North Branch Sunrise River Fecal Coliform Total Maximum Daily Load Implementation Plan

Submitted by

Chisago County Department of Environmental Services and Zoning

Prepared by

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Outline

Page Number

Implementation Plan Review Checklist

To facilitate the review of this Implementation Plan by the MPCA, the following table lists the Implementation Plan requirements along with the location of the information within this document.

Requirement	Report Section Number	Report Page Number
a.1. Geographical extent of watershed (use HUCs, stream segments, etc.)	1.2. TMDL Listing (Table 1 and Figure 1)	p. 2 - 3
a.2. Measurable water quality goals	2.2. Measurable Water Quality Goals	p. 6 - 7
a.3. Causes and sources or groups of similar sources	2.1. Source Assessment	p. 6
b.1. Description of nonpoint source management measures	4.0 Implementation Actions	p. 10 - 16
b.2. Description of point source management	NA	NA
c.1. Estimate of load reductions for nonpoint source management measures listed in b.1.	4.0 Implementation Actions; 8.0 Summary, Table 4	p. 10 - 16, 21 - 22
c.2. Estimate of load reductions for point source management measures listed in b.2.	NA	NA
d.1. Estimate of costs for nonpoint source measures	4.0 Implementation Actions; 8.0 Summary, Table 4	p. 10 - 16, 21 - 22
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e. Information/education component for implementing plan and assistance needed from agencies	4.0 Implementation Actions (4.1.1 and 4.2.1)	p. 11, 14
f.1. Schedule for implementing nonpoint source measures	4.0 Implementation Actions; 8.0 Summary, Table 4	p. 10 - 16, 21 - 22
f.2. Schedule for implementing point source measures	NA	NA
g. A description of interim measurable milestones for implementing management measures (point source and nonpoint source) (by measure if needed)	4.0 Implementation Actions; 8.0 Summary, Table 4	p. 10 - 16, 21 - 22
h. Adaptive management process that includes set of criteria to determine progress toward attaining nonpoint source reductions	6.0 Adaptive Management Process	p. 18
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1.0. Problem Statement

1.1. Background

The Federal Clean Water Act requires states to adopt water quality standards to protect the nation's waters. These standards define how much of a pollutant can be in a surface 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 non-point sources.

For each pollutant that causes a water body to fail to meet the state water quality standards, the Federal Clean Water Act requires that the Minnesota Pollution Control Agency (MPCA) conduct a total maximum daily load (TMDL) study. A TMDL study identifies both point and non-point sources of each pollutant that is causing a water quality impairment. Water quality sampling and computer modeling determine the pollutant reductions needed, for each pollutant source, to enable the water quality standard to be met. Water bodies may have several TMDLs, each one determining the limit for a different pollutant.

1.2. TMDL Listing

In 1998, the MPCA listed the North Branch of the Sunrise River as impaired, under Section 303(d) of the Clean Water Act. The geographical extent of the river is approximately 19 miles long and its watershed covers 71 square miles. The river, from its headwaters near Weber in Isanti County to its confluence with the main stem of the Sunrise River near Hay Creek in Chisago County (Figure 1), was listed as impaired for aquatic recreation (Table 1). This was due to over 20 years of data showing often excessive concentrations of fecal coliform bacteria in these waters, especially during times of increased flow due to rain or snow melt.

The indicator for this impairment, fecal coliform, is a group of nonpathogenic bacteria that lives in the intestines of warm blooded animals, including humans. Its presence means the water is likely to have been contaminated by human or animal feces, indicating the possible presence of waterborne pathogenic bacteria, viruses, or protozoa. These organisms can cause gastric or diarrheal diseases, including diseases such as typhoid and cholera.

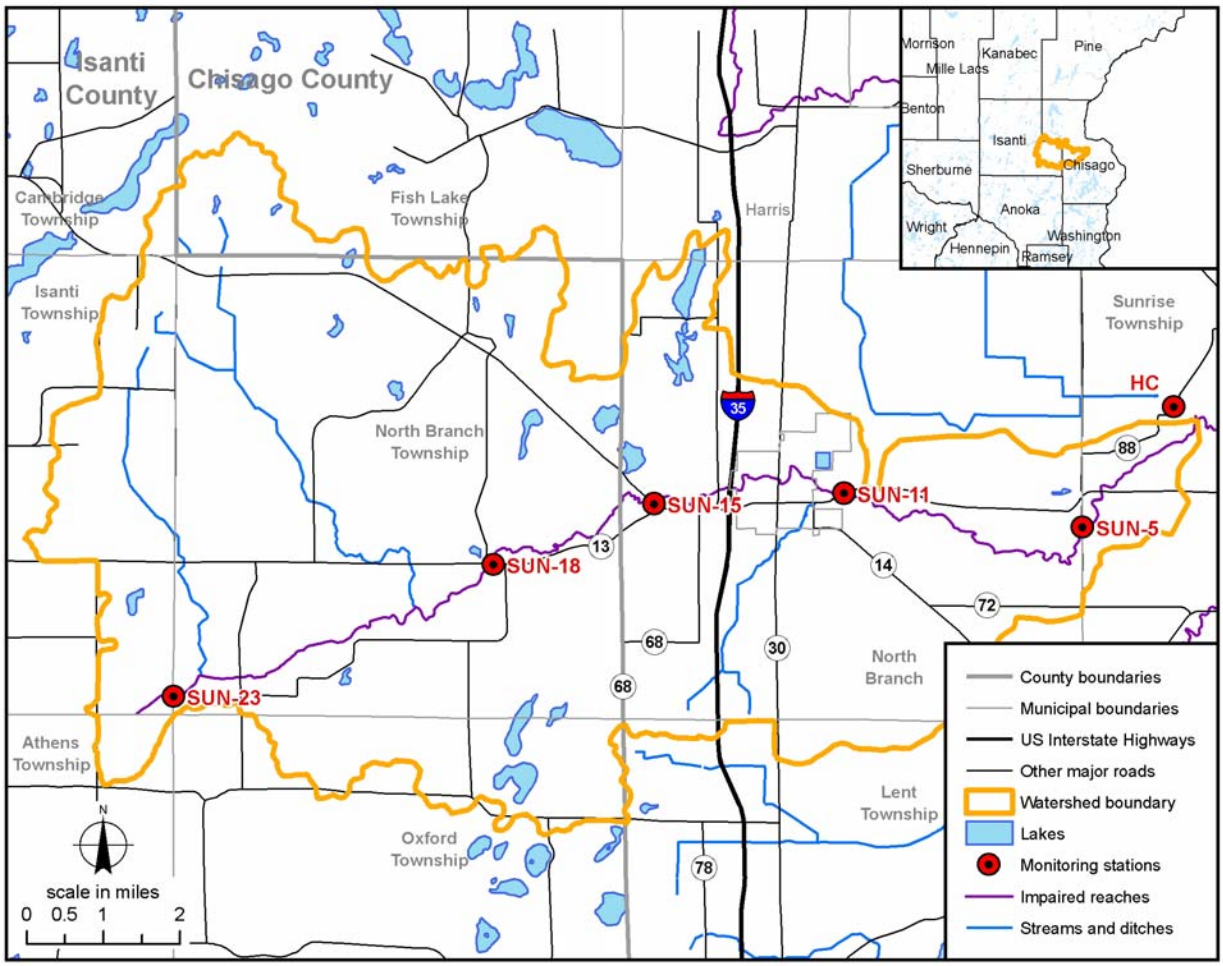
The applicable fecal coliform bacteria water quality standards for Class 2Bd, 2B, and 2C waters are:

200 orgs/100 mL	Not to be exceeded as a geometric mean of not less than 5 samples per calendar month, and
2,000 orgs/100 mL	No more than 10% of samples per calendar month can individually exceed.

Table 1. TMDL Listing Summary Information

Assessment unit identification code:	07030005-501
Pollutant or stressor:	Fecal coliform
Impairment:	Aquatic recreation
Year first listed:	1998
Target start/completion:	2002/2005 (reflects the priority ranking)
Consolidated Assessment and Listing Methodology (CALM) category:	5A – Impaired by multiple pollutants and no TMDL study plans are approved by EPA

Figure 1. Geographical Extent of the North Branch Sunrise River Watershed

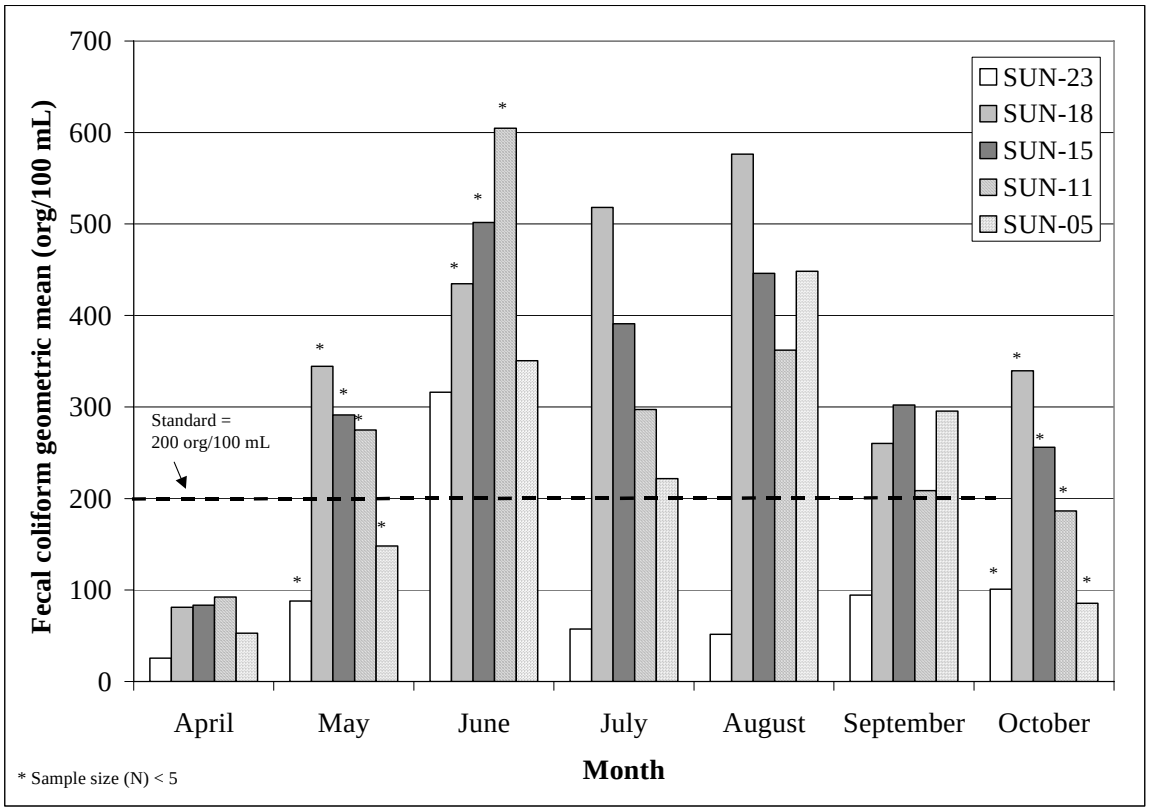


1.3. Existing Conditions

Five sites along the river were monitored for fecal coliform in 2002 and 2003, and these data were used to describe current conditions in the North Branch Sunrise River.

Data from 2002 and 2003 were combined and grouped by month. The fecal coliform standard (monthly geometric mean of 200 org/100 mL) was exceeded at all sites at least once (Figure 2). At the most upstream site, SUN-23, the standard was exceeded in June only. At the remaining sites, the standard was exceeded during a majority of the months. Over all sites except SUN-18 and SUN-5, the magnitude of the exceedance of the standard was greatest in June.

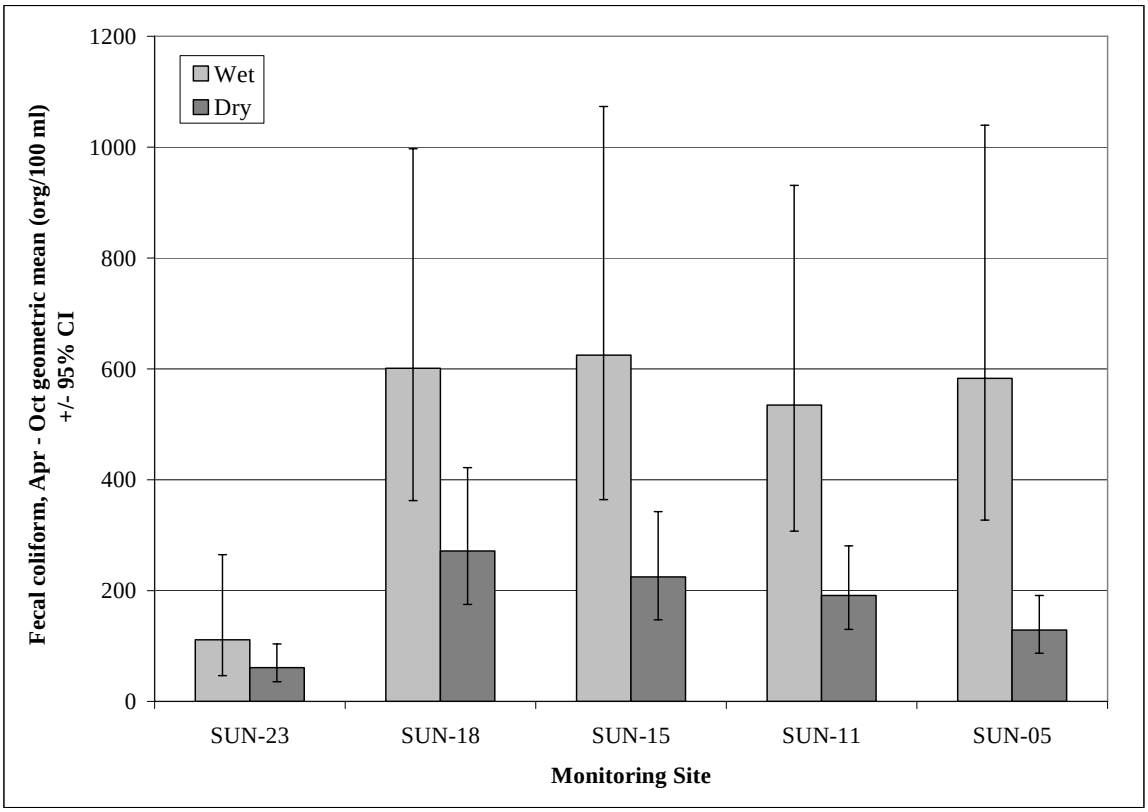
Figure 2. Fecal coliform geometric means by month, 2002-2003 data combined



Fecal coliform concentrations in the river varied between the wet and dry sampling events (Figure 3), with generally higher concentrations during the wet sampling events. Although a level of 200 org/100 mL was exceeded more frequently during the wet sampling events, this concentration was at times exceeded during the dry sampling events. This suggests that although more of the fecal coliform that ends up in the river is from watershed runoff than other sources, some exceedance does occur due to sources other than watershed runoff (e.g. leaky septic systems, wildlife and livestock directly in the water).

A substantial amount of the fecal coliform loading occurs between the monitoring stations SUN-18 and SUN-23 in Isanti County (Figure 3). Nonpoint source management measures listed in this implementation plan will be prioritized to this portion of the watershed.

Figure 3. North Branch Sunrise River fecal coliform monitoring data, 2002-2003. Comparison of wet and dry sampling events.



*A sampling event was considered wet if 0.5 inches of precipitation or more fell in the preceding 24 hours, or if 1.0 inches of precipitation or more fell in the preceding 48 hours

**The 95% confidence interval (CI) refers to the range of values in which the true geometric mean is likely to lie, and is used here to represent the degree of variability in the data within each category. The 95% confidence refers to the method used to construct the interval estimate; that is, the sampling approach. Hypothetically, if 100 different agencies all monitored this stream for fecal coliform during the same time period and subsequently used their data to construct confidence intervals, 95% of these intervals would capture the true geometric mean.

2.0. TMDL Summary

2.1. Source Assessment

A fecal coliform source assessment (causes and sources or groups of similar sources) was completed to characterize the type, magnitude and location of sources of fecal coliform and provide an estimate of the percent contribution of each source to the total amount of fecal coliform in the river. The primary controllable sources of fecal coliform, in order of significance, are pastures near streams or waterways, unregulated feedlots or stockpiles, imminent threat to public health septic systems, surface-applied manure, and dogs and cats in city – waste not collected (Table 2). Nonpoint source management measures listed in this implementation plan will target these sources.

Table 2. Fecal coliform load delivered by source as a percent of the estimated total daily load

Sources	Fecal coliform load delivered (% of the total daily load)			
	Spr-wet	**Spr-dry**	**Sum-wet**	**Sum-dry**
Pasture near stream or waterways	38%	61%	50%	61%
Unregulated feedlots or stockpiles	24%		16%	
Imminent threat to public health septic systems	13%	20%	16%	20%
Surface-applied manure	10%		1.5%	
Dogs & cats in city – waste not collected	5.1%		6.6%	
Dogs & cats outside city	3.6%		4.7%	
Deer & other wildlife	2.9%	19%	3.8%	19%
Incorporated/injected manure	1.7%			
Other pasture	1.0%		1.4%	
Municipal wastewater treatment facility	<0.1%	<0.1%	<0.1%	<0.1%
Septage land application site	<0.1%		<0.1%	
Total	100%	100%	100%	100%

2.2. Measurable Water Quality Goals

The TMDL was linked to observed water quality conditions by using the monitoring data to represent current water quality conditions. Since the magnitude of the exceedance of the standard was greatest in June, the percent reduction needed for the TMDL was set relative to observed fecal coliform concentrations during June. The geometric mean of all sites during the month of June was 420 organisms/100 mL. To attain the standard of 200 organisms/100 mL, a reduction of 52% is necessary. This reduction is believed to be sufficient to ensure compliance with the standard requiring that not more than 10% of the individual samples collected in a single calendar month exceed 2,000 organisms/100 mL. This conclusion is consistent with the findings that the geometric mean standard is the standard most likely to be exceeded in these waters.

Geometric mean, all sites = 420 organisms/100 mL
Standard = 200 organisms/100 mL
% reduction needed to attain standard = (420 – 200) / 420 = 52%

The overall goal for the watershed is therefore a reduction in fecal coliform loadings of 52%. Since flow data are available only at the most downstream site (SUN-5), load calculations are based on flow at that site, and the TMDL is expressed as a daily load at SUN-5. The TMDL calculated represents the loading capacity of the North Branch of the Sunrise River; this is the load of fecal coliform that the river can accept while still maintaining water quality standards.

Table 3. TMDL Calculation – SUN-5, June data only

Average flow	223 cubic feet per second
Average daily volume	19,267,236 cubic feet
Fecal coliform geometric mean (across all sites)	420 organisms per 100 mL
Average daily load	2.29×10^{12} organisms per day 2.29 trillion organisms per day
TMDL (Average daily volume x 200 organisms per 100 mL)	1.10×10^{12} organisms per day 1.10 trillion organisms per day

3.0. Implementation Partners and Planning

The fecal coliform load within the North Branch Sunrise River needs to be reduced by approximately 52% in order for the river to achieve the fecal coliform water quality standard of 200 org/100 mL. A variety of measures will be implemented across the watershed in the upcoming four years. Multiple partners will be involved in this implementation process, and a coordinated effort will be needed to successfully carry out the implementation plan. These project partners have been involved in securing funding for implementation activities.

3.1 Implementation Partners

Chisago County will coordinate the effort to decrease the fecal coliform loading to the North Branch Sunrise River. Chisago County has already worked with the MPCA and several local cooperators to develop a work plan for the Section 319 funded program.

Time frame: Fall 2006 - Fall 2010. Cost: $5,000 In-Kind

Multiple partners, listed below, will act as a steering committee for the implementation of the actions outlined in this Implementation Plan. Chisago County will lead the steering committee.

Time frame: Fall 2006 - Fall 2010. Cost: $6,000 In-Kind

Implementation Coordination:
Chisago County

Implementation Committee:

- Chisago County
- Chisago Soil and Water Conservation District (SWCD)
- City of North Branch
- Farm Service Agency
- Isanti County
- Isanti Soil and Water Conservation District (SWCD)
- Minnesota Department of Agriculture (MDA)
- Minnesota Department of Health (MDH)
- Minnesota Department of Natural Resources (DNR)
- Minnesota Farm Bureau Federation
- Minnesota Milk Producers Association (MMPA) (Environmental Quality Assurance (EQA) Program)
- Minnesota Pollution Control Agency (MPCA)
- Natural Resources Conservation Service

3.2. Funding Opportunities

A combination of grants, in-kind staff time, and cash matches will be used to fund the implementation activities described in this plan.

Clean Water Act Section 319 Programs
Financial assistance is provided to address non-point source water pollution, including the study of water bodies with pollution problems, development of action plans, and implementation of the action plans. Chisago County has been awarded a grant of $90,000 to be used for implementation activities addressing the fecal coliform impairment on the North Branch Sunrise River. These funds need to be spent by September 10, 2010.

Minnesota Clean Water Legacy Program
Passage of the Clean Water Legacy Act in 2006 made short-term program funding available for TMDL implementation activities. Four state agencies are involved in distributing the funds: the Board of Water and Soil Resources, the Minnesota Pollution Control Agency, the Minnesota Department of Agriculture, and the Minnesota Department of Natural Resources.

State Cost-Share
State Cost-Share is a program of the Minnesota Board of Water and Soil Resources. It is administered through local SWCDs and is designed to provide base grants of up to 75% of a project cost in order to help local landowners/occupiers with projects that protect and improve water quality, such as controlling soil erosion and reducing sedimentation. By reducing soil loss there should be commensurate reduction in pathogens (that are attached to the soil) delivered to surface water.

Environmental Quality Incentives Program (EQIP)
EQIP is a program of the Natural Resources Conservation Service whose funds are provided through the Federal Farm Bill. It is designed to help private landowners with technical assistance and a cost-share of up to 50% in order to protect local soil and water resources. They fund such things as nutrient management plans, designs for animal waste structures, wetland restoration, rotational grazing management plans and conservation tillage. It is expected that up to $120,000 of EQIP funds will be used for livestock management BMPs.

Agriculture Best Management Practices Loan Program (AgBMP Loan Program)
AgBMP Loan Program is a program of the Minnesota Department of Agriculture. It is administered through local SWCDs, and offers low interest loans (currently 3%) for implementation of best management practices to improve water quality problems that are caused by agricultural activities or failing septic systems. $25,000 of AgBMP loans have been awarded, and $25,000 is already in-hand for livestock management BMPs.

Chisago County and Isanti County Water Plans
$3,000 from each County Water Plan has been allocated for this Implementation Plan, for a total of $6,000.

In-Kind Contributions
Many of the actions will be implemented by Chisago County, Isanti County, and the City of North Branch using in-kind funding.

Landowners
For actions aimed at decreasing the fecal coliform load from livestock, landowners will, on a voluntary basis, provide 25% of the cost of the installation of the management practice.

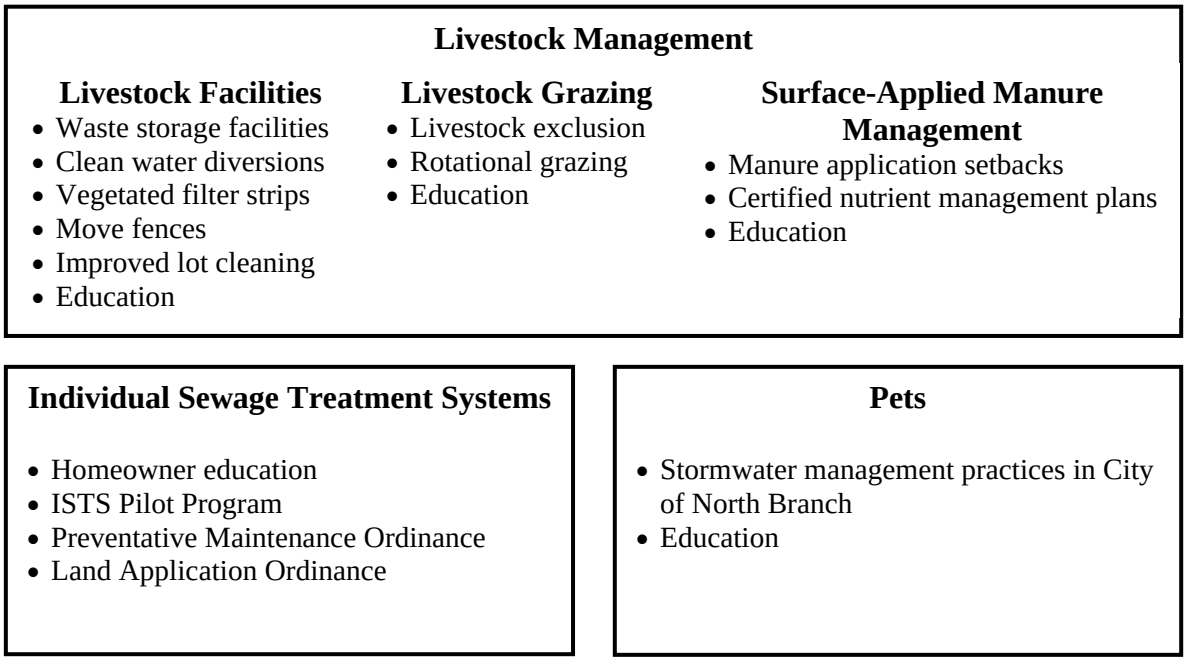
4.0. Implementation Actions

This section contains descriptions of the non-point source management measures, estimates of load reductions, costs, schedule, and interim measurable milestones.

The fecal coliform source inventory provides an estimate of the proportion of the total load of each of the various sources (Table 2), to be used to focus implementation efforts. The top three sources are pasture near streams, unregulated livestock facilities, and septic systems that are determined to be an imminent threat to public health. Together, these three sources represent approximately 80% of the total daily fecal coliform load to the river and will be the primary focus of reduction efforts. Efforts will also be pursued for those sources that appear to provide a low to moderate contribution to the total load during certain times of the year, namely surface-applied manure, pets, and wildlife.

A summary of the actions outlined in this Implementation Plan is presented in Figure 4.

Figure 4. Implementation Action Summary



4.1. Livestock Management

SWCD staff from Isanti and Chisago Counties will contact livestock owners, explain the project, visit farms (with permission), determine necessary modifications in practices in consultation with landowners, offer available incentives, implement projects, and monitor progress. Initially, activities will be focused on landowners in the portion of the watershed between SUN-18 and SUN-23 having large numbers of animal units. The next priority is landowners between SUN-18 and SUN-23 with small numbers of animal units, and subsequent work will take place in the remaining portions of the watershed.

Implementation partners:	Chisago and Isanti Counties Chisago and Isanti SWCDs Farm Service Agency Feedlot owners Minnesota Farm Bureau Federation Minnesota Milk Producers Association Minnesota Pollution Control Agency Natural Resources Conservation Service
Estimated cost:	$279,000
Time frame:	Spring 2007 - Summer 2010
Estimated load reduction:	50 - 100%
Interim milestones:	All feedlot owners within the watershed contacted by spring 2008

4.1.1. Information and Education

Using both mass media and targeted approaches, education and outreach will be directed towards landowners, agencies and organizations, and elected officials, with the goal of educating them about the fecal coliform problem in the watershed and how agricultural BMPs can address the problem.

- Visit county boards and agencies with a county-wide or larger presence to explain project and solicit letter of support to be included in feedlot landowner packet. **Time frame: Spring/summer 2007**
- Visit organizations and service and sportsmen's clubs with county-wide or larger focus/membership and explain project and solicit letters of support from necessary groups. **Time frame: Spring/summer 2007**
- Visit townships in targeted areas and solicit letters of support. **Time frame: Spring/summer 2007**
- Conduct media outreach to emphasize priority areas and project in general. Emphasize local publications including county mailings, newsletters from various agencies, co-op mailings to members, etc.
    - Yearly article in Environmental Connections newsletter
    - Direct mail updates twice a year to landowners within priority areas, initially within subwatersheds between monitoring sites SUN-18 and SUN-23.

  Time frame: 2007 - summer 2008

Cost: $6,000 In-Kind

Landowner information packets and support

A more targeted approach will be used for landowners. Individualized information packets will be developed for landowners within the North Branch of the Sunrise River watershed, including current aerial photographs of property with eligible lands and financial options highlighted. Landowners will be contacted individually and provided with information regarding BMPs and funding and cost-share programs.

- Develop a digitized, comprehensive inventory of riparian corridors within the North Branch of the Sunrise River watershed. All relevant GIS data will be collected and used as input for a model that will act as a general guide for developing priority areas.
- Identify priority areas (sub-watersheds) for initial targeting.
- Create landowner packets highlighting lands potentially eligible for conservation programs, with payment schedule and further information. Packets will be created as priority areas are identified.
- Eligible conservation practices include, but are not limited to, prescribed grazing plans, manure management plans, grassed filter strips, forested riparian buffers, livestock use exclusion, manure storage facilities, and runoff control structures.
- Identify sites within the North Branch of the Sunrise River with overgrazed pastures and prioritize pollution potential based on distance to waters, slope, species, and size.
- It is estimated that a small number of sites are the greatest contributors so each landowner will be individually contacted and provided with information on effects and potential solutions to overgrazed pastures with best management practices encouraged. When appropriate, landowners will be directed to technical service agencies such as the Chisago and Isanti SWCDs and the NRCS.

Time frame: 2007 - summer 2008. Cost: $33,000 (Section 319 Funds - $30,000; In-Kind - $3,000)

Support for financial assistance

Provide financial incentives to landowners to install best management practices (BMPs) on their property. Eligible BMPs include, but are not limited to: prescribed grazing plans, nutrient management plans with manure, grassed filter strips, forested riparian buffers, livestock use exclusion, manure storage facilities and runoff control structures.

A maximum of 75% cost share will be provided towards the installation of any one practice:

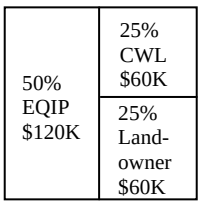
- 50%: EQIP
- 25%: For incentive-based practices (i.e. prescribed grazing and nutrient management plans with manure), a maximum dollar amount of 50% above the current EQIP incentive payment rate will be provided (funds available from Section 319 grant).

The landowners will be expected to contribute the remaining 25% of costs. AgBMP loans are available for the landowners' contributions (a total of $50,000 in AgBMP loans will be available).

$60,000 is available through Section 319 funding; therefore it is estimated that a total of $240,000 will be spent on these practices (see Funding Schematic at right). These funds will be used for implementation of measures described in Section 4.1.2: Livestock Facilities, 4.1.3: Livestock Grazing, and 4.1.3: Surface-Applied Manure Management.

Time Frame: 2007-2010. Cost: $240,000.

Funding Schematic



4.1.2. Livestock Facilities

The following BMPs will be recommended to address the fecal coliform load from livestock facilities:

Waste storage facilities

Total confinement facilities present the least amount of risk for surface water contamination, since surface water runoff does not come into contact with the manure. Although one of the more effective practices for manure management, this is also more costly than other options, due to the need for structural facilities.

Clean water diversions

Surface water runoff that passes through the lot has the potential to pick up fecal coliform bacteria and transport it to the river. Berms that physically prevent cleaner surface water runoff from entering the lot and divert it around the lot will prevent this runoff water from picking up fecal coliform in the lot. Gutters and other roof drainage away from lots is another method of diverting clean runoff around the lot. A relatively effective way to reduce the amount of contact between runoff and manure, this method can be less expensive than waste storage facilities.

Vegetated filter strips

Vegetative buffers in between the lot and any surface water body will lessen the amount of fecal coliform that reaches the water body. Different options are available, including the following:

- Vegetated infiltration area (with a settling basin before the infiltration area)
- Controlled discharge vegetated treatment strip
- Vegetated buffer strip

Vegetated filter strips are less costly than structural BMPs, and require less maintenance.

Move fences

Moving fences can reduce the feedlot area so that there is less surface area with fecal coliform on it and a reduced opportunity for contact with runoff. This is a relatively inexpensive option, although it reduces the amount of space for housing livestock.

Improved lot cleaning

Removing the manure more frequently will decrease the amount of time that stormwater has the potential to come into contact with the manure. Costs for this option are more time-related than for materials.

4.1.3. Livestock Grazing

Overgrazed pastures within the watershed will be identified and pollution potential will be ranked based on distance to surface water, slope, and animal species and size. Pastures will be prioritized based on pollution potential rank, and high priority sites will be the initial focus of outreach efforts. Outreach will consist of providing information regarding the needs and benefits of BMPs, available funding, and other types of support.

The following BMPs will be recommended to address the fecal coliform load from livestock grazing:

Livestock exclusion
Physically excluding (with fencing) the livestock from having access to streams or other water bodies is a relatively low-cost and effective means of reducing the delivery of fecal coliform. A combination of technical assistance, education, and incentives can be used to reach this goal.

Rotational grazing
Rotational grazing will help maintain ground cover on the pasture. Less time near the water body will reduce, but not eliminate, the amount of manure that is deposited into the water body.

4.1.4. Surface-Applied Manure Management
The following BMPs will be recommended to address the fecal coliform load from surface-applied manure:

Manure application setbacks and dates
Manure application should follow the requirements set forth by the MPCA in "Land Application of Manure: Minimum State Requirements," MPCA document #Wq-f8-11. This document specifies the setback requirements for land application of manure. Stricter setback requirements may be necessary if it is determined that fecal coliform still reaches surface water with implementation of these setbacks.

Nutrient management plans
Using soil tests, crop input needs (University of Minnesota Extension recommendations), and manure analysis to determine proper manure application rates to all farm fields will decrease the amount of excessive manure applied to fields.

4.2. Identify and address septic systems that are considered imminent threats to public health

Implementation partners:	Chisago County Isanti County City of North Branch
Estimated cost:	$46,000
Time frame:	2007 - 2010
Estimated load reduction:	100% reduction for an ISTS that is brought into compliance
Interim milestones:	All ISTSs within the Chisago County portion of the watershed inspected by spring 2008

4.2.1. Homeowner information and education on septic systems
Current efforts focusing on the septic systems will continue:

- Homeowner seminars on care and maintenance of septics are offered twice per year by Chisago County and facilitated by staff of the University of Minnesota Extension Service. The class is intended for those who received a cost share grant as well as other interested members of the public.

- The Septic System Owners Guide mailing and follow-up survey is sent to every new home or home with a replacement septic system

Time frame: Ongoing. Cost: $4,000 In-kind.

4.2.2. ISTS Pilot Program

Through Chisago County's Individual Sewage Treatment System (ISTS) Pilot Program, ISTSs within Chisago County are being mapped, and ISTSs considered to be an imminent threat to public health are being identified. When imminent threat systems are identified, county staff work with the homeowner on the process required to bring their system into compliance with the septic ordinance. Since the beginning of the pilot program, 160 systems determined to be imminent threats to public health have been replaced, removing 72,000 gallons per day of untreated sewage from polluting the environment.

Chisago County will begin inspecting septic systems in the Chisago County portion of the North Branch of the Sunrise River watershed in 2007, with a goal of inspecting and correcting all imminent threat to public health systems.

The City of North Branch has joined Chisago County in the pilot program. The city has inspected most of the septic systems in their jurisdiction and will complete the inspections in 2007. The pilot program will be expanded to include townships in Isanti County that are in the North Branch Sunrise River watershed, which is primarily North Branch Township. Isanti County will inspect each ISTS to assure that they are not an imminent threat to public health, as defined by MN chapter 7080.

Time frame: Spring 2007 - Spring 2008. Cost: $40,000 ($20,000 for Chisago County already secured through MPCA funding, $20,000 for Isanti County not yet secured)

4.2.3. Ordinance Adoption

Preventative Maintenance Ordinance for ISTS

Chisago County, Isanti County, and the City of North Branch have all adopted septic ordinances. Chisago County's Wastewater Task Force (see Appendix) recommended that the Chisago County Board adopt a Preventative Maintenance Ordinance for all homeowners. Chisago County is waiting for MPCA determination on 7080 rules as to whether each new or replacement ISTS will be required to have a preventative maintenance ordinance.

Land Application Ordinance

Chisago County's Wastewater Task Force also recommended that the Chisago County Board adopt a Land Application Ordinance that follows federal EPA and MPCA regulations as well as developing a set of regulations specific to Chisago County. Isanti County has adopted a Land Application Ordinance.

Time frame: Spring/summer/fall 2007. Cost: $2,000 In-kind, Chisago County.

4.3. Reduce the contribution of fecal coliform from pets

Implementation partners:	City of North Branch
Estimated cost:	$8,000
Time frame:	On-going
Estimated load reduction:	50 - 75%
Interim milestones:	City of North Branch SWPPP submitted to MPCA by Feb 15, 2007

4.3.1. Stormwater management practices

The City of North Branch is currently in the process of completing its Storm Water Pollution Prevention Plan (SWPPP), which is a requirement of the city's Municipal Separate Storm Sewer (MS4) permit. The city intends to make pet waste clean-up easier on public property with the installation of additional pet waste receptacles. An excerpt from the plan states: "The City will continue to install pet waste receptacles along designated pedestrian trails and parks. Receptacles consist of watertight boxes with plastic gloves and bags for the proper disposal of pet wastes by residents."

The City of North Branch also has a section in their code (Part T of Section 4.03.030) that states that dog and cat owners must clean up animal feces and dispose of them in a sanitary manner.

Stormwater management (SWM) practices in the City of North Branch that treat stormwater runoff before it reaches the North Branch Sunrise River will decrease the fecal coliform load that originates as uncollected pet waste in the city.

North Branch requires new subdivisions (commercial, industrial, and residential) to provide stormwater treatment either on a per-lot or a regional basis, in accordance with MPCA BMP standards. Stormwater ponds are used to settle particulates in stormwater runoff and to control stormwater rates. Most fecal coliform bacteria are removed from stormwater when it travels through a stormwater pond.

As other projects occur in areas that are already developed, stormwater management retrofits are implemented as resources allow.

Time frame: On-going. Cost: $4,000 In-kind, City of North Branch.

4.3.2. Information and Education

Educate homeowners living within the City of North Branch about their responsibilities to minimize pet waste entering the storm sewer system. Information will be included in North Branch education programs throughout the four-year Section 319 grant period.

Time frame: On-going. Cost: $4,000 In-Kind, City of North Branch

5.0. Water Quality Monitoring

The goal of the monitoring plan is to assess the effectiveness of source reduction strategies for attaining water quality standards and designated uses. The North Branch of the Sunrise River will remain listed until water quality standards for bacteria are met.

Chisago SWCD staff will collect the samples, and MPCA funds will pay for chemical analysis in 2007 by the Minnesota Department of Health (MDH).

Implementation Partners:	Chisago SWCD MPCA MDH
Estimated cost:	$40,000
Timeline:	Spring 2007 - Fall 2010
Estimated load reduction:	NA
Interim milestones:	NA

5.1. Monitor at fixed stations

During two calendar months in the summer, five monthly samples will be collected and analyzed for *E. coli* at SUN-5, 11, and 18. This monitoring will occur from 2007 through 2010.

If monitoring indicates that certain reaches of the North Branch of the Sunrise River have unusually high concentrations of fecal coliform, then a targeted monitoring program will be implemented in that area.

Time frame: Spring 2007 - Fall 2010. Cost: $20,000 (funding already secured)

5.2. Monitor at targeted stations

Monitoring data from the TMDL study suggest that a large portion of fecal coliform loading into the North Branch of the Sunrise River originates between monitoring stations SUN-18 and SUN-23 in Isanti County (Figure 3). It was also determined that the magnitude of the exceedance of the standard was greatest in June (Figure 2).

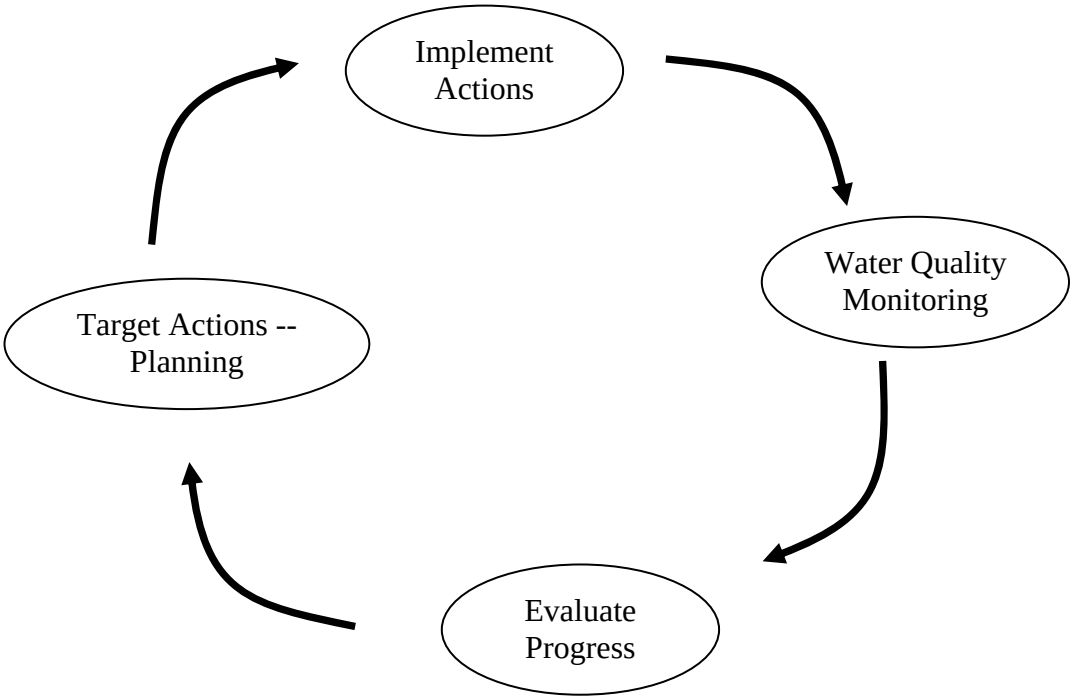
Multiple monitoring sites will be established on various tributaries and reaches between SUN-18 and SUN-23. During the month of June, five samples will be collected at each of these sites and will be analyzed for *E. coli*. This will help pinpoint sources of contamination. Targeted station monitoring will occur from 2007 through 2010.

Time frame: Spring 2007 - Fall 2010. Cost: $20,000 (funding not yet secured)

6.0 Adaptive Management Process

The implementation actions outlined in this management plan will decrease the fecal coliform loading to the North Branch Sunrise River. However, at this stage it is not known exactly how many practices will be installed, and what those practices will consist of. Since the cumulative effect on water quality therefore is also unknown, a continual process must happen that evaluates instream water quality and then tailors the implementation actions to the findings.

As practices are being implemented in the watershed, instream water quality will be monitored to evaluate the impact that the implementation actions have on fecal coliform concentrations in the North Branch Sunrise River. If water quality is improving, this suggests that the current approach is working and the same course will be followed. If water quality is not improving, this suggests that the approach being taken is not sufficient, or is targeted to the wrong sources. In this case, the approach will be evaluated and adjusted so that tangible instream water quality improvements can be realized. This process is referred to as adaptive management.



7.0 Evaluation Plan

Proposed Outcomes

• This project will assist NRCS and Chisago SWCD by conducting comprehensive and focused outreach to the area's agricultural community. There is a need to encourage farmers to recognize the value of adopting conservation measures such as continuous CRP filter strips, riparian buffers, conservation tillage and other techniques that will reduce the movement of manure into surface waters.
• SWCD will work with agencies and local units of government to identify priority areas in the North Branch of the Sunrise River watershed. Geographic and water quality data, such as fecal coliform bacteria levels, amount of rivers streams and ditches, acreage currently in a conservation/retirement programs, amount of acreage with riparian buffers, etc., will be used to assess areas in greatest need of filter strips and riparian buffers.
• We will develop a digital inventory of CRP enrollment and riparian corridors in Chisago and Isanti County. Currently excellent digitized data for waterways exists, but land use data is outdated and inexact. A prerequisite to the project is to digitize current enrollees in conservation and land retirement programs.
• A comprehensive, targeted approach will be used to contact area landowners. Mailings will include an aerial photograph of the landowner's property, highlighting lands eligible for continuous CRP and other conservation programs. Photos will include details from individual property to larger watershed, underscoring the relationship between the property and the larger project. Landowners will receive a description of available programs, payment rates, contract length, etc. Letters supporting this program will come from County Commissioners, SWCD Supervisors, Township Board officials, and related agencies. Inadequate outreach and education has occurred with farmers to address the cause and effect of fecal coliform bacteria contamination, and the reasons and methods for reducing its input to surface waters. In this project, Chisago SWCD, NRCS and Chisago County Environmental Services will partner to conduct extensive, focused outreach with watershed landowners and farmers to enroll land in programs that buffer our waterways. Filter strips and buffer strips reduce the overland movement of water across and prevent soil, nutrients and fecal coliform bacteria from entering streams and ditches.

Measures for Success

• Number of landowners who install filter strips and buffer strips on land
• Number of acres of land enrolled in conservation programs
• Number of farmers implementing feedlot BMPs
• Number of manure management plans developed and implemented
• Number of residents and officials who receive information on conservation practices available to landowners.
• Number of residents involved in volunteer water quality monitoring
• Comprehensive data set of water quality monitoring results
• Imminent threat to public health septic systems corrected
• Pet waste receptacles in place and being used.
• Reduced levels of fecal coliform bacteria found in waters of targeted areas

Desired environmental outcomes

By addressing the sources of fecal coliform bacteria contamination, this project will also contribute to overall water quality improvements by reducing surface runoff into waters of the North Branch of the Sunrise River watershed. This will decrease the amounts of suspended solids, phosphorus, nitrates and other pollutants entering our waters. This project will result in:
• Digitized land use data for CRP enrollment in Chisago and Isanti County
• A reduction of fecal coliform concentration in the North Branch of the Sunrise River watershed is the desired outcome. A significant reduction is needed to meet state water quality standards. During this 3-year project, the goal is to reduce input of fecal coliform bacteria by 52%.
• A decrease in mean fecal coliform numbers in the North Branch of the Sunrise River watershed.

Facilitation of the adoption of best management practices by the community in the project area

A highly individualized and focused approach to landowners will emphasize how individual practices have a beneficial impact on waterways. Using continuous, creative, and focused outreach in the community, a better understanding of the need for adopting BMPs will be recognized by the community and individual landowners. Extensive use of maps and aerial photographs will provide a meaningful context for landowners to make conservation decisions about their land. Extensive public outreach will educate feedlot operators of the advantages and opportunities for technical and financial assistance to assist in updating their operations.

Coordination and cooperation of federal, state, and local agencies and units of government

The Chisago County Environmental Services will work closely with the Chisago and Isanti SWCDs, Isanti County, the City of North Branch, the Natural Resources Conservation Services and North Branch Township. The Farm Service Agency also supports the project, as they are the agency responsible for continuous CRP contracts and payments. Outreach in all of the townships within the watershed will occur and support from township officials will be enlisted. Comprehensive strategies are being implemented by these groups to address fecal coliform bacteria, and together the collaborating agencies and organizations will share data and other information.

8.0 Summary

Table 4 summarizes all of the recommendations within this Implementation Plan, including the non-point source management measures, estimate of load reductions, costs, schedule, and interim measurable milestones.

Table 4. Implementation Plan Summary

Action	Implementation Partners	Estimated Cost			Timeframe	Estimated Load Reduction	Interim Milestones
		In-Kind	Grants, Loans, Land-owners	Grant Funds Not yet Secured			
3.1 Implementation coordination	Chisago County	$5,000			Fall 2006 - Fall 2010	NA	NA
3.1. Steering committee	Chisago County Chisago Soil and Water Conservation District (SWCD) City of North Branch Farm Service Agency Isanti County Isanti Soil and Water Conservation District (SWCD) Minnesota Department of Agriculture (MDA) Minnesota Department of Health (MDH) Minnesota Department of Natural Resources (DNR) Minnesota Farm Bureau Federation Minnesota Milk Producers Association (MMPA) (Environmental Quality Assurance (EQA) Program) Minnesota Pollution Control Agency (MPCA) Natural Resources Conservation Service	$6,000			Fall 2006 - Fall 2010	NA	NA

Action	Implementation Partners	Estimated Cost			Timeframe	Estimated Load Reduction	Interim Milestones
		In-Kind	Grants, Loans, Land-owners	Grant Funds Not yet Secured			
4.1. Livestock management	Chisago and Isanti Counties Chisago and Isanti SWCDs Farm Service Agency Feedlot owners Minnesota Farm Bureau Federation Minnesota Milk Producers Association Minnesota Pollution Control Agency Natural Resources Conservation Service	$9,000	$210,000		Spring 2007 - Summer 2010	50 - 100%	All feedlot owners within the watershed contacted by spring 2008
4.2. Identify and address septic systems that are considered imminent threats	Chisago County Isanti County City of North Branch	$6,000	$20,000	$20,000	2007 - 2010	100% reduction for an ISTS that is brought into compliance	All ISTSs within Chisago County portion of watershed inspected by spring 2008
4.3. Reduce the contribution of fecal coliform from pets	City of North Branch	$8,000			On-going	50 - 75%	City of North Branch SWPPP submitted to MPCA by Feb 15, 2007
5.0. Water quality monitoring	Chisago SWCD MPCA MDH		$20,000	$20,000	Spring 2007 - Fall 2010	NA	NA

Appendix

Existing Projects and Programs

Chisago County
Chisago County has two programs in place that are already addressing fecal coliform loads to the North Branch Sunrise River:

Chisago County Wastewater Task Force
Chisago and Isanti Counties are rapidly becoming two of the fastest growing non-metropolitan area counties in Minnesota. These are counties with tremendous water and scenic resources that add to the quality of life for all residents. In 1994, as part of Chisago County's Comprehensive Planning process, issues relating to water quality and waste management were raised.

As development pressures continued, the county determined it was important to identify and resolve issues relating to wastewater treatment, either municipal or individual. The Chisago County Wastewater Project, Developing Sustainable Wastewater Treatment Options for Growing Counties, was initiated in 1999 to establish a planning process with statewide application to identify wastewater treatment alternatives to open water discharges, with the selection of the best alternative as the ultimate goal.

The project was selected to receive $50,000 from the State through the Minnesota Future Resources Fund, and this amount was matched by a $30,000 grant from Chisago County. The grant timeline was from July 1999 to June 2001.

As a result, the Chisago County Board authorized the establishment of a thirty member Wastewater Task Force to address and develop a set of recommendations for the county on these issues. The Task Force was made up of stake holders and represented a broad array of interests. The Task Force report is the result of a two year effort.

Through this process the Task Force discovered that the area of immediate concern was the maintenance of individual onsite sewage treatment systems (ISTS) and the disposal of septage. The Task Force spent almost a year researching, discussing and developing a set of recommendations for the Chisago County Board that address these issues. The key to the long term success of the Task Force's recommendations is a strong education program aimed at homeowners and septic pumpers and installers.

In addition to an education program, the Task Force had two major recommendations:

1) In the area of ISTS, the Task Force recommended that the Chisago County Board adopt a Preventative Maintenance Ordinance for all homeowners. Chisago County is waiting for MPCA determination on 7080 rules as to whether each new or replacement ISTS will be required to have a preventative maintenance ordinance. The draft Chisago County Preventative Maintenance Ordinance can be found within the County Water Plan.
2) The Task Force recommended that the Chisago County Board adopt a Land Application Ordinance that follows federal EPA and MPCA regulations as well as developing a set of regulations specific to Chisago County.

Individual Sewage Treatment System (ISTS) Pilot Program

Chisago County was selected to receive an Individual Sewage Treatment System (ISTS) Pilot Program Grant from the Minnesota Pollution Control Agency in 2004. The grant is for a total of $240,000 over a four year period, and no local match is required. Chisago County was one of only three counties in the state selected for this grant.

The primary focus of the grant is to identify and address septic systems that are considered imminent threats to public health in the county. If a property has been identified as having an imminent threat system, the county will work with the homeowner on the process required to bring their system into compliance with the septic ordinance. A grant of $400 will be available as part of a cost share program to assist with upgrades. There is also a low interest loan program for septic improvements available in this area through the Minnesota Department of Agriculture Best Management Practices Loan Program and also grants and loans through USDA Rural Development.

All nine townships where Chisago County has jurisdiction have been mapped through the County GIS department. This has required a great deal of time and effort to input and edit the data by the County GIS Specialist. All data required for mapping will be entered into a septic log by the Sanitarian and Inventory Specialist. The purpose of the mapping is to create a baseline for all septics within the watershed; to update maps yearly after pilot program evaluations and any septic system upgrades; and to show a final product after the conclusion of the program. The maps also allow demonstration of progress made in the project to interested parties such as County Boards. All township maps will be field checked and evaluated by Chisago County staff.

Since the beginning of the pilot program, 160 systems determined to be imminent threats to public health have been replaced, removing 72,000 gallons per day of untreated sewage from polluting the environment.

A letter of agreement has been adopted between Chisago County and the City of North Branch to join into the pilot program. North Branch is a township sized city and the North Branch of the Sunrise River runs through the city. The City of North Branch has completed system evaluations for the pilot program.