creek	Headwaters to Center Cr	06	07020009-525	Aquatic life	Turbidity:TTube /Turbidity	2008	2012	5A
Unnamed Creek (Little Beauford Ditch)	Headwaters to Cobb R	04	07020011-503	Aquatic recreation	Fecal coliform	2004	2008	5A
Unnamed Creek (Little Beauford Ditch)	Headwaters to Cobb R	02	07020011-503	Aquatic consumption	Mercury[1] Water Column	2002	2015	5A
Unnamed Creek (Little Beauford Ditch)	Headwaters to Cobb R	02	07020011-503	Aquatic consumption	PCB Water Column	2002	2015	5A
Unnamed Creek (Little Beauford Ditch)	Headwaters to Cobb R	02	07020011-503	Aquatic life	Turbidity	2005	2009	5A
Little Chippewa River	Unnamed Cr to Chippewa R	06	07020005-530	Aquatic life	Fish IBI	2015	2021	5C
Little Cobb River	Bull Run Cr to Cobb R	02	07020011-504	Aquatic life	Fish IBI	2012	2017	5A
Little Cobb River	Bull Run Cr to Cobb R	02	07020011-504	Aquatic consumption	Mercury[1] Water Column	2002	2015	5A
Little Cobb River	Bull Run Cr to Cobb R	02	07020011-504	Aquatic life	Turbidity	2006	2009	5A
Little Cottonwood River	Headwaters to Minnesota R	06	07020007-515	Aquatic recreation	Fecal coliform	2013	2017	5A

Little Cottonwood River	Headwaters to Minnesota R	06	07020007-515		Aquatic life	Turbidity:TSS	2006	2009	5A
Minneopa Creek	T108 R28W S23 south line to Minnesota R	06	07020007-534		Aquatic life	Turbidity:TTube	2008	2012	5C
Minnesota River	Big Stone Lk to Whetstone R	98	07020001-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	Whetstone R to Yellow Bank R	98	07020001-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	Yellow Bank R to Marsh Lk	98	07020001-511		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	Marsh Lk to Lac Qui Parle Lk	98	07020001-516		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	Lac Qui Parle Lk (above Emily Cr)	92	07020001-501		Aquatic life	Ammonia[2,4,5]	2004	2008	5C
Minnesota River	Lac Qui Parle Lk to Lac Qui Parle R	98	07020001-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	Lac Qui Parle R to Chippewa R	98	07020004-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	Chippewa R to Stoney Run Cr	94	07020004-501		Aquatic recreation	Fecal coliform	2008	2012	5A
Minnesota River	Chippewa R to Stoney Run Cr	98	07020004-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Chippewa R to Stoney Run Cr	02	07020004-501		Aquatic life	Turbidity:TSS	2004	2009	5A
Minnesota River	Stony Run Cr to Palmer Cr	98	07020004-519		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	Palmer Cr to Granite Falls City northern boundary	98	07020004-583		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	Granite Falls City northern boundary to Granite Falls Dam	06	07020004-575		Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Minnesota River	Granite Falls Dam to 8th Ave/Baldwin St bridge	98	07020004-612	514	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	8th Ave/Baldwin St bridge to Minnesota Falls Dam	98	07020004-613	514	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Minnesota River	Minnesota Falls Dam to Hazel Cr	98	07020004-515		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Minnesota Falls Dam to Hazel Cr	02	07020004-515		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Hazel Cr to Yellow Medicine R	98	07020004-516		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Hazel Cr to Yellow Medicine R	02	07020004-516		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Yellow Medicine R to Hawk Cr	98	07020004-517		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Yellow Medicine R to Hawk Cr	02	07020004-517		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Hawk Cr to Wood Lk Cr	98	07020004-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Hawk Cr to Wood Lk Cr	02	07020004-506		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Wood Lk Cr to Sacred Heart Cr	98	07020004-504		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Wood Lk Cr to Sacred Heart Cr	02	07020004-504		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Sacred Heart Cr to Timms Cr	98	07020004-507		Aquatic	Mercury[1]FCA	1999	2011	5A

					consumption				
Minnesota River	Sacred Heart Cr to Timms Cr	02	07020004-507		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Timms Cr to Redwood R	98	07020004-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Timms Cr to Redwood R	02	07020004-509		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Timms Cr to Redwood R	04	07020004-509		Aquatic life	Turbidity	2004	2009	5A
Minnesota River	Redwood R to Beaver Cr	98	07020004-511		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Redwood R to Beaver Cr	02	07020004-511		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Beaver Cr to Birch Coulee	98	07020007-514		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Beaver Cr to Birch Coulee	02	07020007-514		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Beaver Cr to Birch Coulee	02	07020007-514		Aquatic life	Turbidity	2004	2009	5A
Minnesota River	Birch Coulee to Redwood CSAH 11	98	07020007- 559	513	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Birch Coulee to Redwood CSAH 11	02	07020007- 559	513	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Redwood CSAH 11 to Wabasha Cr	98	07020007- 560	513	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Redwood CSAH 11 to Wabasha Cr	02	07020007- 560	513	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Wabasha Cr to Fort Ridgely Cr	98	07020007-512		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Wabasha Cr to Fort Ridgely Cr	02	07020007-512		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Fort Ridgely Cr to Spring Cr	98	07020007-511		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Fort Ridgely Cr to Spring Cr	02	07020007-511		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Spring Cr to Little Rock Cr	98	07020007-510		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Spring Cr to Little Rock Cr	02	07020007-510		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Little Rock Cr to Eightmile Cr	98	07020007-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Little Rock Cr to Eightmile Cr	02	07020007-509		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Eightmile Cr to Cottonwood R	98	07020007-508		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Eightmile Cr to Cottonwood R	02	07020007-508		Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Eightmile Cr to Cottonwood R	02	07020007-508		Aquatic life	Turbidity:TSS	2004	2009	5A
Minnesota River	Cottonwood R to Little Cottonwood R	98	07020007-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Cottonwood R to Little Cottonwood R	02	07020007-503		Aquatic consumption	PCB FCA	2002	2015	5A

Minnesota River	Cottonwood R to Little Cottonwood R	02	07020007-503	Aquatic life	Turbidity:TSS	2004	2009	5A
Minnesota River	Little Cottonwood R to Morgan Cr	98	07020007-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Little Cottonwood R to Morgan Cr	02	07020007-507	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Morgan Cr to Swan Lk Outlet	98	07020007-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Morgan Cr to Swan Lk Outlet	02	07020007-506	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Swan Lk Outlet to Minneopa Cr	98	07020007-505	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Minnesota River	Swan Lk Outlet to Minneopa Cr	98	07020007-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Swan Lk Outlet to Minneopa Cr	02	07020007-505	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Swan Lk Outlet to Minneopa Cr	02	07020007-505	Aquatic consumption	PCB Water Column	2002	2015	5A
Minnesota River	Swan Lk Outlet to Minneopa Cr	02	07020007-505	Aquatic life	Turbidity	2004	2009	5A
Minnesota River	Minneopa Cr to Blue Earth R	98	07020007-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Minneopa Cr to Blue Earth R	02	07020007-504	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Blue Earth R to Shahaska Cr	02	07020007-502	Aquatic recreation	Fecal coliform	2008	2012	5A
Minnesota River	Blue Earth R to Shahaska Cr	98	07020007-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Blue Earth R to Shahaska Cr	02	07020007-502	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Blue Earth R to Shahaska Cr	02	07020007-502	Aquatic life	Turbidity	2004	2009	5A
Minnesota River	Shahaska Cr to Rogers Cr	94	07020007-501	Aquatic recreation	Fecal coliform	2008	2011	5A
Minnesota River	Shahaska Cr to Rogers Cr	02	07020007-501	Aquatic consumption	Mercury[1] Water Column	2002	2015	5A
Minnesota River	Shahaska Cr to Rogers Cr	98	07020007-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Shahaska Cr to Rogers Cr	02	07020007-501	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Shahaska Cr to Rogers Cr	02	07020007-501	Aquatic consumption	PCB Water Column	2002	2015	5A
Minnesota River	Shahaska Cr to Rogers Cr	02	07020007-501	Aquatic life	Turbidity	2004	2009	5A
Minnesota River	Rogers Cr to Cherry Cr	98	07020012-524	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Rogers Cr to Cherry Cr	02	07020012-524	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Cherry Cr to Le Sueur Cr	02	07020012-507	Aquatic recreation	Fecal coliform	2010	2014	5A
Minnesota River	Cherry Cr to Le Sueur Cr	98	07020012-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Cherry Cr to Le Sueur Cr	02	07020012-507	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Le Sueur Cr to Rush R	98	07020012-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Le Sueur Cr to Rush R	02	07020012-504	Aquatic	PCB FCA	2002	2015	5A

				consumption				
Minnesota River	Rush R to High Island Cr	94	07020012-503	Aquatic recreation	Fecal coliform	2008	2011	5A
Minnesota River	Rush R to High Island Cr	98	07020012-503	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Minnesota River	Rush R to High Island Cr	98	07020012-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Rush R to High Island Cr	02	07020012-503	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Rush R to High Island Cr	02	07020012-503	Aquatic life	Turbidity	2004	2009	5A
Minnesota River	High Island Cr to Bevens Cr	02	07020012-502	Aquatic recreation	Fecal coliform	2008	2015	5A
Minnesota River	High Island Cr to Bevens Cr	98	07020012-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	High Island Cr to Bevens Cr	02	07020012-502	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Bevens Cr to Sand Cr	02	07020012-501	Aquatic recreation	Fecal coliform	2008	2015	5A
Minnesota River	Bevens Cr to Sand Cr	98	07020012-501	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Minnesota River	Bevens Cr to Sand Cr	98	07020012-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Bevens Cr to Sand Cr	02	07020012-501	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Bevens Cr to Sand Cr	96	07020012-501	Aquatic life	Turbidity	2008	2011	5A
Minnesota River	Sand Cr to Carver Cr	98	07020012-532	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Minnesota River	Sand Cr to Carver Cr	98	07020012-532	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Sand Cr to Carver Cr	02	07020012-532	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Carver Creek to RM 22	98	07020012-506	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Minnesota River	Carver Creek to RM 22	98	07020012-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	Carver Creek to RM 22	02	07020012-506	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	Carver Creek to RM 22	96	07020012-506	Aquatic life	Turbidity	2008	2011	5A
Minnesota River	RM 22 to Mississippi R	94	07020012-505	Aquatic recreation	Fecal coliform	2008	2011	5A
Minnesota River	RM 22 to Mississippi R	98	07020012-505	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Minnesota River	RM 22 to Mississippi R	98	07020012-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Minnesota River	RM 22 to Mississippi R	02	07020012-505	Aquatic consumption	PCB FCA	2002	2015	5A
Minnesota River	RM 22 to Mississippi R	96	07020012-505	Aquatic life	Turbidity	2008	2011	5A
Nine Mile Creek	Headwaters to Minnesota R	04	07020012-518	Aquatic life	Chloride	2005	2009	5A
Nine Mile Creek	Headwaters to Minnesota R	04	07020012-518	Aquatic life	Fish IBI	2005	2009	5A
Nine Mile Creek	Headwaters to Minnesota R	02	07020012-518	Aquatic life	Turbidity	2005	2009	5A
Perch Creek	Headwaters to Spring Cr	06	07020010-524	Aquatic life	Turbidity:TTube	2008	2012	5C
Plum Creek	Headwaters to Cottonwood R	06	07020008-516	Aquatic recreation	Fecal coliform	2009	2012	5A
Plum Creek	Headwaters to Cottonwood R	06	07020008-516	Aquatic life	Turbidity:TSS	2011	2015	5A

Pomme de Terre River	Stalker Lk to Tenmile Lk	06	07020002-514	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Pomme de Terre River	Tenmile Lk to Pelican Cr	06	07020002-505	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Pomme de Terre River	Pelican Cr to Pomme de Terre Lk	06	07020002-504	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Pomme de Terre River	Pomme de Terre Lk to Muddy Cr	06	07020002-502	Aquatic life	Fish IBI	2015	2019	5A
Pomme de Terre River	Pomme de Terre Lk to Muddy Cr	06	07020002-502	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Pomme de Terre River	Muddy Cr to Minnesota R (Marsh Lk)	94	07020002-501	Aquatic recreation	Fecal coliform	2006	2010	5A
Pomme de Terre River	Muddy Cr to Minnesota R (Marsh Lk)	06	07020002-501	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Pomme de Terre River	Muddy Cr to Minnesota R (Marsh Lk)	02	07020002-501	Aquatic life	Turbidity	2006	2010	5A
Redwood River	Headwaters to Coon Cr	02	07020006-505	Aquatic life	Fish IBI	2012	2015	5A
Redwood River	Headwaters to Coon Cr	98	07020006-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Redwood River	Coon Cr to T110 R42W S20 north line	98	07020006-510	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Redwood River	T110 R42W S17 south line to T111 R42W S32 east line	98	07020006-513	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Redwood River	T111 R42W S33 west line to Threemile Cr	92	07020006-502	Aquatic life	Ammonia[2,4,5]	2004	2008	5A
Redwood River	T111 R42W S33 west line to Threemile Cr	04	07020006-502	Aquatic recreation	Fecal coliform	2004	2008	5A
Redwood River	T111 R42W S33 west line to Threemile Cr	02	07020006-502	Aquatic life	Fish IBI	2012	2015	5A
Redwood River	T111 R42W S33 west line to Threemile Cr	98	07020006-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Redwood River	T111 R42W S33 west line to Threemile Cr	02	07020006-502	Aquatic life	Turbidity:TSS	2006	2010	5A
Redwood River	Threemile Cr to Clear Cr	02	07020006-503	Aquatic life	Fish IBI	2012	2015	5A
Redwood River	Threemile Cr to Clear Cr	98	07020006-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Redwood River	Clear Cr to Redwood Lk	06	07020006-509	Aquatic recreation	Fecal coliform	2009	2012	5A
Redwood River	Clear Cr to Redwood Lk	98	07020006-509	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Redwood River	Clear Cr to Redwood Lk	02	07020006-509	Aquatic life	Turbidity:TSS	2006	2010	5A
Redwood River	Dam to Ramsey Cr	98	07020006-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Redwood River	Dam to Ramsey Cr	02	07020006-508	Aquatic life	Turbidity:TSS	2006	2010	5A
Redwood River	Ramsey Cr to Minnesota R	94	07020006-501	Aquatic recreation	Fecal coliform	2004	2008	5A
Redwood River	Ramsey Cr to Minnesota R	98	07020006-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Redwood River	Ramsey Cr to Minnesota R	04	07020006-501	Aquatic life	Turbidity	2004	2009	5A
Rice Creek	Headwaters to Maple R	06	07020011-531	Aquatic life	Fish IBI	2012	2017	5C
Riley Creek	Riley Lk to Minnesota R	02	07020012-511	Aquatic life	Turbidity	2005	2009	5C
Rogers Creek	Unnamed Cr to Minnesota R	04	07020007-547	Aquatic life	Fish IBI	2012	2017	5C
Rush River	S Br Rush R to Minnesota R	02	07020012-521	Aquatic recreation	Fecal coliform	2003	2008	5C
Sand Creek	Porter Cr to Minnesota R	04	07020012-513	Aquatic life	Fish IBI	2006	2010	5A
Sand Creek	Porter Cr to Minnesota R	02	07020012-513	Aquatic life	Turbidity	2006	2010	5A
Sevenmile Creek	T109 R27W S4 north line to Minnesota R	06	07020007-562	Aquatic recreation	Fecal coliform	2010	2015	5A
Sevenmile Creek	T109 R27W S4 north line to Minnesota R	06	07020007-562	Aquatic life	Turbidity:TSS /Turbidity	2010	2015	5A

Sevenmile Creek	CD 13A to CD 46A	06	07020007-564	Aquatic recreation	Fecal coliform	2010	2015	5A
Sevenmile Creek	CD 13A to CD 46A	06	07020007-564	Aquatic life	Turbidity: Turbidity/TSS	2010	2015	5A
Shakopee Creek	Shakopee Lk to Chippewa R	06	07020005-559	Aquatic recreation	Fecal coliform	2006	2008	5A
Shakopee Creek	Shakopee Lk to Chippewa R	06	07020005-559	Aquatic life	Fish IBI	2015	2021	5A
Shakopee Creek	Shakopee Lk to Chippewa R	06	07020005-559	Aquatic life	Turbidity	2009	2013	5A
Silver Creek	CD 32 to Bevens Cr	02	07020012-523	Aquatic recreation	Fecal coliform	2003	2007	5A
Silver Creek	CD 32 to Bevens Cr	06	07020012-523	Aquatic life	Turbidity	2011	2018	5A
Sleepy Eye Creek	Headwaters to Cottonwood R	06	07020008-512	Aquatic recreation	Fecal coliform	2009	2012	5A
Sleepy Eye Creek	Headwaters to Cottonwood R	04	07020008-512	Aquatic life	Fish IBI	2012	2017	5A
Sleepy Eye Creek	Headwaters to Cottonwood R	06	07020008-512	Aquatic life	Turbidity:TSS	2011	2015	5A
Spring Creek	Headwaters to Yellow Medicine R	04	07020004-538	Aquatic life	Fish IBI	2012	2017	5C
St James Creek	Headwaters to Kansas Lk	02	07020010-528	Aquatic life	Turbidity:TSS	2005	2009	5C
Stony Run Creek	Unnamed Cr to Minnesota R	04	07020001-531	Aquatic life	Fish IBI	2012	2017	5C
Swan Lake Outlet	Swan Lk to Minnesota R	06	07020007-520	Aquatic life	Fish IBI	2012	2017	5C
Tenmile Creek	Headwaters to Lac Qui Parle R	06	07020003-511	Aquatic recreation	Fecal coliform	2012	2016	5A
Tenmile Creek	Headwaters to Lac Qui Parle R	04	07020003-511	Aquatic life	Fish IBI	2012	2017	5A
Threemile Creek	Headwaters to Redwood R	06	07020006-504	Aquatic recreation	Fecal coliform	2009	2012	5A
Threemile Creek	Headwaters to Redwood R	04	07020006-504	Aquatic life	Turbidity:TSS	2006	2010	5A
Unnamed Creek	Headwaters to Freeborn Lk	06	07020005-901	Aquatic life	Turbidity:TTube	2009	2013	5C
Unnamed Creek	Unnamed Cr to Unnamed Cr	04	07020004-562	Aquatic life	Fish IBI	2012	2017	5C
Unnamed Creek	Unnamed Cr to Unnamed Cr	04	07020004-566	Aquatic life	Fish IBI	2012	2017	5C
Unnamed Creek	Unnamed Cr to Unnamed Ditch	06	07020007-550	Aquatic life	Fish IBI	2012	2017	5C
Unnamed Creek	Unnamed Cr to Unnamed Ditch	06	07020005-574	Aquatic life	Turbidity:TTube	2009	2013	5C
Unnamed Creek (East Creek)	Unnamed Cr to Minnesota R	06	07020012-581	Aquatic recreation	Fecal coliform	2006	2009	5A
Unnamed Creek (East Creek)	Unnamed Cr to Minnesota R	04	07020012-581	Aquatic life	Fish IBI	2007	2010	5A
Unnamed Creek	Unnamed Cr to Unnamed Cr	04	07020012-579	Aquatic life	Fish IBI	2007	2010	5C
Unnamed Creek	Unnamed Cr to Unnamed Cr	06	07020004-597	Aquatic recreation	Fecal coliform	2007	2011	5C
Unnamed Creek	Unnamed Cr to S Br Yellow Medicine R	06	07020004-599	Aquatic recreation	Fecal coliform	2007	2011	5C
Unnamed Creek	CD 34 to CD 35, S Br Yellow Medicine R	06	07020004-600	Aquatic recreation	Fecal coliform	2007	2011	5C
Unnamed Creek	Headwaters to Carver Cr	06	07020012-526	Aquatic recreation	Fecal coliform	2011	2018	5C
Unnamed Creek	Headwaters to Minnesota R	06	07020012-528	Aquatic recreation	Fecal coliform	2011	2018	5C
Unnamed Creek	Headwaters to T120 R37W S6 west line	06	07020005-561	Aquatic recreation	Fecal coliform	2006	2008	5A
Unnamed Creek	Headwaters to T120 R37W S6 west line	06	07020005-561	Aquatic life	Low Oxygen[2,5]	2016	2021	5A
Unnamed Creek	Headwaters to S Fk Watonwan R	06	07020010-520	Aquatic life	Fish IBI	2012	2017	5C
Unnamed Ditch	Burandt Lk to Unnamed Cr	06	07020012-527	Aquatic recreation	Fecal coliform	2011	2018	5A
Unnamed Ditch	Burandt Lk to Unnamed Cr	06	07020012-527	Aquatic life	Low Oxygen[2,5]	2011	2018	5A
Unnamed Ditch	Chetomba Cr to Spring Cr	06	07020004-589	Aquatic life	Turbidity:TSS	2009	2013	5A
Unnamed Ditch (Judicial Ditch 29)	Headwaters to CD 29	06	07020005-566	Aquatic recreation	Fecal coliform	2006	2008	5C
Watonwan River	Headwaters to N Fk Watonwan R	06	07020010-514	Aquatic recreation	Fecal coliform	2007	2011	5A
Watonwan River	Headwaters to N Fk Watonwan R	04	07020010-514	Aquatic life	Fish IBI	2012	2017	5A
Watonwan River	Headwaters to N Fk Watonwan R	06	07020010-514	Aquatic life	Turbidity	2008	2012	5A
Watonwan River	N Fk Watonwan R to Butterfield Cr	06	07020010-512	Aquatic recreation	Fecal coliform	2007	2011	5A
Watonwan River	N Fk Watonwan R to Butterfield Cr	06	07020010-512	Aquatic life	Turbidity	2008	2012	5A
Watonwan River	Butterfield Cr to S Fk Watonwan R	06	07020010-511	Aquatic recreation	Fecal coliform	2007	2011	5A

Watonwan River	Butterfield Cr to S Fk Watonwan R	04	07020010-511		Aquatic life	Fish IBI	2012	2017	5A
Watonwan River	Butterfield Cr to S Fk Watonwan R	06	07020010-511		Aquatic life	Turbidity	2008	2012	5A
Watonwan River	Perch Cr to Blue Earth R	94	07020010-501		Aquatic recreation	Fecal coliform	2004	2008	5A
Watonwan River	Perch Cr to Blue Earth R	02	07020010-501		Aquatic consumption	Mercury[1] Water Column	2002	2015	5A
Watonwan River	Perch Cr to Blue Earth R	02	07020010-501		Aquatic life	Turbidity:TSS	2005	2009	5A
Watonwan River, North Fork	Headwaters to Watonwan R	06	07020010-513		Aquatic life	Turbidity:TTube	2008	2012	5C
Watonwan River, South Fork	Unnamed Cr to Willow Cr	06	07020010-518		Aquatic life	Turbidity:TTube	2008	2012	5C
Watonwan River, South Fork	Willow Cr to Watonwan R	06	07020010-517		Aquatic recreation	Fecal coliform	2007	2011	5A
Watonwan River, South Fork	Willow Cr to Watonwan R	06	07020010-517		Aquatic life	Turbidity	2008	2012	5A
Willow Creek	Headwaters to S Fk Watonwan R	06	07020010-521		Aquatic life	Fish IBI	2012	2017	5C
Wood Lake Creek	Above Wood Lk Outlet	06	07020004-546		Aquatic life	Fish IBI	2012	2017	5C
Yellow Bank River, North Fork	SD Border to Yellow Bank R	06	07020001-510		Aquatic recreation	Fecal coliform	2017	2021	5C
Yellow Bank River, South Fork	SD Border to N Fk Yellow Bank R	06	07020001-526		Aquatic recreation	Fecal coliform	2017	2021	5C
Yellow Medicine River, South Branch	Headwaters to Yellow Medicine R	02	07020004-503		Aquatic life	Turbidity:TSS	2011	2015	5C
Yellow Medicine River	Headwaters to Mud Cr	98	07020004-584		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Yellow Medicine River	Mud Cr to S Br Yellow Medicine R	98	07020004-541		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Yellow Medicine River	S Br Yellow Medicine R to Spring Cr	98	07020004-513		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Yellow Medicine River	Spring Cr to Minnesota R	98	07020004-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Yellow Medicine River	Spring Cr to Minnesota R	02	07020004-502		Aquatic life	Turbidity	2004	2009	5A
Marsh	Lake or Reservoir	98		06-0001-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Artichoke	Lake or Reservoir	98		06-0002-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Long Tom	Lake or Reservoir	02		06-0029-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Big Stone	Lake or Reservoir	06		06-0152-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Madison	Lake or Reservoir	98		07-0044-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
George	Lake or Reservoir	02		07-0047-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Lura	Lake or Reservoir	02		07-0079-00	Aquatic recreation	Excess nutrients	2007	2011	5A
Lura	Lake or Reservoir	02		07-0079-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Loon	Lake or Reservoir	98		07-0096-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Crystal	Lake or Reservoir	06	07-0098-00	Aquatic recreation	Excess nutrients	2011	2015	5C
Hiniker Pond	Lake or Reservoir	98	07-0147-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sleepy Eye	Lake or Reservoir	02	08-0045-00	Aquatic recreation	Excess nutrients	2011	2015	5C
Riley	Lake or Reservoir	02	10-0002-00	Aquatic recreation	Excess nutrients	2005	2008	5A
Riley	Lake or Reservoir	02	10-0002-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Lotus	Lake or Reservoir	02	10-0006-00	Aquatic recreation	Excess nutrients	2005	2008	5A
Lotus	Lake or Reservoir	02	10-0006-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Lucy	Lake or Reservoir	02	10-0007-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Ann	Lake or Reservoir	02	10-0012-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Susan	Lake or Reservoir	98	10-0013-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Hazeltine	Lake or Reservoir	04	10-0014-00	Aquatic recreation	Excess nutrients	2006	2007	5C
Long	Lake or Reservoir	06	10-0016-00	Aquatic recreation	Excess nutrients	2015	2018	5C
Bavaria	Lake or Reservoir	06	10-0019-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Miller	Lake or Reservoir	02	10-0029-00	Aquatic recreation	Excess nutrients	2003	2007	5C
Gaystock	Lake or Reservoir	04	10-0031-00	Aquatic recreation	Excess nutrients	2006	2007	5C
Reitz	Lake or Reservoir	02	10-0052-00	Aquatic recreation	Excess nutrients	2003	2006	5C
Maria	Lake or Reservoir	04	10-0058-00	Aquatic recreation	Excess nutrients	2006	2007	5C
Waconia	Lake or Reservoir	98	10-0059-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Winkler	Lake or Reservoir	04	10-0066-00	Aquatic recreation	Excess nutrients	2006	2007	5C
Benton	Lake or Reservoir	02	10-0069-00	Aquatic recreation	Excess nutrients	2005	2009	5C
Rutz	Lake or Reservoir	06	10-0080-00	Aquatic recreation	Excess nutrients	2015	2018	5C
Burandt	Lake or Reservoir	04	10-0084-00	Aquatic recreation	Excess nutrients	2006	2007	5C
Hydes	Lake or Reservoir	02	10-0088-00	Aquatic recreation	Excess nutrients	2003	2007	5A
Hydes	Lake or Reservoir	04	10-0088-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5A
Goose	Lake or Reservoir	02	10-0089-00	Aquatic recreation	Excess nutrients	2003	2007	5C

Unnamed (Grace)	Lake or Reservoir	06	10-0218-00	Aquatic recreation	Excess nutrients	2013	2016	5C
Mountain	Lake or Reservoir	98	17-0003-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Alimagnet	Lake or Reservoir	02	19-0021-00	Aquatic recreation	Excess nutrients	2005	2009	5C
Orchard	Lake or Reservoir	98	19-0031-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Earley	Lake or Reservoir	02	19-0033-00	Aquatic recreation	Excess nutrients	2007	2011	5C
Fish	Lake or Reservoir	02	19-0057-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Fish	Lake or Reservoir	06	19-0057-00	Aquatic recreation	Excess nutrients	2017	2020	5A
Blackhawk	Lake or Reservoir	06	19-0059-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Unnamed (Schwanz)	Lake or Reservoir	06	19-0063-00	Aquatic recreation	Excess nutrients	2017	2020	5C
Maple	Lake or Reservoir	98	21-0079-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Chippewa	Lake or Reservoir	98	21-0145-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Whiskey	Lake or Reservoir	02	21-0216-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Christina	Lake or Reservoir	02	21-0375-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Bass	Lake or Reservoir	98	22-0074-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pelican	Lake or Reservoir	98	26-0002-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Barrett	Lake or Reservoir	98	26-0095-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pomme de Terre	Lake or Reservoir	06	26-0097-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Snelling	Lake or Reservoir	98	27-0001-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bush	Lake or Reservoir	98	27-0047-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bryant	Lake or Reservoir	02	27-0067-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Mitchell	Lake or Reservoir	02	27-0070-00	Aquatic recreation	Excess nutrients	2007	2011	5C
Round	Lake or Reservoir	02	27-0071-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Red Rock	Lake or Reservoir	02	27-0076-00	Aquatic recreation	Excess nutrients	2007	2011	5A
Red Rock	Lake or Reservoir	02	27-0076-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Staring	Lake or Reservoir	02	27-0078-00	Aquatic recreation	Excess nutrients	2007	2011	5A

Staring	Lake or Reservoir	98	27-0078-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Fish	Lake or Reservoir	02	32-0018-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Henderson	Lake or Reservoir	02	34-0116-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Eagle	Lake or Reservoir	98	34-0171-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Long	Lake or Reservoir	02	34-0192-00	Aquatic recreation	Excess nutrients	2007	2011	5A
Long	Lake or Reservoir	98	34-0192-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Andrew	Lake or Reservoir	98	34-0206-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Florida	Lake or Reservoir	98	34-0217-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Norway	Lake or Reservoir	98	34-0251-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lac Qui Parle	Lake or Reservoir	98	37-0046-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Washington	Lake or Reservoir	98	40-0117-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dead Coon	Lake or Reservoir	98	41-0021-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Benton	Lake or Reservoir	98	41-0043-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Benton	Lake or Reservoir	06	41-0043-00	Aquatic recreation	Excess nutrients	2012	2016	5A
Perch	Lake or Reservoir	02	41-0067-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Shaokatan	Lake or Reservoir	02	41-0089-00	Aquatic recreation	Excess nutrients	2003	2007	5A
Shaokatan	Lake or Reservoir	98	41-0089-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Hendricks	Lake or Reservoir	98	41-0110-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lady Slipper	Lake or Reservoir	06	42-0020-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
George	Lake or Reservoir	06	46-0024-00	Aquatic recreation	Excess nutrients	2016	2020	5C
Sisseton	Lake or Reservoir	06	46-0025-00	Aquatic recreation	Excess nutrients	2016	2020	5C
Budd	Lake or Reservoir	06	46-0030-00	Aquatic recreation	Excess nutrients	2016	2020	5A
Budd	Lake or Reservoir	02	46-0030-00	Aquatic consumption	PCB FCA	2002	2015	5A
Hall	Lake or Reservoir	06	46-0031-00	Aquatic recreation	Excess nutrients	2016	2020	5C
Amber	Lake or Reservoir	06	46-0034-00	Aquatic recreation	Excess nutrients	2016	2020	5C

Big Twin	Lake or Reservoir	02	46-0133-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Sewell	Lake or Reservoir	06	56-0408-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Stalker	Lake or Reservoir	02	56-0437-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Ten Mile	Lake or Reservoir	02	56-0613-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Scandinavian	Lake or Reservoir	98	61-0041-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Leven	Lake or Reservoir	02	61-0066-00	Aquatic recreation	Excess nutrients	2012	2015	5C
Gilchrist	Lake or Reservoir	02	61-0072-00	Aquatic recreation	Excess nutrients	2012	2015	5C
Reno	Lake or Reservoir	02	61-0078-00	Aquatic recreation	Excess nutrients	2012	2015	5C
Pelican	Lake or Reservoir	02	61-0111-00	Aquatic recreation	Excess nutrients	2012	2015	5C
Ann	Lake or Reservoir	06	61-0122-00	Aquatic recreation	Excess nutrients	2014	2018	5C
Strandness	Lake or Reservoir	06	61-0128-00	Aquatic recreation	Excess nutrients	2014	2018	5C
Minnewaska	Lake or Reservoir	98	61-0130-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Signalness	Lake or Reservoir	98	61-0149-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Malmedal	Lake or Reservoir	02	61-0162-00	Aquatic recreation	Excess nutrients	2012	2015	5C
Emily	Lake or Reservoir	02	61-0180-00	Aquatic recreation	Excess nutrients	2012	2015	5C
Redwood	Lake or Reservoir	98	64-0058-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cleary	Lake or Reservoir	98	70-0022-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lower Prior	Lake or Reservoir	02	70-0026-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
McMahon	Lake or Reservoir	02	70-0050-00	Aquatic recreation	Excess nutrients	2008	2012	5C
Spring	Lake or Reservoir	02	70-0054-00	Aquatic recreation	Excess nutrients	2004	2008	5A
Spring	Lake or Reservoir	98	70-0054-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Fish	Lake or Reservoir	02	70-0069-00	Aquatic recreation	Excess nutrients	2007	2011	5A
Fish	Lake or Reservoir	06	70-0069-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Upper Prior	Lake or Reservoir	02	70-0072-00	Aquatic recreation	Excess nutrients	2004	2008	5A
Upper Prior	Lake or Reservoir	02	70-0072-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5A

Dean	Lake or Reservoir	06			70-0074-00	Aquatic recreation	Excess nutrients	2017	2020	5C
Pike	Lake or Reservoir	02			70-0076-00	Aquatic recreation	Excess nutrients	2007	2011	5C
Cedar	Lake or Reservoir	02			70-0091-00	Aquatic recreation	Excess nutrients	2008	2012	5A
Cedar	Lake or Reservoir	98			70-0091-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
O'Dowd	Lake or Reservoir	02			70-0095-00	Aquatic recreation	Excess nutrients	2013	2017	5A
O'Dowd	Lake or Reservoir	98			70-0095-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Thole(Schneider)	Lake or Reservoir	02			70-0120-00	Aquatic recreation	Excess nutrients	2007	2011	5C
Oliver	Lake or Reservoir	02			76-0146-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Del Clark	Lake or Reservoir	04			87-0180-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
ST. CROIX RIVER BASIN										
Ann River	Headwaters (Ann Lk) to Snake R	02	07030004-511			Aquatic life	Fish IBI	2007	2012	5C
Browns Creek	T30 R21W S12 north line to T30 R21W S13 east line	02	07030005-587	519		Aquatic life	Fish IBI	2006	2009	5A
Browns Creek	T30 R21W S12 north line to T30 R21W S13 east line	04	07030005-587	519		Aquatic life	Invertebrate IBI	2006	2009	5A
Dry Run	Dry Run to Unnamed Cr	06	07030004-537			Aquatic life	Invertebrate IBI	2007	2012	5C
Goose Creek	Headwaters (Goose Lk) to St Croix R	02	07030005-510			Aquatic life	Fish IBI	2006	2012	5A
Goose Creek	Headwaters (Goose Lk) to St Croix R	04	07030005-510			Aquatic life	Invertebrate IBI	2006	2012	5A
Grindstone River, North Branch	Headwaters to Grindstone Lk	02	07030003-541			Aquatic recreation	Fecal coliform	2004	2007	5C
Grindstone River, North Branch	T42 R21W S33 north line to Grindstone R	02	07030003-544			Aquatic recreation	Fecal coliform	2004	2007	5C
Grindstone River, South Branch	Headwaters to Grindstone R	02	07030003-516			Aquatic recreation	Fecal coliform	2004	2007	5A
Grindstone River, South Branch	Headwaters to Grindstone R	02	07030003-516			Aquatic life	Fish IBI	2004	2007	5A
Grindstone River	Grindstone Reservoir to Kettle R	96	07030003-501			Aquatic recreation	Fecal coliform	2004	2007	5A
Grindstone River	Grindstone Reservoir to Kettle R	04	07030003-501			Aquatic life	Fish IBI	2004	2007	5A
Groundhouse River	Headwaters to S Fk Groundhouse R	02	07030004-513			Aquatic recreation	Fecal coliform	2003	2007	5A
Groundhouse River	Headwaters to S Fk Groundhouse R	02	07030004-513			Aquatic life	Fish IBI	2003	2007	5A
Groundhouse River	Headwaters to S Fk Groundhouse R	04	07030004-513			Aquatic life	Invertebrate IBI	2003	2007	5A
Groundhouse River, South Fork	Headwaters to Groundhouse R	04	07030004-539			Aquatic life	Invertebrate IBI	2003	2007	5C
Kettle River	Headwaters to W Br Kettle R	98	07030003-511			Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	W Br Kettle R to Dead Moose R	98	07030003-529			Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	Dead Moose R to Gillespie Bk	98	07030003-510			Aquatic	Mercury[1]FCA	1999	2011	5C

					consumption				
Kettle River	Gillespie Bk to Split Rock R	98	07030003-508		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	Split Rock R to Carlton/Pine County Line	98	07030003-551	507	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	Carlton/Pine County Line to Birch Cr	98	07030003-552	507	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	Birch Cr to Moose Horn R	98	07030003-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	Moose Horn R to Willow R	98	07030003-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	Willow R to Pine R	98	07030003-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	Pine R to Dam (at Sandstone)	98	07030003-528		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	Dam (at Sandstone) to Skunk Cr	98	07030003-519		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River (Below Dam)	Skunk Cr to Grindstone R	98	07030003-517		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kettle River	Grindstone R to St Croix R	98	07030003-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Knife River	Dry Run to Knife Lk	02	07030004-549		Aquatic life	Fish IBI	2007	2012	5A
Knife River	Dry Run to Knife Lk	04	07030004-549		Aquatic life	Invertebrate IBI	2007	2012	5A
Mission Creek	Unnamed Lk (58-00173) to T39 R21W S31 west line	02	07030004-547		Aquatic life	Fish IBI	2007	2012	5A
Mission Creek	Unnamed Lk (58-00173) to T39 R21W S31 west line	04	07030004-547		Aquatic life	Invertebrate IBI	2007	2012	5A
Mud Creek (County Ditch 10)	Headwaters to Snake R	02	07030004-504		Aquatic life	Fish IBI	2007	2012	5A
Mud Creek (County Ditch 10)	Headwaters to Snake R	04	07030004-504		Aquatic life	Invertebrate IBI	2007	2012	5A
Pokegama Creek	E Pokegama Cr to Unnamed Cr	04	07030004-532		Aquatic life	Invertebrate IBI	2007	2014	5C
Rock Creek	Rock Lk to St Croix R	02	07030005-584	508	Aquatic life	Fish IBI	2007	2015	5A
Rock Creek	Rock Lk to St Croix R	04	07030005-584	508	Aquatic life	Invertebrate IBI	2007	2015	5A
Rush Creek	Rush Lk to St. Croix R	02	07030005-509		Aquatic life	Fish IBI	2005	2011	5A
Rush Creek	Rush Lk to St. Croix R	04	07030005-509		Aquatic life	Invertebrate IBI	2005	2011	5A
Snake River	Headwaters to Hay Cr	02	07030004-508		Aquatic life	Fish IBI	2007	2012	5A
Snake River	Headwaters to Hay Cr	98	07030004-508		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Snake River	Hay Cr to Chelsey Bk	98	07030004-523		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Snake River	Chelsey Bk to Knife R	98	07030004-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Snake River	Knife R to Fish Lake Outlet	98	07030004-525		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Snake River	Fish Lk Outlet to Groundhouse R	98	07030004-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Snake River	Groundhouse R to Mud Cr	98	07030004-524		Aquatic	Mercury[1]FCA	1999	2011	5C

				consumption				
Snake River	Mud Cr to Mission Cr	98	07030004-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Snake River	Mission Cr to St. Croix R	98	07030004-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Spring Brook	Headwaters to Snake R	02	07030004-515	Aquatic life	Fish IBI	2007	2012	5C
St. Croix River	MN/WI border to Upper Tamarack R	98	07030001-521	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	MN/WI border to Upper Tamarack R	06	07030001-521	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Upper Tamarack R to Yellow R (WI)	98	07030001-508	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Upper Tamarack R to Yellow R (WI)	06	07030001-508	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Yellow R (WI) to Lower Tamarack R	98	07030001-507	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Yellow R (WI) to Lower Tamarack R	06	07030001-507	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Lower Tamarack R to Crooked Cr	98	07030001-506	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Lower Tamarack R to Crooked Cr	06	07030001-506	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Crooked Cr to Clam R	98	07030001-505	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Crooked Cr to Clam R	06	07030001-505	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Clam R to Sand Cr	98	07030001-504	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Clam R to Sand Cr	06	07030001-504	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Sand Cr to Bear Cr	98	07030001-503	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Sand Cr to Bear Cr	06	07030001-503	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Bear Cr to Kettle R	98	07030001-502	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Bear Cr to Kettle R	06	07030001-502	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Kettle R to Snake R	98	07030001-501	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Kettle R to Snake R	06	07030001-501	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Snake R to Wood R	98	07030005-507	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Snake R to Wood R	06	07030005-507	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Wood R to Rock Cr	98	07030005-515	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Wood R to Rock Cr	06	07030005-515	Aquatic consumption	PCB FCA	2006	2021	5A

St. Croix River	Rock Cr to Rush Cr	98	07030005-506	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Rock Cr to Rush Cr	06	07030005-506	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Rush Cr to Goose Cr	98	07030005-516	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Rush Cr to Goose Cr	06	07030005-516	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Goose Cr to Sunrise R	98	07030005-517	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Goose Cr to Sunrise R	06	07030005-517	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Sunrise R to Trade R	98	07030005-505	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Sunrise R to Trade R	06	07030005-505	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Trade R to Taylors Falls Dam	98	07030005-518	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Trade R to Taylors Falls Dam	06	07030005-518	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Taylors Falls Dam to Apple R (WI)	98	07030005-513	Aquatic consumption	Mercury1FCA	1999	2011	5A
St. Croix River	Taylors Falls Dam to Apple R (WI)	06	07030005-513	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Apple R (WI) to Willow R	98	07030005-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
St. Croix River	Apple R (WI) to Willow R	06	07030005-504	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Willow R to Kinnickinnic R (WI)	98	07030005-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
St. Croix River	Willow R to Kinnickinnic R (WI)	06	07030005-503	Aquatic consumption	PCB FCA	2006	2021	5A
St. Croix River	Kinnickinnic R (WI) to Mississippi R	98	07030005-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
St. Croix River	Kinnickinnic R (WI) to Mississippi R	06	07030005-502	Aquatic consumption	PCB FCA	2006	2021	5A
Sunrise River, North Branch	Headwaters to Sunrise R	94	07030005-501	Aquatic recreation	Fecal coliform	2002	2005	5A
Sunrise River, North Branch	Headwaters to Sunrise R	02	07030005-501	Aquatic life	Fish IBI	2006	2010	5A
Sunrise River, North Branch	Headwaters to Sunrise R	04	07030005-501	Aquatic life	Invertebrate IBI	2006	2010	5A
Sunrise River	Pool 3 to Kost Dam Reservoir	06	07030005-540	Aquatic life	Low Oxygen[2,5]	2006	2010	5C
Sunrise River	Kost dam to North Br Sunrise R	04	07030005-542	Aquatic life	Invertebrate IBI	2006	2010	5C
Sunrise River, West Branch	Typo Lk to Martin Lk	06	07030005-563	Aquatic life	pH	2006	2010	5A
Sunrise River, West Branch	Typo Lk to Martin Lk	06	07030005-563	Aquatic life	Turbidity: Turbidity/TTube	2006	2010	5A
Sunrise River, West Branch	Martin Lk to Sunrise R	04	07030005-529	Aquatic life	Fish IBI	2006	2010	5C

Unnamed Creek	Unnamed Cr to Rock Cr	04	07030005-555		Aquatic life	Invertebrate IBI	2007	2015	5C
Linwood	Lake or Reservoir	02		02-0026-00	Aquatic recreation	Excess nutrients	2005	2010	5C
Martin	Lake or Reservoir	02		02-0034-00	Aquatic recreation	Excess nutrients	2003	2005	5C
Park	Lake or Reservoir	02		09-0029-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Little Hanging Horn	Lake or Reservoir	02		09-0035-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Hanging Horn	Lake or Reservoir	98		09-0038-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Eddy	Lake or Reservoir	02		09-0039-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Moosehead	Lake or Reservoir	98		09-0041-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little	Lake or Reservoir	98		13-0033-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Comfort	Lake or Reservoir	02		13-0053-00	Aquatic recreation	Excess nutrients	2004	2008	5A
Comfort	Lake or Reservoir	98		13-0053-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Fish	Lake or Reservoir	98		13-0068-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rush	Lake or Reservoir	02		13-0069-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Typo	Lake or Reservoir	02		30-0009-00	Aquatic recreation	Excess nutrients	2003	2005	5C
Five	Lake or Reservoir	98		33-0003-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Quamba	Lake or Reservoir	04		33-0015-00	Aquatic recreation	Excess nutrients	2006	2008	5C
Knife	Lake or Reservoir	04		33-0028-00	Aquatic recreation	Excess nutrients	2006	2008	5C
Devils	Lake or Reservoir	98		33-0033-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fish	Lake or Reservoir	04		33-0036-00	Aquatic recreation	Excess nutrients	2006	2008	5A
Fish	Lake or Reservoir	98		33-0036-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Ann	Lake or Reservoir	04		33-0040-00	Aquatic recreation	Excess nutrients	2006	2008	5C
Tamarack	Lake or Reservoir	98		58-0024-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sturgeon	Lake or Reservoir	98		58-0067-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Long	Lake or Reservoir	02		58-0107-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Cross	Lake or Reservoir	04		58-0119-00	Aquatic recreation	Excess nutrients	2008	2010	5C
Little Bass	Lake or Reservoir	98		58-0127-	Aquatic	Mercury[1]FCA	1999	2011	5C

			00	consumption				
Bass	Lake or Reservoir	98	58-0128-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Upper Pine	Lake or Reservoir	98	58-0130-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Pine	Lake or Reservoir	98	58-0138-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pokegama	Lake or Reservoir	04	58-0142-00	Aquatic recreation	Excess nutrients	2008	2010	5C
Little Carnelian	Lake or Reservoir	02	82-0014-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Loon	Lake or Reservoir	04	82-0015-00	Aquatic recreation	Excess nutrients	2009	2013	5C
Silver	Lake or Reservoir	04	82-0016-00	Aquatic recreation	Excess nutrients	2009	2013	5C
South Twin	Lake or Reservoir	06	82-0019-00	Aquatic recreation	Excess nutrients	2014	2018	5C
McKusick	Lake or Reservoir	06	82-0020-00	Aquatic recreation	Excess nutrients	2014	2018	5C
Long	Lake or Reservoir	02	82-0021-00	Aquatic recreation	Excess nutrients	2005	2009	5C
Lily	Lake or Reservoir	02	82-0023-00	Aquatic recreation	Excess nutrients	2007	2011	5A
Lily	Lake or Reservoir	02	82-0023-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5A
Louise	Lake or Reservoir	04	82-0025-00	Aquatic recreation	Excess nutrients	2009	2013	5C
Long	Lake or Reservoir	02	82-0030-00	Aquatic recreation	Excess nutrients	2007	2011	5C
East Boot	Lake or Reservoir	04	82-0034-00	Aquatic recreation	Excess nutrients	2009	2013	5C
Square	Lake or Reservoir	02	82-0046-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Big Carnelian	Lake or Reservoir	98	82-0049-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Marine	Lake or Reservoir	98	82-0052-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Jellums	Lake or Reservoir	04	82-0052-02	Aquatic recreation	Excess nutrients	2009	2013	5C
Bone	Lake or Reservoir	04	82-0054-00	Aquatic recreation	Excess nutrients	2009	2013	5A
Bone	Lake or Reservoir	98	82-0054-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Goose	Lake or Reservoir	02	82-0059-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Fish	Lake or Reservoir	04	82-0064-00	Aquatic recreation	Excess nutrients	2009	2013	5C
Hay	Lake or Reservoir	02	82-0065-00	Aquatic recreation	Excess nutrients	2010	2014	5C
Sand	Lake or Reservoir	02	82-0067-	Aquatic recreation	Excess nutrients	2007	2011	5C

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Long	Lake or Reservoir	04		82-0068-00	Aquatic recreation	Excess nutrients	2009	2013	5C
Unnamed (Goggins)	Lake or Reservoir	06		82-0077-00	Aquatic recreation	Excess nutrients	2014	2018	5C
Jane	Lake or Reservoir	06		82-0104-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Elmo	Lake or Reservoir	98		82-0106-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
S. School Section	Lake or Reservoir	02		82-0151-00	Aquatic recreation	Excess nutrients	2007	2011	5C
Sunset	Lake or Reservoir	02		82-0153-00	Aquatic recreation	Excess nutrients	2008	2012	5C
Forest	Lake or Reservoir	98		82-0159-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Forest	Lake or Reservoir	02		82-0159-00	Aquatic consumption	PCB FCA	2002	2015	5A
Shields	Lake or Reservoir	06		82-0162-00	Aquatic recreation	Excess nutrients	2014	2018	5C
UPPER MISSISSIPPI RIVER BASIN, Lower Portion									
Belle Creek	Headwaters to Cannon R	06	07040002-527		Aquatic life	Turbidity:Ttube/TSS	2009	2012	5C
Cannon River	Cannon Lk to Straight R	04	07040002-540		Aquatic life	Turbidity	2006	2009	5C
Cannon River	Straight R to T110 R20W S19 east line	98	07040002-581	506	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cannon River	T110 R20W S20 west line to Wolf Cr	98	07040002-582	506	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cannon River	Wolf Cr to Heath Cr	98	07040002-507		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cannon River	Wolf Cr to Heath Cr	06	07040002-507		Aquatic life	Turbidity:TTube	2009	2012	5A
Cannon River	Heath Cr to Northfield Dam	98	07040002-508		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cannon River	Northfield Dam to Lk Byllesby inlet	04	07040002-509		Aquatic recreation	Fecal coliform	2004	2006	5A
Cannon River	Northfield Dam to Lk Byllesby inlet	98	07040002-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cannon River	Northfield Dam to Lk Byllesby inlet	04	07040002-509		Aquatic life	Turbidity	2006	2009	5A
Cannon River	Pine Cr to Belle Cr	04	07040002-502		Aquatic life	Turbidity	2006	2009	5B
Cannon River	HUC boundary in Rice Lk Bottoms to Vermillion Slough/ Mississippi R	96	07040001-511		Aquatic life	Turbidity	2003	2009	5C
Cascade Creek	Headwaters to Unnamed Cr T104 R17W S33 east half	06	07040004-582		Aquatic life	Turbidity:TTube	2007	2011	5C
Cascade Creek	Unnamed Cr T104 R17W S33 east half to S Fk Zumbro R	06	07040004-581		Aquatic life	Turbidity:TTube	2007	2011	5C
Chub Creek	Headwaters to Cannon R	04	07040002-528		Aquatic recreation	Fecal coliform	2004	2006	5C
Chub Creek, North Branch	T113 R19W S19 west line to Chub Cr	06	07040002-566		Aquatic recreation	Fecal coliform	2017	2021	5C
Crane Creek	Headwaters (Watkins Lk) to Straight R	02	07040002-516		Aquatic recreation	Fecal coliform	2004	2006	5C

Dodge Center Creek	Headwaters to S Br M Fk Zumbro R	06	07040004-528		Aquatic life	Turbidity:TTube	2007	2011	5C
Forestville Creek	Unnamed Cr to S Br Root R	06	07040008-563		Aquatic life	Turbidity:TTube /Turbidity	2006	2008	5C
Garvin Brook	T106 R8W S17 west line to Rollingstone Cr	96	07040003-542		Aquatic life	Turbidity	2004	2008	5B
Judicial Ditch 1	Unnamed Cr to S Br Root R	06	07040008-561		Aquatic life	Turbidity:TTube	2006	2008	5C
Little Cannon River (Goodhue County)	T111 R17W S18 west line to Cannon R	06	07040002-526		Aquatic life	Turbidity:Ttube/TSS	2009	2012	5C
Little Cannon River (Goodhue County)	T110 R18W S15 west line to T111 R18W S13 east line	06	07040002-554		Aquatic life	Turbidity:TTube	2009	2012	5C
Logan Branch	Headwater to T107 R11W Sec 4 east line	02	07040003-536	552	Aquatic recreation	Fecal coliform	2004	2006	5A
Logan Branch	Headwater to T107 R11W Sec 4 east line	02	07040003-536	552	Aquatic life	Turbidity	2004	2008	5A
Maple Creek	Headwaters to Straight R	02	07040002-519		Aquatic recreation	Fecal coliform	2004	2006	5C
Milliken Creek	Unnamed Cr to Unnamed Cr	06	07040004-554		Aquatic life	Turbidity:TTube	2007	2011	5C
Mississippi River	St Croix River to Chippewa R (WI)	98	07040001-531		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	St Croix River to Chippewa R (WI)	04	07040001-531		Aquatic consumption	Mercury[1] Water Column	2004	2017	5A
Mississippi River	St Croix River to Chippewa R (WI)	02	07040001-531		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	St Croix River to Chippewa R (WI)	98	07040001-531		Aquatic life	Turbidity	2005	2009	5A
Mississippi River	Chippewa R (WI) to 2.75 miles downstream of L & D #6 at HUC boundary (downstream of Richmond Island)	02	07040003-560		Aquatic recreation	Fecal coliform	2004	2006	5A
Mississippi River	Chippewa R (WI) to 2.75 miles downstream of L & D #6 at HUC boundary (downstream of Richmond Island)	98	07040003-560		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Chippewa R (WI) to 2.75 miles downstream of L & D #6 at HUC boundary (downstream of Richmond Island)	02	07040003-560		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	2.75 miles downstream of L & D #6 at HUC boundary (downstream of Richmond Island) to Root R	98	07040006-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	2.75 miles downstream of L & D #6 at HUC boundary (downstream of Richmond Island) to Root R	02	07040006-509		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Root R to IA border	98	07060001-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Mississippi River	Root R to IA border	02	07060001-509		Aquatic consumption	PCB FCA	2002	2015	5A
Mississippi River	Root R to IA border	98	07060001-509		Aquatic life	Turbidity	2004	2008	5A
Money Creek	T105 R7W S21 north line to Root R	04	07040008-521		Aquatic recreation	Fecal coliform	2004	2006	5C
Mud Creek	Unnamed Cr to Chub Cr	06	07040002-558		Aquatic recreation	Fecal coliform	2017	2021	5C
Prairie Creek	Headwaters to Cannon R (Lk Byllesby)	04	07040002-504		Aquatic life	Turbidity	2006	2009	5B
Root River	Thompson Cr to Mississippi R	94	07040008-501		Aquatic life	Turbidity	2004	2008	5B
Root River, Middle Branch	Deer Cr to Bear Cr	06	07040008-545		Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Root River, Middle Branch	Bear Cr to Upper Bear Cr	02	07040008-505		Aquatic	Mercury[1]FCA	2002	2015	5C

				consumption				
Root River, Middle Branch	Upper Bear Cr to N Br Root R	02	07040008-506	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Root River, Middle Branch	N Br Root R to Lynch Cr	04	07040008-534	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Root River, Middle Branch	Lynch Cr to Rice Cr	04	07040008-532	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Root River, Middle Branch	Rice Cr to Trout Run	04	07040008-530	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Root River, Middle Branch	Trout Run Cr to S Br Root R	04	07040008-528	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Root River, South Branch	Headwaters to T102 R12W S16 south line	04	07040008-586	Aquatic recreation	Fecal coliform	2004	2006	5A
Root River, South Branch	Headwaters to T102 R12W S16 south line	04	07040008-586	Aquatic life	Turbidity	2004	2008	5A
Root River, South Branch	Canfield Cr to Willow Cr	04	07040008-555	Aquatic recreation	Fecal coliform	2004	2006	5A
Root River, South Branch	Canfield Cr to Willow Cr	04	07040008-555	Aquatic life	Turbidity	2004	2008	5A
Root River, South Branch	Willow Cr to Camp Cr	06	07040008-554	Aquatic life	Turbidity:TTube	2006	2008	5C
Root River, South Branch	T102 R12W S21 north line to Canfield Cr	06	07040008-556	Aquatic life	Turbidity:TTube	2006	2008	5C
Rush Creek	Headwaters to Straight R	02	07040002-505	Aquatic recreation	Fecal coliform	2004	2006	5A
Rush Creek	Headwaters to Straight R	06	07040002-505	Aquatic life	Turbidity:TTube	2009	2012	5A
Silver Creek	Unnamed Cr to Unnamed Cr	06	07040004-552	Aquatic life	Turbidity:TTube	2007	2011	5C
Silver Creek	Unnamed Cr to Silver Lk (S Fk Zumbro R)	06	07040004-553	Aquatic life	Turbidity:TTube	2007	2011	5C
Stockton Valley Creek	T106 R8W S23 south line to Garvin Bk	02	07040003-559	Aquatic recreation	Fecal coliform	2004	2006	5C
Straight River	CD 25 to Turtle Cr	02	07040002-517	Aquatic recreation	Fecal coliform	2004	2006	5A
Straight River	CD 25 to Turtle Cr	06	07040002-517	Aquatic life	Turbidity:TTube	2009	2012	5A
Straight River	Turtle Cr to Owatonna Dam	04	07040002-535	Aquatic recreation	Fecal coliform	2004	2006	5A
Straight River	Turtle Cr to Owatonna Dam	04	07040002-535	Aquatic life	Turbidity	2006	2009	5A
Straight River	Maple Cr to Crane Cr	04	07040002-503	Aquatic life	Turbidity	2006	2009	5B
Straight River	Rush Cr to Cannon R	02	07040002-515	Aquatic recreation	Fecal coliform	2004	2006	5A
Straight River	Rush Cr to Cannon R	04	07040002-515	Aquatic life	Turbidity	2006	2009	5A
Turtle Creek	Headwaters to Straight R	02	07040002-518	Aquatic recreation	Fecal coliform	2004	2006	5C
Unnamed Creek	Headwaters to Prairie Cr	02	07040002-512	Aquatic recreation	Fecal coliform	2004	2006	5A
Unnamed Creek	Headwaters to Prairie Cr	06	07040002-512	Aquatic life	Turbidity:TTube	2009	2012	5A
Unnamed Creek (Spring Brook)	Unnamed Cr to Cannon R	06	07040002-557	Aquatic life	Turbidity:TTube	2009	2012	5C
Unnamed Creek	Unnamed Cr to Unnamed Cr	06	07040004-556	Aquatic life	Turbidity:TTube	2007	2011	5C
Unnamed Creek (Trout Brook)	Unnamed Cr to Cannon R (trout stream portion)	06	07040002-567	Aquatic life	Turbidity:Ttube/TSS	2009	2012	5C
Unnamed Creek	Unnamed Cr to Unnamed Cr	02	07040002-513	Aquatic recreation	Fecal coliform	2004	2006	5C
Vermillion River	Vermillion R/Vermillion Slough, Hastings dam to Mississippi R	98	07040001-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Vermillion River	Vermillion R/Vermillion Slough, Hastings dam to Mississippi R	02	07040001-504	Aquatic consumption	PCB FCA	2002	2015	5A
Vermillion River	Vermillion R/Vermillion Slough, Hastings dam to Mississippi R	94	07040001-504	Aquatic life	Turbidity	2003	2007	5A
Whitewater River, Middle Fork	T107 R11W S35 west line to N Fk Whitewater R	02	07040003-514	Aquatic recreation	Fecal coliform	2004	2006	5A
Whitewater River, Middle Fork	T107 R11W S35 west line to N Fk Whitewater R	02	07040003-514	Aquatic life	Turbidity	2004	2008	5A

Whitewater River, North Fork	T108 R11W S30 west line to Unnamed Cr	02	07040003-553	Aquatic recreation	Fecal coliform	2004	2006	5A
Whitewater River, North Fork	T108 R11W S30 west line to Unnamed Cr	02	07040003-553	Aquatic life	Turbidity	2004	2008	5A
Whitewater River, North Fork	Unnamed Cr to M Fk Whitewater R	96	07040003-554	Aquatic life	Turbidity	2004	2008	5B
Whitewater River, North Fork	M Fk Whitewater R to S Fk Whitewater R	06	07040003-523	Aquatic life	Turbidity:TTube	2006	2008	5C
Whitewater River, South Fork	Headwaters to T106 R10W S2 east line	02	07040003-505	Aquatic life	Turbidity	2004	2008	5B
Whitewater River, South Fork	T106 R10W S1west line to N Fk Whitewater R	02	07040003-512	Aquatic recreation	Fecal coliform	2004	2008	5A
Whitewater River, South Fork	T106 R10W S1west line to N Fk Whitewater R	02	07040003-512	Aquatic life	Turbidity	2004	2008	5A
Whitewater River	S Fk Whitewater R to Beaver Cr	98	07040003-537	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Whitewater River	S Fk Whitewater R to Beaver Cr	06	07040003-537	Aquatic life	Turbidity:TTube	2006	2008	5A
Whitewater River	Beaver Cr to T108 R10W S1 north line	98	07040003-538	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Whitewater River	T109 R10W S36 south line to Mississippi R	98	07040003-539	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Whitewater River	T109 R10W S36 south line to Mississippi R	98	07040003-539	Aquatic life	Turbidity	2004	2008	5A
Willow Creek	Headwaters to Bear Cr	06	07040004-540	Aquatic life	Turbidity:TTube	2007	2011	5C
Wolf Creek	Headwaters to Cannon R	06	07040002-522	Aquatic life	Turbidity:TTube	2009	2012	5C
Zumbro River	Zumbro Lk to N Fk Zumbro R	06	07040004-506	Aquatic consumption	Mercury[1]FCA	2006	2021	5A
Zumbro River	Zumbro Lk to N Fk Zumbro R	04	07040004-506	Aquatic consumption	PCB FCA	2004	2017	5A
Zumbro River	N Fk Zumbro R to Cold Cr	98	07040004-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Zumbro River	N Fk Zumbro R to Cold Cr	04	07040004-504	Aquatic consumption	PCB FCA	2004	2017	5A
Zumbro River	Cold Cr to West Indian Cr	04	07040004-502	Aquatic recreation	Fecal coliform	2004	2006	5A
Zumbro River	Cold Cr to West Indian Cr	98	07040004-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Zumbro River	Cold Cr to West Indian Cr	04	07040004-502	Aquatic consumption	PCB FCA	2004	2017	5A
Zumbro River	West Indian Cr to Mississippi R	04	07040004-501	Aquatic recreation	Fecal coliform	2004	2006	5A
Zumbro River	West Indian Cr to Mississippi R	98	07040004-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Zumbro River	West Indian Cr to Mississippi R	04	07040004-501	Aquatic consumption	PCB FCA	2004	2017	5A
Zumbro River	West Indian Cr to Mississippi R	98	07040004-501	Aquatic life	Turbidity	2007	2011	5A
Zumbro River, Middle Fork, South Branch	Dodge Center Cr to M Fk Zumbro R	06	07040004-525	Aquatic life	Turbidity:TTube	2007	2011	5C
Zumbro River, Middle Fork, South Branch	Headwaters to Dodge Center Cr	06	07040004-526	Aquatic life	Turbidity:TTube	2007	2011	5C
Zumbro River, South Fork	Salem Cr to Bear Cr	04	07040004-536	Aquatic recreation	Fecal coliform	2004	2006	5A
Zumbro River, South Fork	Salem Cr to Bear Cr	06	07040004-536	Aquatic life	Turbidity:TTube	2007	2011	5A

Zumbro River, South Fork	Bear Cr to old Oakwood Dam		04	07040004-535		Aquatic recreation	Fecal coliform	2004	2006	5C
Zumbro River, South Fork	Silver Lk Dam to Cascade Cr		04	07040004-533		Aquatic recreation	Fecal coliform	2004	2006	5C
Zumbro River, South Fork	Cascade Cr to Zumbro Lk		02	07040004-507		Aquatic life	Turbidity:TSS	2007	2011	5B
Byllesby		Lake or Reservoir	02		19-0006-00	Aquatic recreation	Excess nutrients	2003	2007	5A
Byllesby		Lake or Reservoir	98		19-0006-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Chub		Lake or Reservoir	02		19-0020-00	Aquatic recreation	Excess nutrients	2003	2007	5C
Long		Lake or Reservoir	02		19-0022-00	Aquatic recreation	Excess nutrients	2007	2011	5C
Farquar		Lake or Reservoir	02		19-0023-00	Aquatic recreation	Excess nutrients	2007	2011	5C
Keller		Lake or Reservoir	02		19-0025-00	Aquatic recreation	Excess nutrients	2004	2008	5C
Marion		Lake or Reservoir	98		19-0026-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crystal		Lake or Reservoir	02		19-0027-00	Aquatic recreation	Excess nutrients	2006	2011	5A
Crystal		Lake or Reservoir	98		19-0027-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Lee		Lake or Reservoir	02		19-0029-00	Aquatic recreation	Excess nutrients	2006	2011	5C
Laclavon		Lake or Reservoir	98		19-0446-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pepin		Lake or Reservoir	02		25-0001-00	Aquatic recreation	Excess nutrients	2004	2009	5C
Upper Sakatah		Lake or Reservoir	06		40-0002-00	Aquatic recreation	Excess nutrients	2016	2020	5C
Tetonka		Lake or Reservoir	06		40-0031-00	Aquatic recreation	Excess nutrients	2016	2020	5A
Tetonka		Lake or Reservoir	98		40-0031-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Volney		Lake or Reservoir	02		40-0033-00	Aquatic recreation	Excess nutrients	2005	2011	5A
Volney		Lake or Reservoir	98		40-0033-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Frances		Lake or Reservoir	98		40-0057-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Louise Mill Pond		Lake or Reservoir	98		50-0001-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Silver		Lake or Reservoir	98		55-0003-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Zumbro		Lake or Reservoir	02		55-0004-00	Aquatic recreation	Excess nutrients	2007	2011	5A
Zumbro		Lake or Reservoir	98		55-0004-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
WR6A Pond		Lake or Reservoir	06		55-0021-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Cannon		Lake or Reservoir	06		66-0008-	Aquatic recreation	Excess nutrients	2016	2020	5C

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Roberds	Lake or Reservoir	06		66-0018-00	Aquatic recreation	Excess nutrients	2016	2020	5C
Circle	Lake or Reservoir	06		66-0027-00	Aquatic recreation	Excess nutrients	2016	2020	5C
Union	Lake or Reservoir	06		66-0032-00	Aquatic recreation	Excess nutrients	2016	2020	5C
French	Lake or Reservoir	98		66-0038-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mazaska	Lake or Reservoir	06		66-0039-00	Aquatic recreation	Excess nutrients	2016	2020	5A
Mazaska	Lake or Reservoir	98		66-0039-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Hunt	Lake or Reservoir	04		66-0047-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Shields	Lake or Reservoir	04		66-0055-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Clear	Lake or Reservoir	04		81-0014-00	Aquatic recreation	Excess nutrients	2005	2009	5A
Clear	Lake or Reservoir	98		81-0014-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Loon	Lake or Reservoir	98		81-0015-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Winona	Lake or Reservoir	98		85-0011-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
CEDAR RIVER BASIN									
Cedar River	Headwaters to Roberts Cr	06	07080201-503		Aquatic recreation	Fecal coliform	2010	2014	5A
Cedar River	Headwaters to Roberts Cr	98	07080201-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cedar River	Headwaters to Roberts Cr	02	07080201-503		Aquatic consumption	PCB FCA	2002	2015	5A
Cedar River	Roberts Cr to Upper Austin Dam	98	07080201-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5B
Cedar River	Roberts Cr to Upper Austin Dam	02	07080201-502		Aquatic consumption	PCB FCA	2002	2015	5B
Cedar River	Roberts Cr to Upper Austin Dam	02	07080201-502		Aquatic life	Turbidity	2006	2010	5B
Cedar River	Upper Austin Dam to Wolf Cr	98	07080201-511		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cedar River	Upper Austin Dam to Wolf Cr	02	07080201-511		Aquatic consumption	PCB FCA	2002	2015	5A
Cedar River	Wolf Cr to Lower Austin Dam	98	07080201-512		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Cedar River	Wolf Cr to Lower Austin Dam	06	07080201-512		Aquatic consumption	PCB FCA	2006	2021	5A
Cedar River	Lower Austin Dam to Dobbins Cr	98	07080201-513		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cedar River	Dobbins Cr to Turtle Cr	98	07080201-514		Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Cedar River	Turtle Cr to Rose Cr	98	07080201-515		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cedar River	Rose Cr to Woodbury Cr	98	07080201-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5B
Cedar River	Rose Cr to Woodbury Cr	02	07080201-501		Aquatic life	Turbidity	2006	2010	5B
Cedar River	Woodbury Cr to IA border	98	07080201-516		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dobbins Creek	T103 R18W S36 east line to East Side Lk	06	07080201-535		Aquatic recreation	Fecal coliform	2010	2014	5C
Dobbins Creek	East Side Lk to Cedar R	06	07080201-537		Aquatic recreation	Fecal coliform	2010	2014	5A
Dobbins Creek	East Side Lk to Cedar R	06	07080201-537		Aquatic life	Turbidity:TTube	2010	2014	5A
Orchard Creek	T101 R18W S 5 north line to Cedar R	06	07080201-539		Aquatic recreation	Fecal coliform	2010	2014	5C
Otter Creek	Headwaters to IA Border	06	07080201-517		Aquatic recreation	Fecal coliform	2010	2014	5C
Roberts Creek	Unnamed Cr to Cedar R	06	07080201-504		Aquatic recreation	Fecal coliform	2010	2014	5C
Rose Creek	Headwaters to Cedar R	06	07080201-522		Aquatic recreation	Fecal coliform	2010	2014	5C
Shell Rock River	Albert Lea Lk to Goose Cr	02	07080202-501		Aquatic life	Turbidity	2006	2010	5B
Turtle Creek	T102 R18W S 4 north line to Cedar R	06	07080201-540		Aquatic recreation	Fecal coliform	2010	2014	5A
Turtle Creek	T102 R18W S 4 north line to Cedar R	06	07080201-540		Aquatic life	Turbidity:Ttube/TSS	2010	2014	5A
Unnamed Creek	Unnamed Cr to Cedar R	06	07080201-533		Aquatic recreation	Fecal coliform	2010	2014	5C
Wolf Creek	Headwaters to Cedar R	06	07080201-510		Aquatic recreation	Fecal coliform	2010	2014	5C
Woodbury Creek	Headwaters to Cedar R	06	07080201-526		Aquatic recreation	Fecal coliform	2010	2014	5C
East Side	Lake or Reservoir	98		50-0002-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

DES MOINES RIVER BASIN

Beaver Creek	CD 20 to Des Moines R	02	07100001-503		Aquatic recreation	Fecal coliform	2004	2008	5A
Beaver Creek	CD 20 to Des Moines R	04	07100001-503		Aquatic life	Turbidity	2004	2008	5A
County Ditch 20	Headwaters to Beaver Cr	02	07100001-504		Aquatic recreation	Fecal coliform	2004	2008	5C
Des Moines River	Beaver Cr to Lime Cr	04	07100001-546		Aquatic recreation	Fecal coliform	2004	2008	5A
Des Moines River	Beaver Cr to Lime Cr	04	07100001-546		Aquatic life	Turbidity	2004	2008	5A
Des Moines River	Lime Cr to Heron Lk Outlet	04	07100001-533		Aquatic recreation	Fecal coliform	2004	2008	5A
Des Moines River	Lime Cr to Heron Lk Outlet	04	07100001-533		Aquatic life	Turbidity	2004	2008	5A
Des Moines River	Windom Dam to Jackson Dam	94	07100001-501		Aquatic life	Ammonia[2,4,5]	2004	2008	5A
Des Moines River	Windom Dam to Jackson Dam	04	07100001-501		Aquatic recreation	Fecal coliform	2004	2008	5A
Des Moines River	Windom Dam to Jackson Dam	94	07100001-501		Aquatic life	Low Oxygen[2,5]	2004	2008	5A
Des Moines River	Windom Dam to Jackson Dam	98	07100001-501		Aquatic life	Turbidity	2004	2008	5A
Des Moines River	Jackson Dam to JD 66	02	07100001-541		Aquatic life	Turbidity	2004	2008	5C
Des Moines River	JD 66 to IA border	04	07100002-501		Aquatic recreation	Fecal coliform	2004	2008	5A
Des Moines River	JD 66 to IA border	02	07100002-501		Aquatic life	Turbidity	2004	2008	5A
Des Moines River	Heron Lk Outlet to Windom Dam	06	07100001-524		Aquatic life	Turbidity:TTube	2006	2008	5C
Des Moines River	Lk Shetek to Beaver Cr	06	07100001-545		Aquatic life	Turbidity	2006	2008	5C
Des Moines River, East Branch	Headwaters to Okamanpeedan Lk	06	07100003-501		Aquatic life	Low Oxygen[2,5]	2011	2016	5A
Des Moines River, East Branch	Headwaters to Okamanpeedan Lk	02	07100003-501		Aquatic life	Turbidity	2011	2016	5A
Division Creek	Heron Lk to Okabena Cr	06	07100001-529		Aquatic life	Turbidity:TTube	2006	2008	5C
Elk Creek	Headwaters to Okabena Cr	06	07100001-507		Aquatic recreation	Fecal coliform	2006	2008	5A
Elk Creek	Headwaters to Okabena Cr	06	07100001-507		Aquatic life	Turbidity	2006	2008	5A

Heron Lake Outlet	Heron Lk (32-0057-01) to Des Moines R	06	07100001-527		Aquatic life	pH	2006	2008	5A
Heron Lake Outlet	Heron Lk (32-0057-01) to Des Moines R	06	07100001-527		Aquatic life	Turbidity	2006	2008	5A
Jack Creek	JD 26 to Heron Lk	06	07100001-509		Aquatic recreation	Fecal coliform	2006	2008	5A
Jack Creek	JD 26 to Heron Lk	06	07100001-509		Aquatic life	Turbidity:Turbidity/ TTube/TSS	2006	2008	5A
Jack Creek, North Branch	Headwaters to Jack Cr	06	07100001-505		Aquatic life	Turbidity:Ttube/TS S	2006	2008	5C
Lake Shetek Inlet	Headwaters to Lk Shetek	02	07100001-502		Aquatic recreation	Fecal coliform	2004	2008	5C
Lime Creek	Lime Lk to Des Moines R	04	07100001-535		Aquatic recreation	Fecal coliform	2004	2008	5A
Lime Creek	Lime Lk to Des Moines R	04	07100001-535		Aquatic life	Turbidity	2004	2008	5A
Lower Lake Sarah Outlet	First Unnamed Cr on Lk Sarah Outlet stream to Lk Shetek inlet	02	07100001-508		Aquatic recreation	Fecal coliform	2004	2008	5C
Okabena Creek	Elk Cr to South Heron Lk	06	07100001-506		Aquatic recreation	Fecal coliform	2006	2008	5A
Okabena Creek	Elk Cr to South Heron Lk	06	07100001-506		Aquatic life	Turbidity	2006	2008	5A
Unnamed Creek (Site I4)	Outlet at SW Lk Shetek upstream to fork	02	07100001-519		Aquatic recreation	Fecal coliform	2004	2008	5C
Unnamed Creek (Site I3)	Outlet at SW Lk Shetek upstream to split into two forks	02	07100001-517		Aquatic recreation	Fecal coliform	2004	2008	5C
Upper Lake Sarah Outlet	Lk Sarah Outlet to first Unnamed Cr	02	07100001-513		Aquatic recreation	Fecal coliform	2004	2008	5C
Heron	Lake or Reservoir	02		32-0057-00	Aquatic recreation	Excess nutrients	2004	2008	5C
Shetek	Lake or Reservoir	06		51-0046-00	Aquatic recreation	Excess nutrients	2017	2021	5C
Sarah	Lake or Reservoir	06		51-0063-00	Aquatic recreation	Excess nutrients	2017	2021	5C
RED RIVER BASIN									
Bois de Sioux River	Rabbit R to Otter Tail R	02	09020101-501		Aquatic life	Fish IBI	2010	2013	5A
Bois de Sioux River	Rabbit R to Otter Tail R	98	09020101-501		Aquatic life	Low Oxygen[2,5]	2010	2013	5A
Buffalo River, South Branch	Deerhorn Cr to Whiskey Cr	02	09020106-505		Aquatic life	Fish IBI	2004	2007	5C
Buffalo River	S Br Buffalo R to Red R	96	09020106-501		Aquatic life	Turbidity	2005	2009	5C
Clearwater River	Headwaters to T148 R36W S36 east line	06	09020305-517		Aquatic life	Low Oxygen[2,5]	2013	2016	5A
Clearwater River	Headwaters to T148 R36W S36 east line	98	09020305-517		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Clearwater River	T148 R35W S31 west line to Clearwater Lk	98	09020305-516		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clearwater River	Clearwater Lk to Ruffy Bk	98	09020305-514		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clearwater River	Ruffy Bk to Lost R	02	09020305-510		Aquatic recreation	Fecal coliform	2006	2009	5A
Clearwater River	Ruffy Bk to Lost R	02	09020305-510		Aquatic life	Low Oxygen[2,5]	2004	2007	5A
Clearwater River	Ruffy Bk to Lost R	98	09020305-510		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Clearwater River	Lost R to Beau Gerlot Cr	98	09020305-511		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clearwater River	Beau Gerlot Cr to Lower Badger Cr	04	09020305-519		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Clearwater River	Lower Badger Cr to Red Lk R	98	09020305-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5A

Clearwater River	Lower Badger Cr to Red Lk R	06	09020305-501	Aquatic life	Turbidity	2006	2009	5A
County Ditch 57	Unnamed Ditch to Clearwater R	02	09020305-508	Aquatic life	Low Oxygen[2,5]	2004	2007	5C
Grand Marais Creek	Headwaters to CD 2	06	09020306-507	Aquatic life	Low Oxygen[2,5]	2011	2014	5A
Grand Marais Creek	Headwaters to CD 2	06	09020306-507	Aquatic life	Turbidity	2006	2009	5A
Grand Marais Creek	CD 2 to Red R	06	09020306-512	Aquatic life	Turbidity	2006	2009	5C
Joe River	Salt Coulee to Canadian Border	06	09020311-513	Aquatic life	Chloride	2015	2018	5A
Joe River	Salt Coulee to Canadian Border	06	09020311-513	Aquatic life	pH	2015	2018	5A
Lost River	Anderson Lk to Hill R	02	09020305-507	Aquatic recreation	Fecal coliform	2006	2009	5C
Lost River	T148 R38W S17 south line to Pine Lk	06	09020305-529	Aquatic life	Low Oxygen[2,5]	2013	2016	5C
Moose River	Headwaters to Thief Lk	06	09020304-505	Aquatic life	Low Oxygen[2,5]	2013	2016	5C
Mustinka River	Grant/Traverse Co Line to Fivemile Cr	04	09020102-518	Aquatic life	Turbidity	2005	2009	5C
Mustinka River	Unnamed Cr to Lk Traverse	06	09020102-503	Aquatic life	Low Oxygen[2,5]	2010	2013	5A
Mustinka River	Unnamed Cr to Lk Traverse	04	09020102-503	Aquatic life	Turbidity	2005	2009	5A
Otter Tail River	Rice Lk to Mud Lk	98	09020103-532	Aquatic life	Low Oxygen[2,5]	2010	2013	5C
Otter Tail River	JD #2 to Breckenridge Lk	02	09020103-504	Aquatic life	Fish IBI	2010	2013	5A
Otter Tail River	JD #2 to Breckenridge Lk	04	09020103-504	Aquatic life	Turbidity	2005	2009	5A
Otter Tail River	Breckenridge Lk to Bois de Sioux R	96	09020103-502	Aquatic life	Turbidity	2001	2004	5C
Poplar River	Spring Lk to Hwy 59	02	09020305-518	Aquatic life	Low Oxygen[2,5]	2004	2007	5C
Poplar River Diversion	Unnamed Ditch to Badger Lk	06	09020305-543	Aquatic life	Low Oxygen[2,5]	2013	2016	5C
Rabbit River	Wilkin County line to Bois de Sioux R	02	09020101-502	Aquatic life	Fish IBI	2010	2013	5A
Rabbit River	Wilkin County line to Bois de Sioux R	04	09020101-502	Aquatic life	Low Oxygen[2,5]	2010	2013	5A
Rabbit River	Wilkin County line to Bois de Sioux R	96	09020101-502	Aquatic life	Turbidity	2005	2009	5A
Red Lake River	Headwaters to Thief R	98	09020303-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Red Lake River	Thief R to Thief River Falls Dam	98	09020303-509	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Red Lake River	Thief River Falls Dam to Unnamed Cr	98	09020303-513	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Red Lake River	Unnamed Cr to Clearwater R	98	09020303-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Red Lake River	Clearwater R to Cyr Cr	98	09020303-510	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Red Lake River	Cyr Cr to Black R	98	09020303-511	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Red Lake River	Black R to Gentilly R	98	09020303-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red Lake River	Gentilly R to Crookston Dam	98	09020303-512	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Red Lake River	Crookston Dam to Burnham Cr	98	09020303-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Red Lake River	Burnham Cr to Unnamed Cr (East Grand Forks)	98	09020303-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red Lake River	Burnham Cr to Unnamed Cr (East Grand Forks)	98	09020303-501	Aquatic life	Turbidity	2005	2009	5A
Red Lake River	Unnamed Cr to Red R	98	09020303-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red Lake River	Unnamed Cr to Red R	02	09020303-503	Aquatic life	Turbidity	2005	2009	5A
Red River of the North	Otter Tail R to Breckenridge Dam	98	09020104-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Otter Tail R to Breckenridge Dam	02	09020104-506	Aquatic	PCB FCA	2002	2015	5A

				consumption				
Red River of the North	Breckenridge Dam to Whiskey Cr	98	09020104-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Breckenridge Dam to Whiskey Cr	02	09020104-503	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Breckenridge Dam to Whiskey Cr	96	09020104-503	Aquatic life	Turbidity	2005	2009	5A
Red River of the North	Whiskey Cr to Dam 3 (Comstock)	98	09020104-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Whiskey Cr to Dam 3 (Comstock)	02	09020104-505	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Dam 3 (Comstock) to Wolverton Cr	98	09020104-509	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Dam 3 (Comstock) to Wolverton Cr	02	09020104-509	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Wolverton Cr to Wild Rice R (ND)	98	09020104-510	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Wolverton Cr to Wild Rice R (ND)	02	09020104-510	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Wolverton Cr to Wild Rice R (ND)	06	09020104-510	Aquatic life	Turbidity	2006	2009	5A
Red River of the North	Wild Rice R (ND) to Dam 2 (Fargo/Moorhead)	98	09020104-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Wild Rice R (ND) to Dam 2 (Fargo/Moorhead)	02	09020104-508	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Fargo/Moorhead Dam 2 to Dam 1	98	09020104-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Fargo/Moorhead Dam 2 to Dam 1	02	09020104-507	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Moorhead/Fargo Dam 1 (RM 452.15) to Dam A (RM 448.9)	94	09020104-504	Aquatic recreation	Fecal coliform	2002	2005	5A
Red River of the North	Moorhead/Fargo Dam 1 (RM 452.15) to Dam A (RM 448.9)	98	09020104-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Moorhead/Fargo Dam 1 (RM 452.15) to Dam A (RM 448.9)	02	09020104-504	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Moorhead/Fargo Dam 1 (RM 452.15) to Dam A (RM 448.9)	96	09020104-504	Aquatic life	Turbidity	2002	2009	5A
Red River of the North	Moorhead/Fargo Dam A (RM 448.9) to Sheyenne R (ND)	92	09020104-502	Aquatic life	Ammonia[2,5]	1998	2005	5A
Red River of the North	Moorhead/Fargo Dam A (RM 448.9) to Sheyenne R (ND)	94	09020104-502	Aquatic recreation	Fecal coliform	2002	2005	5A
Red River of the North	Moorhead/Fargo Dam A (RM 448.9) to Sheyenne R (ND)	98	09020104-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Moorhead/Fargo Dam A (RM 448.9) to Sheyenne R (ND)	02	09020104-502	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Moorhead/Fargo Dam A (RM 448.9) to Sheyenne R (ND)	06	09020104-502	Aquatic life	Turbidity	2006	2009	5A
Red River of the North	Sheyenne R (ND) to Buffalo R	98	09020104-511	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Sheyenne R (ND) to Buffalo R	02	09020104-511	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Buffalo R to Elm R (ND)	94	09020107-501	Aquatic recreation	Fecal coliform	2005	2008	5A

Red River of the North	Buffalo R to Elm R (ND)	98	09020107-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Buffalo R to Elm R (ND)	02	09020107-501	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Buffalo R to Elm R (ND)	96	09020107-501	Aquatic life	Turbidity	2005	2009	5A
Red River of the North	Elm R (ND) to Wild Rice R	98	09020107-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Elm R (ND) to Wild Rice R	02	09020107-504	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Wild Rice R to Goose R (ND)	98	09020107-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Wild Rice R to Goose R (ND)	02	09020107-502	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Wild Rice R to Goose R (ND)	96	09020107-502	Aquatic life	Turbidity	2005	2009	5A
Red River of the North	Goose R (ND) to Marsh R	98	09020107-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Goose R (ND) to Marsh R	02	09020107-505	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Marsh R to Sandhill Cr	98	09020301-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Marsh R to Sandhill Cr	02	09020301-506	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Sandhill R to Buffalo Coulee	98	09020301-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Sandhill R to Buffalo Coulee	02	09020301-507	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Buffalo Coulee to Cole Cr (ND)	98	09020301-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Buffalo Coulee to Cole Cr (ND)	02	09020301-502	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Cole Cr (ND) to Red Lk R	98	09020301-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Cole Cr (ND) to Red Lk R	02	09020301-501	Aquatic consumption	PCB FCA	2002	2015	5A
Red River of the North	Cole Cr (ND) to Red Lk R	96	09020301-501	Aquatic life	Turbidity	2005	2009	5A
Red River of the North	Red Lk R to Grand Forks Dam	98	09020301-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Red Lk R to Grand Forks Dam	02	09020301-504	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Grand Forks Dam to English Coulee	98	09020301-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Grand Forks Dam to English Coulee	02	09020301-503	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	English Coulee to Grand Marais Cr	98	09020306-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	English Coulee to Grand Marais Cr	02	09020306-502	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Grand Marais Cr to North Marais R (ND)	98	09020306-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Grand Marais Cr to North Marais R (ND)	02	09020306-501	Aquatic	PCB FCA	2002	2015	5A

Consumption

Red River of the North	N Marais R (ND) to Forest R (ND)	98	09020306-503	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	N Marais R (ND) to Forest R (ND)	02	09020306-503	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Forest R (ND) to Snake R	98	09020306-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Forest R (ND) to Snake R	02	09020306-504	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Snake R to Park R (ND)	98	09020306-505	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Snake R to Park R (ND)	02	09020306-505	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Park R (ND) to Tamarack R	98	09020311-507	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Park R (ND) to Tamarack R	02	09020311-507	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Tamarac R to Drayton Dam	98	09020311-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Tamarac R to Drayton Dam	02	09020311-502	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Drayton Dam to Unnamed Cr	98	09020311-508	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Drayton Dam to Unnamed Cr	02	09020311-508	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Unnamed Cr to Two R	98	09020311-506	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Unnamed Cr to Two R	02	09020311-506	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Two R to Pembina R (ND)	98	09020311-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Two R to Pembina R (ND)	02	09020311-504	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Pembina R (ND) to Canadian Border	98	09020311-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Red River of the North	Pembina R (ND) to Canadian Border	02	09020311-501	Aquatic Consumption	PCB FCA	2002	2015	5A
Red River of the North	Pembina R (ND) to Canadian Border	96	09020311-501	Aquatic life	Turbidity	2005	2009	5A
Roseau River	Headwaters to S Fk Roseau R	98	09020314-504	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Roseau River	S Fk Roseau R to Hay Cr	98	09020314-502	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Roseau River	Hay Cr to Canadian Border	96	09020314-501	Aquatic life	Low Oxygen[2,5]	2007	2010	5A
Roseau River	Hay Cr to Canadian Border	98	09020314-501	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Silver Creek	Headwaters to Anderson Lk	06	09020305-527	Aquatic recreation	Fecal coliform	2006	2009	5C
Snake River	S Br Snake R to CD 7	02	09020309-504	Aquatic life	Fish IBI	2010	2013	5C
Snake River	CD 7 to CD 3	02	09020309-503	Aquatic life	Fish IBI	2010	2013	5A
Snake River	CD 7 to CD 3	04	09020309-503	Aquatic life	Low Oxygen[2,5]	2010	2013	5A
Snake River	Middle R to Red R	02	09020309-501	Aquatic life	Low Oxygen[2,5]	2010	2013	5A

Snake River	Middle R to Red R	02	09020309-501			Aquatic life	Turbidity	2005	2009	5A
Stony Creek	Hay Cr to S Br Buffalo R	96	09020106-502			Aquatic life	Turbidity	2005	2009	5C
Tamarac River	Florian Park Reservoir to Stephen dam	02	09020311-503			Aquatic life	Fish IBI	2010	2013	5C
Thief River	Agassiz Pool to Red Lk R	06	09020304-501			Aquatic life	Low Oxygen[2,5]	2013	2016	5A
Thief River	Agassiz Pool to Red Lk R	06	09020304-501			Aquatic life	Turbidity	2013	2016	5A
Thief River	Thief Lk to Agassiz Pool	06	09020304-504			Aquatic life	Ammonia2,5	2013	2016	5C
Twelvemile Creek	W Br Twelvemile Cr to Mustinka R	02	09020102-501			Aquatic life	Fish IBI	2010	2013	5C
Two River	M Br Two R to N Br Two R	06	09020312-501			Aquatic life	Turbidity	2006	2009	5C
Two River, Middle Branch	Headwaters (CD 23) to S Br Two R	02	09020312-503			Aquatic life	Fish IBI	2010	2013	5C
Two River, North Branch	Headwaters to Little Joe R	02	09020312-504			Aquatic life	Fish IBI	2010	2013	5C
Two River, South Branch	Unnamed Ditch to Lateral Ditch 2	02	09020312-506			Aquatic life	Fish IBI	2010	2013	5C
Unnamed Creek	Eighteen Lk to Bee Lk	06	09020305-541			Aquatic life	Low Oxygen[2,5]	2013	2016	5C
Unnamed Creek	Mitchell Lk to Badger Lk	06	09020305-542			Aquatic life	Low Oxygen[2,5]	2013	2016	5C
Walker Brook	Walker Bk Lk to Clearwater R	02	09020305-509			Aquatic life	Low Oxygen[2,5]	2002	2005	5C
Whiskey Creek	T133 R47W S13 east line to Red R	96	09020104-520	501		Aquatic life	Turbidity	2005	2009	5C
Whiskey Creek	Headwaters to T133 R46W S18 west line	96	09020104-521	501		Aquatic life	Turbidity	2005	2009	5C
Wild Rice River	S Br Wild Rice R to Red R	06	09020108-501			Aquatic life	Turbidity:TTube	2006	2009	5C
Toad	Lake or Reservoir	98			03-0107-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Many Point	Lake or Reservoir	98			03-0158-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Elbow	Lake or Reservoir	06			03-0159-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Cotton	Lake or Reservoir	98			03-0286-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Strawberry	Lake or Reservoir	98			03-0323-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
White Earth	Lake or Reservoir	98			03-0328-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sallie	Lake or Reservoir	98			03-0359-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Muskrat	Lake or Reservoir	98			03-0360-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Detroit	Lake or Reservoir	98			03-0381-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Floyd	Lake or Reservoir	98			03-0386-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Floyd	Lake or Reservoir	02			03-0387-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Big Cormorant	Lake or Reservoir	98			03-0576-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ida	Lake or Reservoir	98			03-0582-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lee (Talac)	Lake or Reservoir	02			03-0619-00	Aquatic recreation	Excess nutrients	2012	2015	5C
Red	Lake or Reservoir	02			04-0035-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Blackduck	Lake or Reservoir	98			04-0069-	Aquatic	Mercury[1]FCA	1999	2011	5C

			00	consumption				
Medicine	Lake or Reservoir	98	04-0122-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sandy	Lake or Reservoir	06	04-0124-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Clearwater	Lake or Reservoir	98	04-0343-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
East Toqua	Lake or Reservoir	04	06-0138-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Minerva	Lake or Reservoir	98	15-0079-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lomond	Lake or Reservoir	98	15-0081-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pine	Lake or Reservoir	06	15-0149-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Florian Pk Res.	Lake or Reservoir	98	45-0119-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Pine	Lake or Reservoir	98	56-0130-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
East Battle	Lake or Reservoir	02	56-0138-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Rush	Lake or Reservoir	98	56-0141-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Pine	Lake or Reservoir	02	56-0142-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Clitherall	Lake or Reservoir	98	56-0238-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
West Battle	Lake or Reservoir	02	56-0239-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Otter Tail	Lake or Reservoir	98	56-0242-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Marion	Lake or Reservoir	06	56-0243-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Walker	Lake or Reservoir	98	56-0310-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little McDonald	Lake or Reservoir	98	56-0328-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dead	Lake or Reservoir	98	56-0383-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Star	Lake or Reservoir	98	56-0385-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Long	Lake or Reservoir	02	56-0388-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Pickerel	Lake or Reservoir	98	56-0475-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wall	Lake or Reservoir	98	56-0658-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fish	Lake or Reservoir	06	56-0684-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
North Lida	Lake or Reservoir	98	56-0747-	Aquatic	Mercury[1]FCA	1999	2011	5C

				01	consumption				
Lizzie	Lake or Reservoir	98		56-0760-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pelican	Lake or Reservoir	98		56-0786-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dayton Hollow Reservoir	Lake or Reservoir	98		56-0824-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pebble	Lake or Reservoir	98		56-0829-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Jewett	Lake or Reservoir	06		56-0877-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Prairie	Lake or Reservoir	04		56-0915-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Olaf	Lake or Reservoir	02		56-0950-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Maple	Lake or Reservoir	98		60-0305-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Hayes	Lake or Reservoir	98		68-0004-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Traverse	Lake or Reservoir	98		78-0025-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
RAINY RIVER BASIN									
Baudette River	Headwaters to Rainy R	94	09030008-501		Aquatic life	Low Oxygen[2,5]	2004	2009	5C
Big Fork River	Moose Bk to Coon Cr	98	09030006-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Fork River	Coon Cr to Deer Cr	98	09030006-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Fork River	Deer R to Caldwell R	98	09030006-504		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Fork River	Caldwell R to Reilly Bk	98	09030006-507		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Fork River	Reilly Bk to Sturgeon R	98	09030006-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Fork River	Sturgeon R to Bear R	98	09030006-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big Fork River	Bear R to Rainy R	98	09030006-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Black River	Unnamed Cr to W Fk Black R	06	09030004-510		Aquatic consumption	Mercury[1] Water Column	2006	2021	5C
Kawishiwi River	Headwaters to S Kawishiwi R	02	09030001-510		Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Kawishiwi River	S Kawishiwi R to Farm Lk	02	09030001-512		Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Little Fork River	Headwaters (Lost Lk) to Rice R	98	09030005-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Fork River	Rice R to Beaver Cr	98	09030005-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Fork River	Beaver Cr to Sturgeon R	98	09030005-504		Aquatic	Mercury[1]FCA	1999	2011	5C

					consumption				
Little Fork River	Sturgeon R to Willow R	98	09030005-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Fork River	Willow R to Valley R	98	09030005-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Fork River	Valley R to Prairie Cr	98	09030005-507		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Fork River	Prairie Cr to Nett Lk R	98	09030005-508		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Fork River	Nett Lk R to Cross R	98	09030005-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Fork River	Cross R to Beaver Bk	98	09030005-510		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Fork River	Beaver Bk to Rainy R	98	09030005-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Little Fork River	Beaver Bk to Rainy R	06	09030005-501		Aquatic life	Turbidity	2011	2016	5A
Rainy River	Saganaga Lk to Basswood Lk	98	09030001-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Basswood Lk to Crooked Lk	98	09030001-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Crooked Lk to Iron Lk	04	09030001-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Iron Lk to Lac La Croix	98	09030001-507		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Lac La Croix to Vermilion R	98	09030001-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Vermilion R to Sand Point Lk	98	09030003-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Sand Point Lk to Namakan Lk	98	09030003-512		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Namakan Lk to Rainy Lk	98	09030003-504		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Rainy Lk to International Falls Dam	98	09030004-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	International Falls Dam to Little Fork R	98	09030004-503		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Little Fork R to Big Fork R	98	09030004-504		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Big Fork R to Black R	98	09030004-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Black R to Rapid R	98	09030004-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Rapid R to Baudette R	98	09030008-504		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Baudette R to RR Bridge in Baudette	98	09030008- 508	503	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	RR Bridge in Baudette to Winter Road R	98	09030008- 509	503	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy River	Winter Road R to Lk of the Woods	98	09030008-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Sturgeon River	Headwaters (Sturgeon Lk) to East Br Sturgeon R	04	09030005-527		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Sturgeon River	E Br Sturgeon R to Dark R	04	09030005-523		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Sturgeon River	Dark R to Bear R	04	09030005-524		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Sturgeon River	Bear R to Little Fork R	04	09030005-514		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Vermilion River	Vermilion Lk to Hilda Cr	04	09030002-527		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Vermilion River	Hilda Cr to Pelican R	04	09030002-529		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Vermilion River	Pelican R to Crane Lk	04	09030002-531		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Williams Creek	Headwaters to Zippel Cr	96	09030009-501		Aquatic life	Low Oxygen[2,5]	2004	2009	5C
Iron	Lake or Reservoir	02		16-0328-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
North	Lake or Reservoir	98		16-0331-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mayhew	Lake or Reservoir	98		16-0337-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
West Pope	Lake or Reservoir	02		16-0341-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Little Iron	Lake or Reservoir	02		16-0355-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Gunflint	Lake or Reservoir	98		16-0356-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crab	Lake or Reservoir	02		16-0357-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Loon	Lake or Reservoir	98		16-0448-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Extortion	Lake or Reservoir	02		16-0450-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Frost	Lake or Reservoir	98		16-0571-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Meditation	Lake or Reservoir	02		16-0583-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Round	Lake or Reservoir	98		16-0606-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sea Gull	Lake or Reservoir	98		16-0629-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gull	Lake or Reservoir	02		16-0632-01	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Saganaga	Lake or Reservoir	98		16-0633-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Hog	Lake or Reservoir	98		16-0653-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mesaba	Lake or Reservoir	98		16-0673-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wine	Lake or Reservoir	98		16-0686-	Aquatic	Mercury[1]FCA	1999	2011	5C

			00	consumption				
Crooked	Lake or Reservoir	98	16-0723-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gillis	Lake or Reservoir	98	16-0753-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Alpine	Lake or Reservoir	98	16-0759-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Jasper	Lake or Reservoir	98	16-0768-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Red Rock	Lake or Reservoir	98	16-0793-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Phoebe	Lake or Reservoir	02	16-0808-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Little Saganaga	Lake or Reservoir	98	16-0809-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gabimichigami	Lake or Reservoir	98	16-0811-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Bear	Lake or Reservoir	98	31-0156-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crum	Lake or Reservoir	98	31-0171-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bass	Lake or Reservoir	98	31-0316-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Deer	Lake or Reservoir	98	31-0334-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Black Island	Lake or Reservoir	98	31-0416-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Nose	Lake or Reservoir	98	31-0417-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
East	Lake or Reservoir	98	31-0460-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Elizabeth	Lake or Reservoir	98	31-0490-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Caribou	Lake or Reservoir	98	31-0620-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ranier	Lake or Reservoir	98	31-0664-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Aspen	Lake or Reservoir	98	31-0690-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Turtle	Lake or Reservoir	98	31-0725-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bello	Lake or Reservoir	98	31-0726-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Jessie	Lake or Reservoir	04	31-0786-00	Aquatic recreation	Excess nutrients	2005	2008	5A
Jessie	Lake or Reservoir	98	31-0786-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Bowstring	Lake or Reservoir	98	31-0813-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sand	Lake or Reservoir	98	31-0826-	Aquatic	Mercury[1]FCA	1999	2011	5C

			00	consumption				
Round	Lake or Reservoir	98	31-0896-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Island	Lake or Reservoir	02	31-0913-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Moose	Lake or Reservoir	98	36-0008-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clear	Lake or Reservoir	98	36-0011-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Dark	Lake or Reservoir	98	36-0014-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Harriet	Lake or Reservoir	98	38-0048-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wanless	Lake or Reservoir	98	38-0049-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Coffee	Lake or Reservoir	98	38-0064-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
T	Lake or Reservoir	98	38-0066-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Windy	Lake or Reservoir	98	38-0068-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Square	Lake or Reservoir	98	38-0074-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Watonwan	Lake or Reservoir	98	38-0079-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kawishiwi	Lake or Reservoir	98	38-0080-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Polly	Lake or Reservoir	06	38-0104-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Adams	Lake or Reservoir	98	38-0153-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ogishkemuncie	Lake or Reservoir	04	38-0180-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Ottertrack	Lake or Reservoir	02	38-0211-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Silver Island	Lake or Reservoir	98	38-0219-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Perent	Lake or Reservoir	98	38-0220-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Knife	Lake or Reservoir	98	38-0229-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Section 29	Lake or Reservoir	98	38-0292-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bunny	Lake or Reservoir	02	38-0293-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Amber	Lake or Reservoir	98	38-0336-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Thomas	Lake or Reservoir	98	38-0351-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fraser	Lake or Reservoir	98	38-0372-	Aquatic	Mercury[1]FCA	1999	2011	5C

			00	consumption				
Dumbbell	Lake or Reservoir	98	38-0393-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sylvania	Lake or Reservoir	02	38-0395-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Isabella	Lake or Reservoir	98	38-0396-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Insula	Lake or Reservoir	04	38-0397-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Ima	Lake or Reservoir	02	38-0400-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Knife	Lake or Reservoir	98	38-0404-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Delay	Lake or Reservoir	98	38-0415-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Eighteen	Lake or Reservoir	98	38-0432-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Jack	Lake or Reservoir	02	38-0441-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Disappointment	Lake or Reservoir	98	38-0488-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Vera	Lake or Reservoir	98	38-0491-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ensign	Lake or Reservoir	06	38-0498-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Parent	Lake or Reservoir	98	38-0526-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Snowbank	Lake or Reservoir	98	38-0529-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sucker	Lake or Reservoir	98	38-0530-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Birch	Lake or Reservoir	98	38-0532-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Surprise	Lake or Reservoir	02	38-0550-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Dragon	Lake or Reservoir	98	38-0552-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gander	Lake or Reservoir	98	38-0554-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Grouse	Lake or Reservoir	98	38-0557-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kitigan	Lake or Reservoir	98	38-0559-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mitawan	Lake or Reservoir	98	38-0561-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Flat Horn	Lake or Reservoir	98	38-0568-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gegoka	Lake or Reservoir	98	38-0573-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Quadga	Lake or Reservoir	98	38-0596-	Aquatic	Mercury[1]FCA	1999	2011	5C

			00	consumption				
Three	Lake or Reservoir	98	38-0600-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
One	Lake or Reservoir	98	38-0605-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Two	Lake or Reservoir	98	38-0608-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Newfound	Lake or Reservoir	98	38-0619-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Flash	Lake or Reservoir	98	38-0630-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Grass	Lake or Reservoir	98	38-0635-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ojibway	Lake or Reservoir	98	38-0640-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Ojibway	Lake or Reservoir	02	38-0640-00	Aquatic Consumption	PCB FCA	2002	2015	5A
Moose	Lake or Reservoir	98	38-0644-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Basswood	Lake or Reservoir	98	38-0645-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Greenwood	Lake or Reservoir	98	38-0656-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Middle McDougal	Lake or Reservoir	02	38-0658-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
South McDougal	Lake or Reservoir	02	38-0659-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Dunnigan	Lake or Reservoir	98	38-0664-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Slate	Lake or Reservoir	98	38-0666-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Swallow	Lake or Reservoir	98	38-0668-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pike	Lake or Reservoir	98	38-0670-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Highlife	Lake or Reservoir	98	38-0673-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
East Chub	Lake or Reservoir	98	38-0674-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
West Chub	Lake or Reservoir	98	38-0675-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
North McDougal	Lake or Reservoir	02	38-0686-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
August	Lake or Reservoir	98	38-0691-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gabbro	Lake or Reservoir	98	38-0701-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Nickel	Lake or Reservoir	02	38-0705-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Section Twelve	Lake or Reservoir	02	38-0714-	Aquatic	Mercury[1]FCA	2002	2015	5C

			00	consumption				
Triangle	Lake or Reservoir	98	38-0715-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Greenstone	Lake or Reservoir	98	38-0718-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clear	Lake or Reservoir	02	38-0722-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Sand	Lake or Reservoir	98	38-0735-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Harris	Lake or Reservoir	98	38-0736-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Beaver Hut	Lake or Reservoir	98	38-0737-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pickerel	Lake or Reservoir	02	38-0741-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Browns	Lake or Reservoir	98	38-0780-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Garden	Lake or Reservoir	98	38-0782-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Newton	Lake or Reservoir	98	38-0784-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sandpit	Lake or Reservoir	98	38-0786-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Horse	Lake or Reservoir	98	38-0792-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cedar	Lake or Reservoir	98	38-0810-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fall	Lake or Reservoir	98	38-0811-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fourtown	Lake or Reservoir	98	38-0813-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crooked	Lake or Reservoir	98	38-0817-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lake of the Woods	Lake or Reservoir	98	39-0002-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Birch	Lake or Reservoir	98	69-0003-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
White Iron	Lake or Reservoir	98	69-0004-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little	Lake or Reservoir	98	69-0056-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Perch	Lake or Reservoir	98	69-0058-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Whisper	Lake or Reservoir	98	69-0059-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
One Pine	Lake or Reservoir	98	69-0061-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Hobo	Lake or Reservoir	04	69-0062-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Bass	Lake or Reservoir	02	69-0063-	Aquatic	Mercury[1]FCA	2002	2015	5C

			00	consumption				
Minister	Lake or Reservoir	98	69-0065-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Long	Lake or Reservoir	98	69-0066-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Shagawa	Lake or Reservoir	98	69-0069-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Low	Lake or Reservoir	98	69-0070-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Picket	Lake or Reservoir	02	69-0079-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Nels	Lake or Reservoir	98	69-0080-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Grassy	Lake or Reservoir	02	69-0082-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Tee	Lake or Reservoir	02	69-0083-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Sletten	Lake or Reservoir	98	69-0084-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fenske	Lake or Reservoir	02	69-0085-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Bear Island	Lake or Reservoir	98	69-0115-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Johnson	Lake or Reservoir	98	69-0117-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Burntside	Lake or Reservoir	98	69-0118-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Everett	Lake or Reservoir	98	69-0120-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Muckwa	Lake or Reservoir	98	69-0159-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wolf	Lake or Reservoir	98	69-0161-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Twin	Lake or Reservoir	98	69-0163-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
East Twin	Lake or Reservoir	02	69-0174-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Ole	Lake or Reservoir	04	69-0175-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Slim	Lake or Reservoir	98	69-0181-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Big	Lake or Reservoir	98	69-0190-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ed Shave	Lake or Reservoir	98	69-0199-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Stuart	Lake or Reservoir	98	69-0205-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Eagles Nest #4	Lake or Reservoir	98	69-0218-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crab	Lake or Reservoir	04	69-0220-	Aquatic	Mercury[1]FCA	2004	2017	5C

			00	consumption				
Lac la Croix	Lake or Reservoir	98	69-0224-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Bearhead	Lake or Reservoir	98	69-0254-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Armstrong	Lake or Reservoir	02	69-0278-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Eagles Nest #1	Lake or Reservoir	98	69-0285-01	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Eagles Nest #3	Lake or Reservoir	98	69-0285-03	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Big Moose	Lake or Reservoir	98	69-0316-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Meander	Lake or Reservoir	98	69-0329-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Oyster	Lake or Reservoir	98	69-0330-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ramshead	Lake or Reservoir	98	69-0339-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Hustler	Lake or Reservoir	98	69-0343-00	Aquatic consumption	Mercury[1] Water Column	1999	2011	5A
Hustler	Lake or Reservoir	98	69-0343-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Ge-Be-On-Equat	Lake or Reservoir	98	69-0350-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Takucmich	Lake or Reservoir	02	69-0369-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Vermilion	Lake or Reservoir	98	69-0378-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Lynx	Lake or Reservoir	06	69-0383-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Little Trout	Lake or Reservoir	98	69-0455-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Jeanette	Lake or Reservoir	98	69-0456-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Nigh	Lake or Reservoir	02	69-0457-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Crellin	Lake or Reservoir	98	69-0459-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Heritage	Lake or Reservoir	06	69-0469-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Loon	Lake or Reservoir	98	69-0470-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Eugene	Lake or Reservoir	04	69-0473-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Fat	Lake or Reservoir	98	69-0481-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Gun	Lake or Reservoir	98	69-0487-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Trout	Lake or Reservoir	98	69-0498-	Aquatic	Mercury[1]FCA	1999	2011	5C

			00	consumption				
Pike River Flowage	Lake or Reservoir	98	69-0580-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Wolf	Lake or Reservoir	98	69-0582-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Oriniack	Lake or Reservoir	06	69-0587-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Pauline	Lake or Reservoir	98	69-0588-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Astrid	Lake or Reservoir	98	69-0589-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Maude	Lake or Reservoir	98	69-0590-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pickett	Lake or Reservoir	04	69-0591-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Dovre	Lake or Reservoir	98	69-0604-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Vermillion	Lake or Reservoir	98	69-0608-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Echo	Lake or Reservoir	98	69-0615-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Crane	Lake or Reservoir	98	69-0616-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sand Point	Lake or Reservoir	98	69-0617-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pfeiffer	Lake or Reservoir	02	69-0671-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Kabustasa	Lake or Reservoir	02	69-0679-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Little Trout	Lake or Reservoir	98	69-0682-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Mukooda	Lake or Reservoir	98	69-0684-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
O'Leary	Lake or Reservoir	98	69-0685-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Winchester	Lake or Reservoir	04	69-0690-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Johnson	Lake or Reservoir	98	69-0691-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Namakan	Lake or Reservoir	98	69-0693-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rainy	Lake or Reservoir	98	69-0694-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Little Sandy	Lake or Reservoir	98	69-0729-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Auto	Lake or Reservoir	02	69-0731-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Little Sand	Lake or Reservoir	98	69-0732-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sand	Lake or Reservoir	02	69-0736-	Aquatic	Mercury[1]FCA	2002	2015	5C

			00	consumption				
Susan	Lake or Reservoir	98	69-0741-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ban	Lake or Reservoir	98	69-0742-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Elbow	Lake or Reservoir	98	69-0744-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kjostad	Lake or Reservoir	98	69-0748-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Myrtle	Lake or Reservoir	98	69-0749-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Moose	Lake or Reservoir	98	69-0750-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Franklin	Lake or Reservoir	98	69-0754-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Marion	Lake or Reservoir	98	69-0755-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Tooth	Lake or Reservoir	98	69-0756-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Net	Lake or Reservoir	02	69-0757-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Little Johnson	Lake or Reservoir	98	69-0760-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Spring	Lake or Reservoir	98	69-0761-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Long	Lake or Reservoir	02	69-0765-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Dark	Lake or Reservoir	98	69-0790-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fourteen	Lake or Reservoir	98	69-0793-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Leander	Lake or Reservoir	98	69-0796-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Clear	Lake or Reservoir	98	69-0799-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Moose	Lake or Reservoir	98	69-0806-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Elephant	Lake or Reservoir	98	69-0810-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Agnes	Lake or Reservoir	98	69-0830-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Cruiser	Lake or Reservoir	98	69-0832-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Peary	Lake or Reservoir	98	69-0833-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Fishmouth	Lake or Reservoir	02	69-0834-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Ryan	Lake or Reservoir	02	69-0835-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Beast	Lake or Reservoir	04	69-0837-	Aquatic	Mercury[1]FCA	2004	2017	5C

				00	consumption				
Oslo	Lake or Reservoir	02		69-0838-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Brown	Lake or Reservoir	02		69-0839-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Pelican	Lake or Reservoir	98		69-0841-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Black Duck	Lake or Reservoir	02		69-0842-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Ek	Lake or Reservoir	98		69-0843-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Kabetogama	Lake or Reservoir	98		69-0845-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Long	Lake or Reservoir	98		69-0859-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Ash	Lake or Reservoir	98		69-0864-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Jorgens	Lake or Reservoir	02		69-0867-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Boot	Lake or Reservoir	02		69-0868-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Quarterline	Lake or Reservoir	02		69-0869-00	Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Shoepack	Lake or Reservoir	98		69-0870-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Quill	Lake or Reservoir	06		69-0871-00	Aquatic consumption	Mercury[1]FCA	2006	2021	5C
Loiten	Lake or Reservoir	04		69-0872-00	Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Hobson	Lake or Reservoir	98		69-0923-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Shannon	Lake or Reservoir	98		69-0925-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Side	Lake or Reservoir	98		69-0933-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Locator	Lake or Reservoir	98		69-0936-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
War Club	Lake or Reservoir	98		69-0937-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Sturgeon	Lake or Reservoir	98		69-0939-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C
MISSOURI RIVER BASIN									
Elk River	Headwaters to Rock R	06	10170204-519		Aquatic life	Turbidity:TTube	2006	2011	5C
Judicial Ditch 6 (Lake Okabena Outflow)	Okabena Lk to Ocheda Lk	02	10230003-502		Aquatic life	Turbidity:TSS	2011	2014	5C
Main Ditch	CD A to Pipestone Cr	04	10170203-527		Aquatic recreation	Fecal coliform	2004	2008	5A
Main Ditch	CD A to Pipestone Cr	06	10170203-527		Aquatic life	Turbidity	2006	2008	5A

Pipestone Creek, North Branch	Headwaters to Pipestone Cr	04	10170203-514		Aquatic recreation	Fecal coliform	2004	2008	5A
Pipestone Creek, North Branch	Headwaters to Pipestone Cr	06	10170203-514		Aquatic life	Turbidity	2006	2008	5A
Pipestone Creek	Headwaters to N Br Pipestone Cr	98	10170203-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Pipestone Creek	N Br Pipestone Cr to MN/SD border (Pipestone County)	94	10170203-501		Aquatic recreation	Fecal coliform	2002	2008	5A
Pipestone Creek	N Br Pipestone Cr to MN/SD border (Pipestone County)	98	10170203-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Pipestone Creek	N Br Pipestone Cr to MN/SD border (Pipestone County)	02	10170203-501		Aquatic life	Turbidity	2002	2008	5A
Pipestone Creek	SD border to Split Rock Cr (Rock County)	04	10170203-505		Aquatic consumption	Mercury[1]FCA	2004	2017	5C
Rock River	Headwaters to T107 R44W S7 west line	98	10170204-502		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rock River	T107 R45W S12 east line to T107 R44W S29 west line	98	10170204-503		Aquatic consumption	Mercury[1]FCA	2002	2015	5C
Rock River	T107 R44W S30 east line to Chanarambie Cr	98	10170204-504		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rock River	Chanarambie Cr to Poplar Cr	98	10170204-505		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rock River	Poplar Cr to Unnamed Cr	98	10170204-506		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rock River	Unnamed Cr to Unnamed Cr	98	10170204-507		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rock River	Unnamed Cr to Champepadan Cr	98	10170204-508		Aquatic consumption	Mercury[1]FCA	1999	2011	5C
Rock River	Champepadan Cr to Elk Cr	98	10170204-509		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Rock River	Champepadan Cr to Elk Cr	06	10170204-509		Aquatic life	Turbidity:TTube	2006	2011	5A
Rock River	Elk Cr to IA border	94	10170204-501		Aquatic life	Ammonia[2,5]	2006	2011	5A
Rock River	Elk Cr to IA border	94	10170204-501		Aquatic recreation	Fecal coliform	2006	2011	5A
Rock River	Elk Cr to IA border	98	10170204-501		Aquatic consumption	Mercury[1]FCA	1999	2011	5A
Rock River	Elk Cr to IA border	02	10170204-501		Aquatic Life	Turbidity	2006	2011	5A
Split Rock Creek	Split Rock Lk to Pipestone Cr	94	10170203-507		Aquatic life	Low Oxygen[2]	2006	2009	5C
Little Spirit	Lake or Reservoir	04		32-0024-00	Aquatic recreation	Excess nutrients	2012	2017	5C
Split Rock	Lake or Reservoir	98		59-0001-00	Aquatic consumption	Mercury[1]FCA	1999	2011	5C

Appendix III-A.
Beach Monitoring Program

Beach List and Priority

Tier 1 – High

Beach	STORET	Location
Park Point Beach House	16-0001-B003	St. Louis County
Park Point Harbor Parking Lot/ Sky Harbor Airport	16-0001-B004	St. Louis County
Park Point Southworth Marsh	16-0001-B036	St. Louis County
Park Pt Lafayette Community Center	16-0001-B005	St. Louis County
Park Point 20th St/Hearding Island Canal Beach	16-0001-B037	St. Louis County
New Duluth Boat Club Boat Landing	16-0001-B007	St. Louis County
Tot Lot/13th Street South	16-0001-B006	St. Louis County
Lakewalk Beach	16-0001-B008	St. Louis County
Brighton Beach	16-0001-B012	St. Louis County

Tier 2 – Medium

Beach	STORET	Location
Boy Scout Landing	16-0001-B001	St. Louis County
Clyde Ave – West Duluth	16-0001-B002	St. Louis County
Leif Erickson Park	16-0001-B009	St. Louis County
Lakewalk East/16th Avenue East	16-0001-B038	St. Louis County
42nd Avenue East	16-0001-B010	St. Louis County
Lester River	16-0001-B011	St. Louis County
French River	16-0001-B013	St. Louis County
Bluebird Landing	16-0001-B014	St. Louis County
Stony Point	16-0001-B015	St. Louis County
Knife River Marina Beach	16-0001-B035	Lake County
Agate Bay	16-0001-B039	Lake County
Burlington Bay	16-0001-B016	Lake County
Flood Bay	16-0001-B017	Lake County
Stewart River Beach	16-0001-B018	Lake County
Gooseberry Falls State Park	16-0001-B019	Lake County
Twin Points Public Access	16-0001-B020	Lake County
Split Rock River	16-0001-B021	Lake County
Split Rock Lighthouse State Park	16-0001-B022	Lake County
Silver Bay Marina	16-0001-B023	Lake County
Tettegouche State Park	16-0001-B024	Lake County
Sugar Loaf Cove	16-0001-B025	Cook County
Schroeder Town Park	16-0001-B026	Cook County
Temperance River State Park	16-0001-B027	Cook County
Cutface Creek Wayside Rest	16-0001-B028	Cook County
Grand Marais Campground	16-0001-B029	Cook County
Grand Marais Downtown	16-0001-B030	Cook County
Old Shore Road Beach Area	16-0001-B031	Cook County

Durfee Creek Area	16-0001-B032	Cook County
Kadunce Creek Outpost Motel Area	16-0001-B033	Cook County
Paradise Beach	16-0001-B034	Cook County

Tier 3 – Low

Beach	**STORET**	**Location**
Morgan Park Beach	16-0001-B040	St. Louis
Smithville Park Beach	16-0001-B041	St. Louis
Indian Point Campground Beach	16-0001-B042	St. Louis
Waterfront Trail/Riverside Beach	16-0001-B043	St. Louis
Waterfront Trail/Radio Towers Beach	16-0001-B044	St. Louis
Waterfront Trail/Interlake Beach	16-0001-B045	St. Louis
Blatnik Fishing Pier Beach	16-0001-B046	St. Louis
Bayfront Park Beach	16-0001-B047	St. Louis
Minnesota Point Harbor Beach	16-0001-B048	St. Louis
Lakewalk East/26th Avenue East Beach	16-0001-B049	St. Louis
Glensheen Cemetary Beach	16-0001-B050	St. Louis
North Shore Drive Wayside Rest/72nd Ave E	16-0001-B051	St. Louis
Lakewood Pump Station Beach	16-0001-B052	St. Louis
North Shore Drive Wayside Rest/Cant Road	16-0001-B053	St. Louis
McQuade Road Safe Harbor Beach	16-0001-B054	St. Louis
Stony Point Wayside Rest Beach	16-0001-B055	St. Louis
Two Harbors City Park Beach	16-0001-B056	Lake
Silver Creek Beach	16-0001-B057	Lake
Silver Cliff Beach	16-0001-B058	Lake
Split Rock Lighthouse State Park/Split Rock Point	16-0001-B059	Lake
Split Rock Lighthouse State Park /Crazy Bay	16-0001-B060	Lake
Split Rock Lighthouse State Park /Corundum Point	16-0001-B061	Lake
Split Rock Lighthouse State Park /Gold Rock Point	16-0001-B062	Lake
Blueberry Hill Beach	16-0001-B063	Lake
Palisade Beach	16-0001-B064	Lake
Tettegouche State Park/Baptism River	16-0001-B065	Lake
Tettegouche State Park/Crystal Bay	16-0001-B066	Lake
Manitou River Beach	16-0001-B067	Lake
Temperance River State Park East	16-0001-B068	Cook
Ray Berglund Wayside Rest Beach	16-0001-B069	Cook
Cascade State Park West Beach	16-0001-B070	Cook
Cascade State Park Campground Beach	16-0001-B071	Cook
Butterwort Cliffs Beach	16-0001-B072	Cook
Croftville Beach	16-0001-B073	Cook
Red Cliff Beach	16-0001-B074	Cook
Coville Creek Beach	16-0001-B075	Cook
Judge C.R. Magney State Park West	16-0001-B076	Cook
Judge C.R. Magney State Park East	16-0001-B077	Cook
Chicago Bay Boat Launch Beach	16-0001-B078	Cook

Horseshoe Bay Boat Launch Beach	16-0001-B079	Cook

Appendix III-B.
Beach Monitoring Program

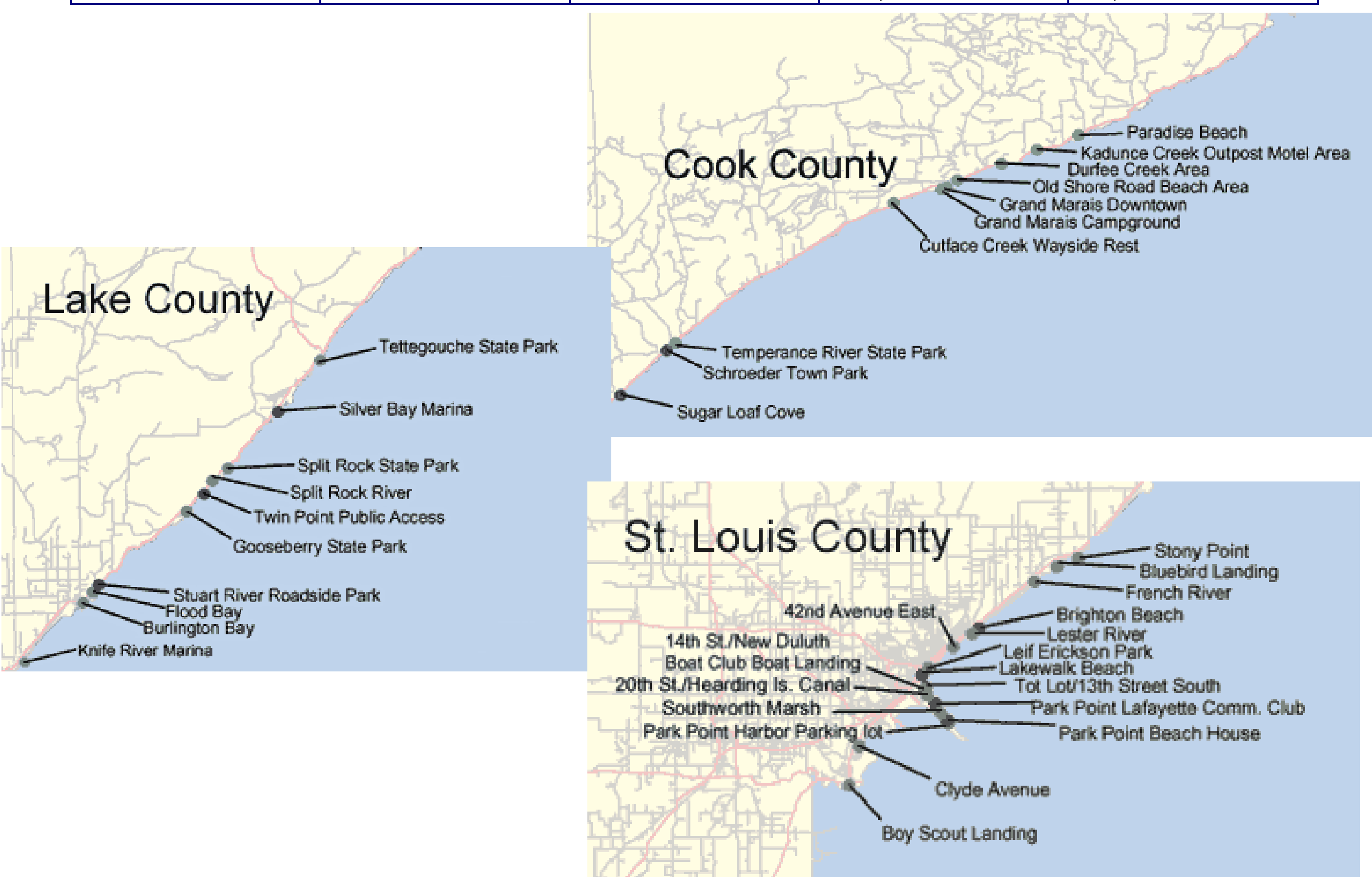
Beach Miles

Monitored Minnesota Lake Superior Beaches

County	No. of Beaches	Total Beach Miles	Total Beach Feet	Total Beach Meters
Cook Monitored	10	11.41	60,219	**18,355**
Lake Monitored	11	6.73	35,509	**10,823**
St. Louis Monitored	18	12.13	64,040	**19,519**
Total	**39 beaches**	**30.27 miles**	**159,768 feet**	**48,697 meters**

All Minnesota Lake Superior Beaches

County	No. of Beaches	Total Beach Miles	Total Beach Feet	Total Beach Meters
Cook All	22	21.67	114,429	**34,878**
Lake All	23	16.05	84,744	**25,830**
St. Louis All	34	20.02	105,677	**32,210**
Total	**79 beaches**	**57.74 miles**	**304,850 feet**	**92,918 meters**



Appendix III-C.
Beach Monitoring Program

Tiered Monitoring, Sampling and Analysis Plans

Tiered Monitoring Plan
Tier 1 beaches are those that receive the most use by the public for swimming, bathing, surfing, kayaking, or similar water contact activities and/or have the highest potential risk of pathogen pollution within the immediate area. These beaches are sampled a minimum of twice a week on Mondays and Thursdays.

Tier 2 coastal recreational water sites usually receive moderate use by the public for water contact recreational purposes and have fewer source of pathogen pollution in the area. These beaches are sampled a minimum of once a week on Mondays.

Tier 3 sites typically receive sporadic use, have limited access, and few if any potential sources of pollution in the area. These sites are not sampled.

Sampling Protocol
To assure consistency in collecting samples for analysis, the following procedures will be used: Specific sites will be designated for collecting samples during the bathing season. Samples will be collected exclusively at these sites for the duration of the sampling period.
2) Sample bottles will be prepared and provided by the laboratories charged with conducting bacteria analyses.

<u>General Rules of Sampling</u>

a. Take extreme care to avoid contamination the sample and sample container.
   · Do not remove bottle covering and closure until just prior to obtaining each sample.
   · Do not touch the inside of the sample container.
   · Do not rinse the sample container.
   · Do not put caps on the ground while sampling.
   · Do not transport the samples with other environmental samples.

b. Adhering to sample preservation and holding time limits is critical to the production of valid data.
   · Samples should be labeled, iced or refrigerated at 1 – 4 degrees C immediately after collection and during transit to the lab.
   · Care should be taken to ensure that sample bottles are not totally immersed in water during transit or storage.
   · Samples should arrive in the lab no later than 6 hours after collection. Whenever possible samples should arrive at the lab on the day of collection, preferably before 3 p.m.

c. The sampler will complete the laboratory data form noting time, date, and location of sample collection, current weather conditions (including wind direction and velocity), water temperature, clarity, wave height and any abnormal water conditions.

Sampling Method

- Label the bottle.
- Carefully move to the first sampling location. Water should be approximately knee deep. While wading slowly in the water, try to avoid kicking up bottom sediment at the sampling site.
- Open a sampling bottle and grasp it at the base with one hand and plunge the bottle mouth downward into the water to avoid introducing surface scum.
- The sampling depth should approximately 6 to 12 inches below the surface of the water.
- Position the mouth of the bottle into the current away from your hand. If the water body is static, an artificial current can be created by moving the bottle horizontally with the direction of the bottle pointed away from you.
- Tip the bottle slightly upward to allow air to exit and the bottle to fill.
- Make sure the bottle is completely filled before removing it from the water.
- Remove the bottle from the water body and pour out a small portion to allow an air space of 2 cm for proper mixing of the sample before analyses.
- Tightly close the cap.
- Store sample in a cooler immediately.

The laboratory data form serves as a Chain-of-Custody record for each sample collected and analyzed. In keeping with laboratory requirements (Standard Methods), all samples must be sealed, chilled, and transported from the sample point to the laboratory for analysis within six hours after sampling. Sample collectors have exclusive custody of any sample from the time of collection until the sample is deposited with the laboratory. The laboratory assumes custody of each sample it receives and is responsible for forwarding all sample analysis results to the Project Manager within twenty-four hours to forty-eight hours of receiving the sample.

Analytical Methods

All analyses shall be performed in laboratories certified by the Minnesota Department of Health for microbiological analysis of *E. coli* in water.

Appendix III-D.
Beach Monitoring Program

Public Notification and Risk Communication Plan

The public notification and risk communication plan is to address all advisories for " water contact not recommended" at Minnesota's Lake Superior beaches. The plan is to provide the public with accurate and timely information regarding beach WQ, risks associated with water contact, and suggestions on how the public can assist in the protection and improvement of the beach WQ.

A. Public notification and risk communication plan

1. Identify measures to notify EPA and local governments when indicator bacteria levels exceed a WQ standard.

a) The single sample maximum shall not exceed 235 cfu/100mL for E. coli or 400 cfu/100mL for fecal coliform.
b) The geometric mean of 5 most recent samples collected during a 30 day period shall not exceed 126 cfu/100mL for E. coli or 200 cfu/100mL for fecal coliform.
c) The Minnesota Lake Superior Beach Monitoring and Notification Program issues beach advisories when indicator bacteria levels exceed the above standards.

2. Identify measures to notify the public when indicator bacteria levels exceed a WQ standard.

Signs, the MPCA Beach webpage (www.MNBeaches.org), Earth 911 webpage, email alerts to participants and media, local phone hotline message, and news releases to the media will be utilized to alert the public to the hazards. Interested parties and managers of sites are also called when an advisory is posted and again when the advisory is removed.

3. Identify notification report submission and delegation process.

Currently, two of the three counties have health department staff that work directly on the monitoring and notification program. When indicator bacteria levels exceed a WQ standard the county staff are notified, the county staff post the sign, an email alert is generated by beach program staff and sent to interested participants and media, and appropriate parties are notified with a phone call. Because the program is coordinated through the MPCA office, including lab facilities and the notification process, there is no need for notification report submission to the MPCA from the county health departments.

B. Measures to notify EPA and local governments

1. Identify measures to notify EPA when a state WQ standard is exceeded.

The EPA will be notified in the annual report of exceedances of state WQS. The EPA can be notified on a more timely fashion, if they so choose.

2. For states, identify measures to notify local governments when a WQ standard is exceeded.

Minnesota has a small number of local governments to work with on the north shore of Lake Superior. There are 3 counties, 7 cities/towns, and 4 state parks. The MPCA will send out email notification with a follow-up phone call to make sure the information was received and the proper action taken.

3. States, tribes, and local governments must notify EPA annually of exceedances of WQS and actions taken to notify the public.

The EPA will be notified in the annual report of exceedances of state WQS in the annual report. The EPA can be notified on a more timely fashion, if they so choose.

4. States only must notify local governments promptly of exceedances of WQS and actions taken to notify the public.

When there is an exceedance of the bacteria standard the county is notified with a phone call and asked to post the sign, the public is notified through the media via a news release and posting on the webpage, and interested parties such as state park managers receive a phone call. We are using the same process for removal of an advisory.

C. Measures to notify the public

1. Identify measures to notify the public when a WQ standard has been exceeded.

A central aim of the Beach Team is to produce a comprehensive communication plan to inform the public of beach water health risks and WQ issues in general. Several products were developed for previous beach seasons in Minnesota and will be updated for the 2006 season.

Websites
The Beach Act staff is currently developing several Internet outlets to post updated information about beach WQ status at individual beaches. The MPCA website (www.MNBeaches.org) itself features a page about beach WQ and public health and the BEACH Act. The staff is also working with the Earth 911 website to post detailed information about Minnesota Lake Superior public beaches. Other webpages to have links to our webpage include: MN Dept. of Health, MN Planning, Duluth Stream (www.lakesuperiorstreams.org), MN DNR State Parks, WLSSD, and North Shore Water Trail.

Brochures
The Team has an informational brochure to distribute to the public. “Business” cards

with website and program information have been developed and distributed. A series of fact sheets are also being developed with the FAQ already completed.

Signs
The Team has developed standard beach advisory signs. The signs clearly show when risk is present using both words and a "no-swim" icon. The sign presents information about causes of water contamination and shows how to contact authorities for more information.

Media partnering
The Team will continue working to partner with local mass media outlets to communicate beach health risk information to the public. This includes newspapers, radio and television. Program staff have done a number of interviews with all local television stations, a number of radio stations, and all local news papers.

MPCA Outlets
The Team will take advantage of MPCA information dissemination media, such as the Agency's quarterly "Minnesota Environment".

Other Outlets
The staff will be working to make presentations at appropriate public meetings such as the Park Point Community Club, North Shore Water Trail Board, County and Township Boards, and other appropriate groups. Other outlets could include articles in the Minnesota Volunteer, Lake Superior Magazine, a booth at the annual Boat Show, and participation in the Riverquest.

Promotional Items
The Team has developed a number of promotional items – beach balls, hand sanitizer, carbineer key chains, magnets, sand pales and business cards – to get the word out about the new website and hot line number. These have been very well received at public meetings, festivals and other events.

Hotline
A local hotline (218-725-7724) which has a recorded message with updated beach advisories was started in the late summer of 2004 and will continue into the future.

2. Immediately issue a public notification or resample for bacterial exceedance of a WQ standard.

When bacteria samples are exceeded the public is notified with news releases, webpage updates, emails, and phone calls. The site is resampled, as soon as possible (Monday through Thursday sampling only because of availability of the lab), and daily sampling continues until the site is back below the WQS.

3. Promptly notify the public of a WQ standard exceedance when there is no reason to doubt the accuracy of the sample.

The “all clear” is issued through the same steps as the advisory. Signs are removed, a news release goes out, and appropriate phone calls are made.

4. Post a sign or functional equivalent when a WQ standard is exceeded.

Advisory signs are posted on large portable orange and white hazard signs with reflective material. They are placed on the high traffic areas of the beach.

D. Notification report submission and delegation

State, tribes, and local governments must notify EPA and in the case of states, local governments must be notified annually of notification plan changes and any delegation of responsibilities.

The Lake Superior Beach Monitoring database is being designed to generate a variety of summary reports from a variety of categories. The following summary reports will be submitted to EPA on an annual basis:

- Steps utilized for public notification of advisories
- Beach descriptive data
- Beach programmatic data
- Station and method identification data
- Beach advisory data

States, tribes, and local governments, as delegated, must:

There are no delegated local governments at this time. All local governments participate and coordinate through the MPCA Duluth office.