ERWSA 2007

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Annual Elk River Watershed Association Report

The Elk River Watershed Association (ERWSA) was formed in 1994 as a result of Local Water Planning efforts in Sherburne and Benton Counties. Concerned citizens identified the water quality of the Elk River and lakes in the Elk River Watershed as priorities for improvement. Thus, the two Counties determined that a watershed approach would be the most effective way to improve water quality. A Joint Powers Board was formed by Sherburne and Benton SWCDs and Counties for the purpose of coordinating efforts within the Elk River Watershed.

2007 ERWSA Board of Directors

:
From left, Leonard Popp, Benton County member at large; Joe Wollak, Benton County Commissioner; John Riebel, Sherburne County Commissioner; Terry Polsfuss, Sherburne County member at large; Joe Jordan, Benton Soil and Water Conservation District Supervisor, Lee Schlosser, Sherburne Soil and Water Conservation District Supervisor; Brian Kaschmitter, Benton County member at large. Not pictured: Jim Sanford, Sherburne County member at large and Mike Hayes, alternate member at large.

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ERWSA
Since 1994

2007 Executive Summary

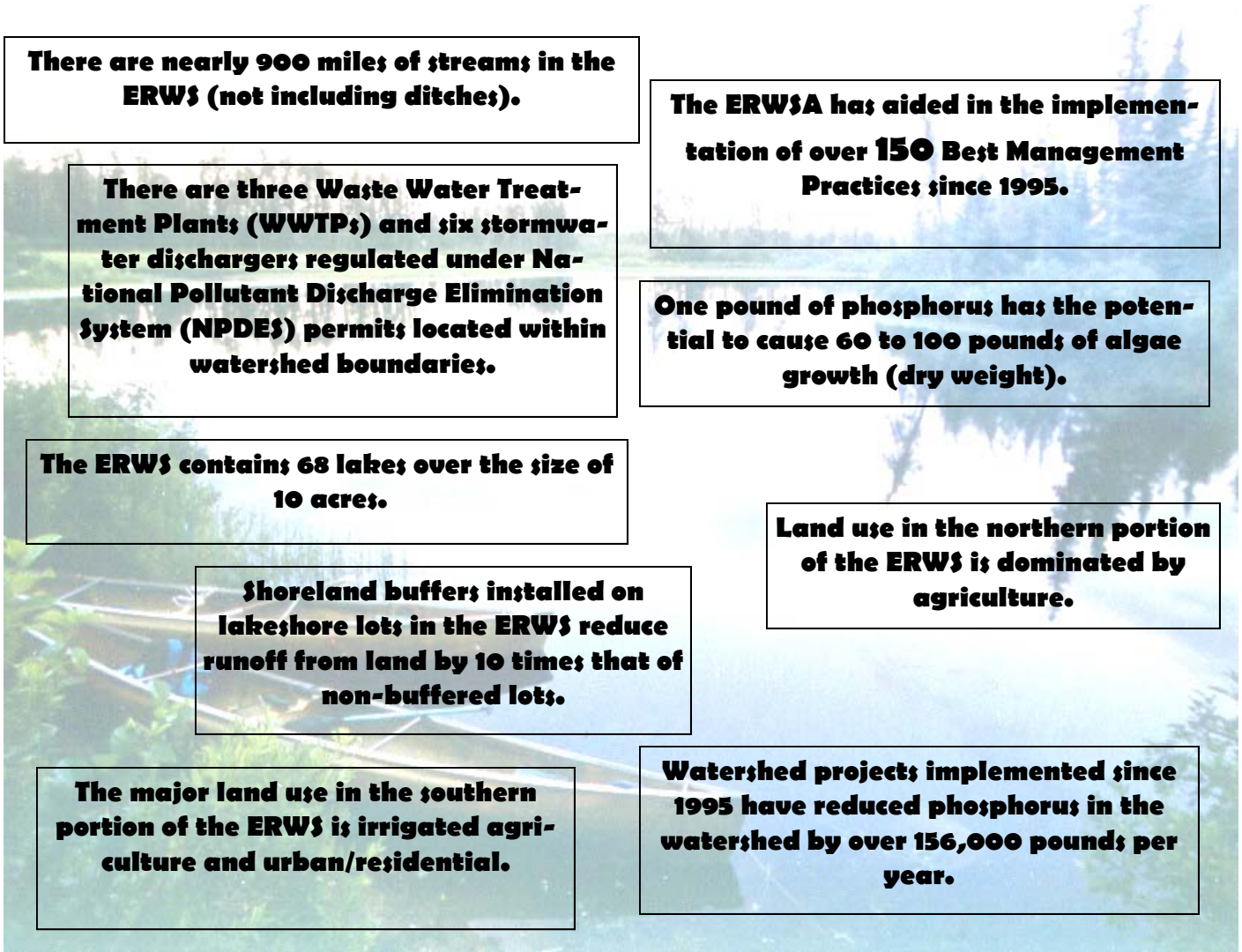
The Elk River Watershed 2007 Water Quality Report was prepared to inform counties, board members, watershed residents and staff of the projects that took place within the watershed over the previous year.

The objectives of this report are to:

- Provide an easily accessible summary of the projects completed in 2007 for board members, counties, staff and watershed residents.
- Summarize funds utilized to implement best management practices (BMPs) within the watershed.
- Provide a brief description of the projects that were most closely focused on in 2007 by the ERWSA.
- Introduce projects that are planned for in 2008.

The Elk River Watershed covers approximately 613 square miles of Sherburne County, Benton County, Mille-Lacs County, and Morrison County. The Elk River and the St. Francis River are the major streams and hydrologic features of the watershed. Elk River's headwaters are located in northern Benton County and the river outlets to the Mississippi River in Sherburne county.

Elk River Watershed Facts



There are nearly 900 miles of streams in the ERWS (not including ditches).

The ERWSA has aided in the implementation of over 150 Best Management Practices since 1995.

There are three Waste Water Treatment Plants (WWTPs) and six stormwater dischargers regulated under National Pollutant Discharge Elimination System (NPDES) permits located within watershed boundaries.

One pound of phosphorus has the potential to cause 60 to 100 pounds of algae growth (dry weight).

The ERWS contains 68 lakes over the size of 10 acres.

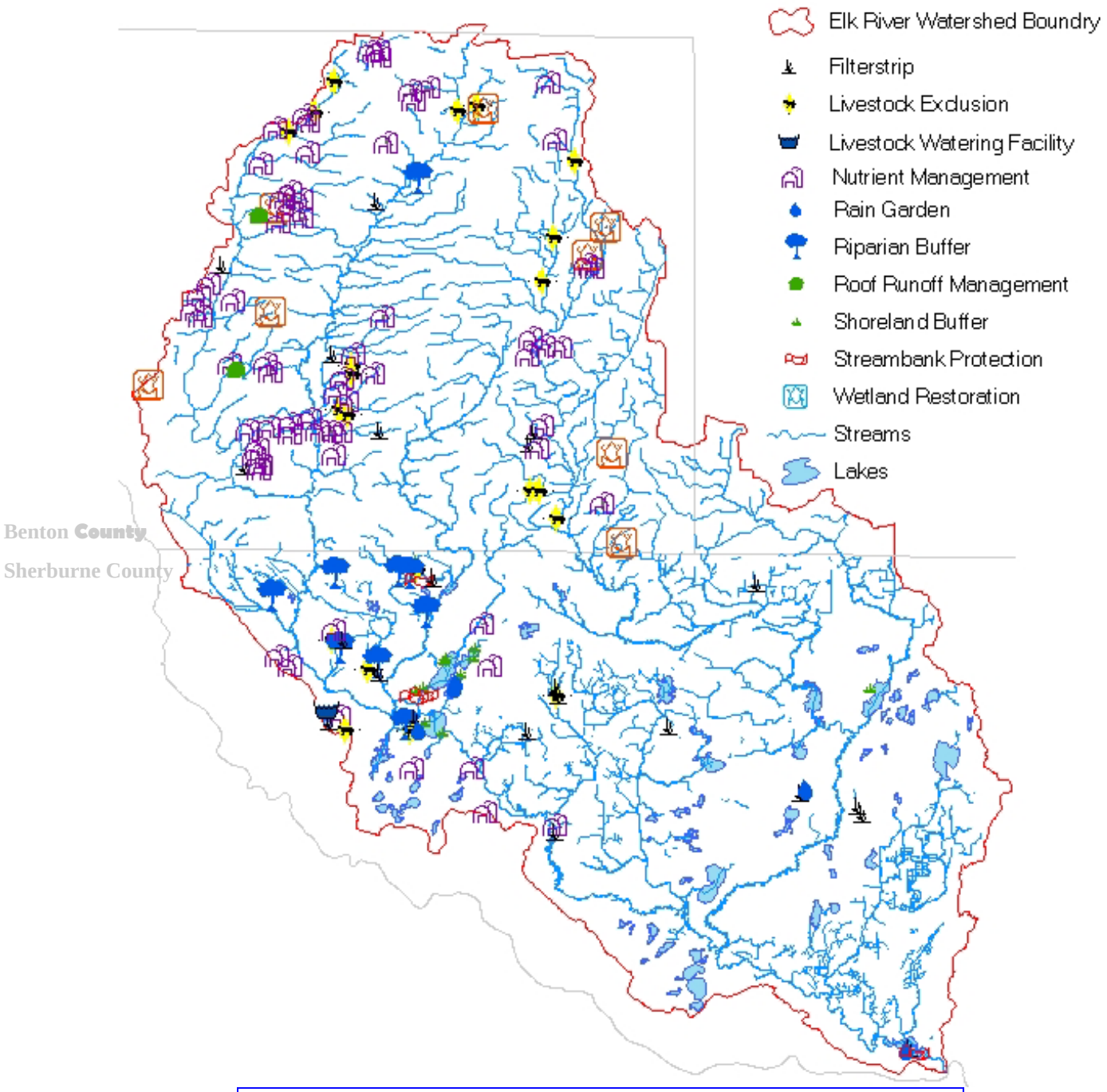
Land use in the northern portion of the ERWS is dominated by agriculture.

Shoreland buffers installed on lakeshore lots in the ERWS reduce runoff from land by 10 times that of non-buffered lots.

The major land use in the southern portion of the ERWS is irrigated agriculture and urban/residential.

Watershed projects implemented since 1995 have reduced phosphorus in the watershed by over 156,000 pounds per year.

Elk River Watershed Association Projects 1995 to 2007



2007 Accomplishments at a Glance

BMPs

12 AgBMP Test Plots

1 Wetland Restoration

2 Filter Strips

2 Rain Gardens

1 Vegetated Swale

Monitoring

Briggs Lake Chain Mass Balance Monitoring

Fecal Coliform Monitoring

Education/Information

Elk River Watershed Currents

Presentations: Stormwater BMPs and Shoreland Revegetation

Rain Garden Design Workshop

Installation of 5 Stormwater BMP Signs

Funding Available for Projects in the Elk River Watershed

In 2007 the ERWS assisted Benton and Sherburne County Landowners within the Elk River Watershed utilizing two 319 grants from the Minnesota Pollution Control Agency (MPCA). Additionally, the association was supported by Sherburne and Benton SWCDs and Sherburne and Benton Counties. The goals of the programs implemented in the ERWS have been to improve water quality to levels that are within the typical range for the ecoregion and delist impaired waters in the Elk River, its tributaries, and lakes within the Elk River Watershed.

2007 programs consisted of providing financial incentives to landowners for establishing conservation practices on riparian land; monitoring indicators of water quality; educating the public about conservation practices; and assisting lake associations with implementing lake management plans.

Conservation practices focused on in 2007 included: **1)** Establishment of small nutrient management Best Management Practices (BMP) test plots **2)** restoration, enhancement and creation of wetlands by creating impoundments **3)** Encouragement of farmers to install buffer strips along pastured ditches; **4)** continuation of re-establishment of natural shoreline vegetation and installation of filter strips, rain gardens, and infiltration ponds.

2007 Project Funding Opportunities

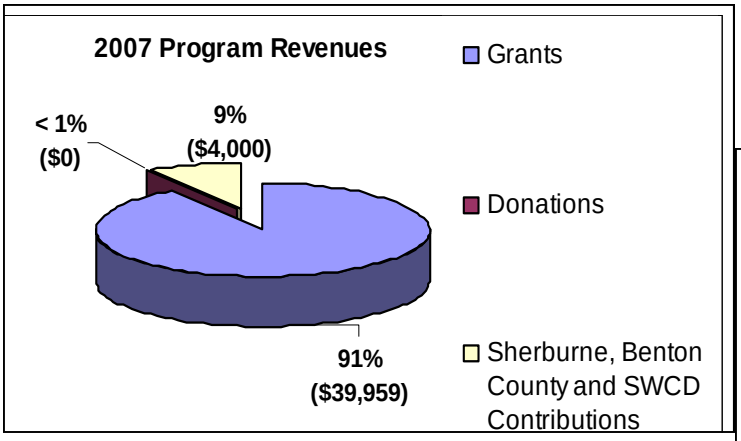
319-1 Grant: October 2002-August 2007

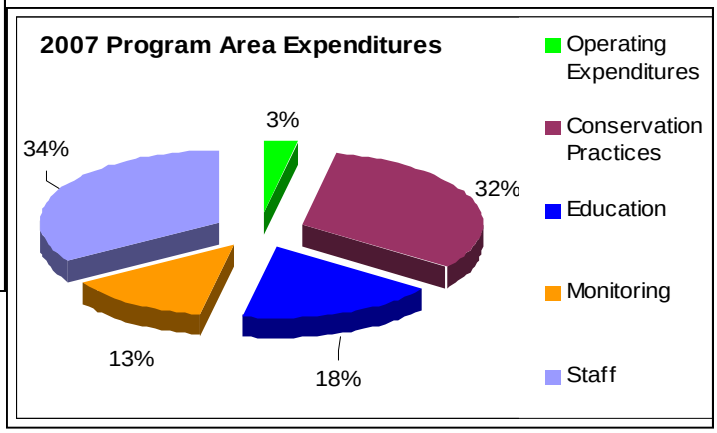
In 2007 the ERWSA completed the work elements from the first of two MPCA Section 319 grants in the amount of $122,780. This grant provided funds to programs in the watershed from October 2002 through August of 2007.

319-2 Grant: October 2006-August 2010

In 2007 the ERWSA began assisting Sherburne and Benton County landowners within the Elk River Watershed though a second grant from the MPCA. The 319-2 grant has a funding schedule of October 2006 through August 2010 and totals $185,187.

Elk River Watershed Association Revenue and Expenditures





2007 Program Focus Summary– Agricultural BMPs

Nutrient Management (12 test plots completed 2007)

Plots have been installed since 1995: 68

Incentive Payment: $150 per plot

All lands receiving manure application in the watershed are considered a high priority. Nutrient Management (AgBMP) Demonstration Plots are used to evaluate management strategies. A small strip of cropland is used to evaluate the University of Minnesota's nutrient recommendations against the producer's normal management strategies. The test plots are customized for each farmer and compared Best Management Practices for nutrient management to the farmers normal nutrient management strategies.

Left: Poultry manure spreader is available to those establishing test plots. This manure spreader spreads manure at agronomic rates.

Right: A set of test plots during the growing season. Even though the reduction in applied nutrients in the BMP plot changed the timing of corn tasseling, yield was not affected.

Wetland Restoration/Enhancement (1 wetland restoration completed 2007)

Wetland restoration/enhancement projects completed since 1995: 9

Below: Wetland restoration project completed in 2007. Located in Benton County

Cost-Share: reimbursement for wetland projects is up to 75%. Cooperator's in-kind expenses or cash can be used as a 25% match.

Incentive Bonus: The wetland and adjacent upland filter area are eligible. Payments are on a per acres basis and equal the Farm Service Agency posted rental rate times 10 (for 10 year contracts).

Wetland projects must improve or maintain water quality, or improve water flow conditions in the Elk River Watershed to be eligible.

Pasture Management (1 filter strip completed 2007)

Management practices completed since 1995: 46

Cost-Share: Reimbursement up to 75%, not to exceed out of pocket expenses. Cooperator's in-kind expenses are used as a 25% required match.

Incentive Bonus: Offered for livestock exclusion. Payments on a per acres basis and are equal to the Farm Service Agency (FSA) posted rental rate times 10 (for 10 year contracts).

Riparian projects located on the Elk River, on lakes directly flowing to the Elk River and flow-through lakes on the Elk River are high priority. Riparian pasture practices include fencing, gates, livestock crossings, alternative watering systems and other components that the ERWSA Board determines are necessary to exclude animals from surface water. Limited grazing has been allowed.

2007 Program Focus Summary– Rural and Urban BMPs

Stormwater Runoff BMPs

Stormwater BMPs installed since 1995: 9

Sites can be established where runoff resulting from urban or residential development discharges to lakes, streams, ditches or wetlands. Practices have included filtration and infiltration methods such as: vegetated swales, rain garden, infiltration trenches, cisterns, bioretention and filter strips. Rain barrels are also eligible.

Cost Share: Up to 75% of project costs not to exceed invoiced expenses (cooperators can not be reimbursed for their labor or equipment). Maximum amount, $1,500 per landowner.

Left and right: Stan Berg installed this rain garden with a vegetated swale in 2007. A rain garden can be a formal landscaped garden with plants arranged in rows or it can be a small patch of native prairie depending on location and individual tastes.

A common rain garden installation is located down gradient from a rain gutter down spout. A 10 by 30 foot size or smaller is usually adequate. The rain garden depression is formed by excavation to a depth of about six inches to one foot. Native plant species of grasses, wild flowers and shrubs are recommended because of their extensive root systems which create channels in the soil that allow for water to infiltrate faster and deeper.

Shoreland Revegetation

Shoreland Revegetation projects installed since 1995: 20

Cost Share: Up to 75% of project costs not to exceed invoiced expenses (cooperators can not be reimbursed for their labor or equipment)

Projects on lakes where the shoreline is over 50 percent developed are given high priority. Revegetation sites have been established along lakes, streams, or ditches in areas where native vegetation has been disturbed due to urban or residential development. Buffers provide benefits to water quality and wildlife; studies have shown that stormwater runoff from residential lakeshore lots can be 10 times higher than for lakeshore with natural cover. The ERWSA has provided cost share to establish natural shoreline buffers on the Briggs Lake Chain, Big Elk Lake and Little Elk Lake.

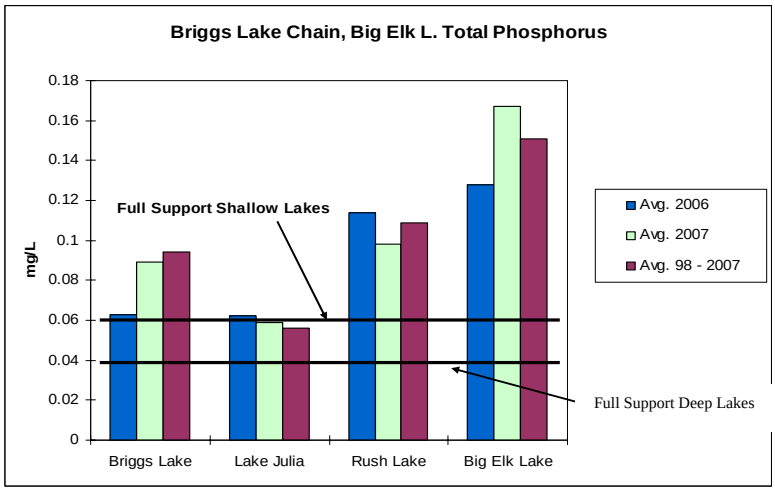
Left: Filter strip and sign installed at Lake Orono located in Elk River in 2007.

Right: Workshop participants planting a buffer along lakeshore consisting of plants native to this area.

2007 Project Summary- Monitoring

Phosphorus Mass Balance for the Briggs Lake Chain and Big Elk Lake

According to a study done by the Minnesota Pollution Control Agency in 1998, phosphorus was determined to be the major limiting nutrient for nuisance algae growth in the Briggs Lake chain and Big Elk Lake. In order to determine relative sources of phosphorus in the lake chain, a phosphorus mass balance study was conducted in 2006 and 2007 (report complete in 2008). Sampling was performed by Sherburne Soil and Water Conservation District staff and Briggs Lake Chain Association volunteers. Funding for the study was provided in part by the Initiative Foundation, a regional foundation; through a MPCA State of Minnesota Grant; federal section 319 grant and the Briggs Lake Chain Association.



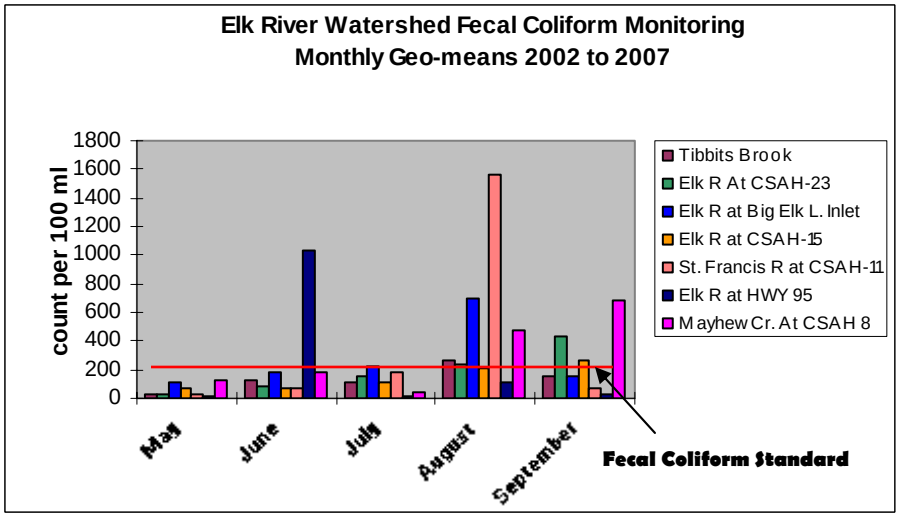
Monitoring is conducted April through October 2007:

Streams: stage, discharge and total phosphorus.
Lakes: Secchi disc transparency, total phosphorus, and chlorophyll-a. In addition, dissolved oxygen and temperature profiles were also done for the four lakes.

For more information or a complete report contact Sherburne SWCD @ 763-241-1170 ext. 3.

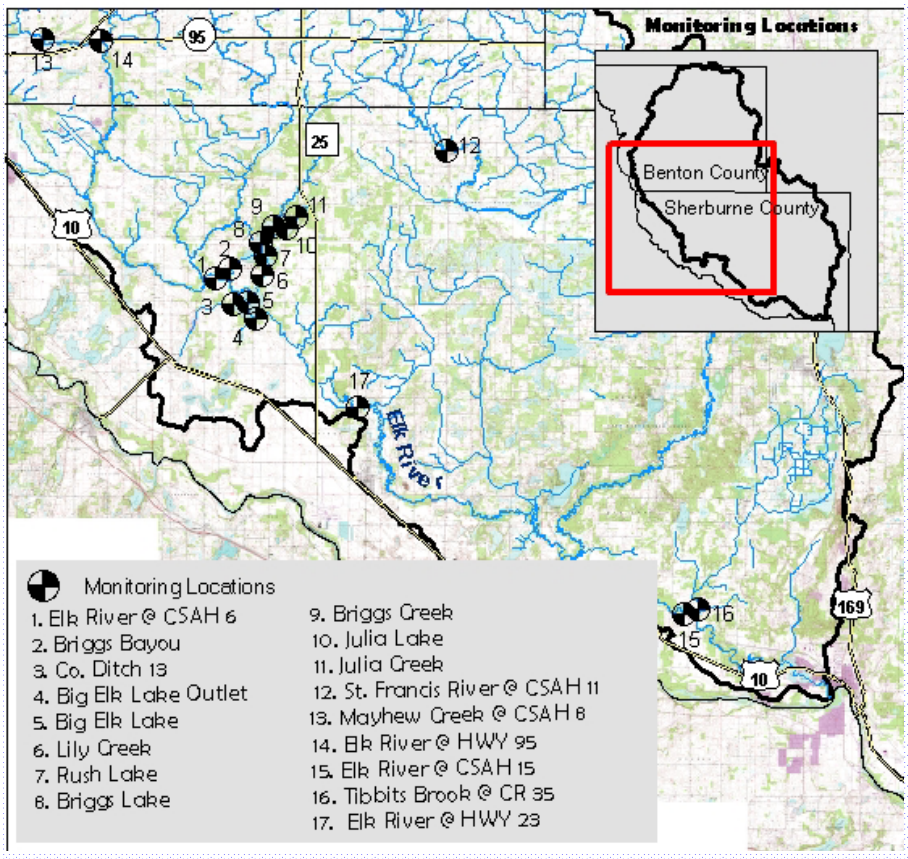
Fecal Coliform Monitoring

The Elk River Watershed Association began monitoring select stream sites in 2006 for fecal coliform bacteria. In recent years, there have been frequent warnings posted at the Lake Orono beach because of high fecal coliform bacteria counts. Lake Orono is a reservoir on the Elk River. The goal of this monitoring program was to determine if stream reaches immediately upstream from Lake Orono meet the fecal coliform criteria for placement of the 303(d) impaired waters list. In order to do so, Bi-weekly samples were collected from seven sites in 2007.



Sites monitored in 2007 exceeded the standard for fecal coliform bacteria (200 cfu/100ml) during several monitoring periods; however the number of samples exceeding the standard and the amount by which the standard was exceeded varied at each site. The majority of exceedances occurred late in the summer season when water levels and precipitation was low. Determination of impairment is made by the MPCA and streams impaired by fecal coliform are listed on the 2008 303(d) impaired waters list. Information regarding the listing of impaired waters can be found on the MPCA website: http://www.pca.state.mn.us/publications

2007 Project Summary- Monitoring Continued



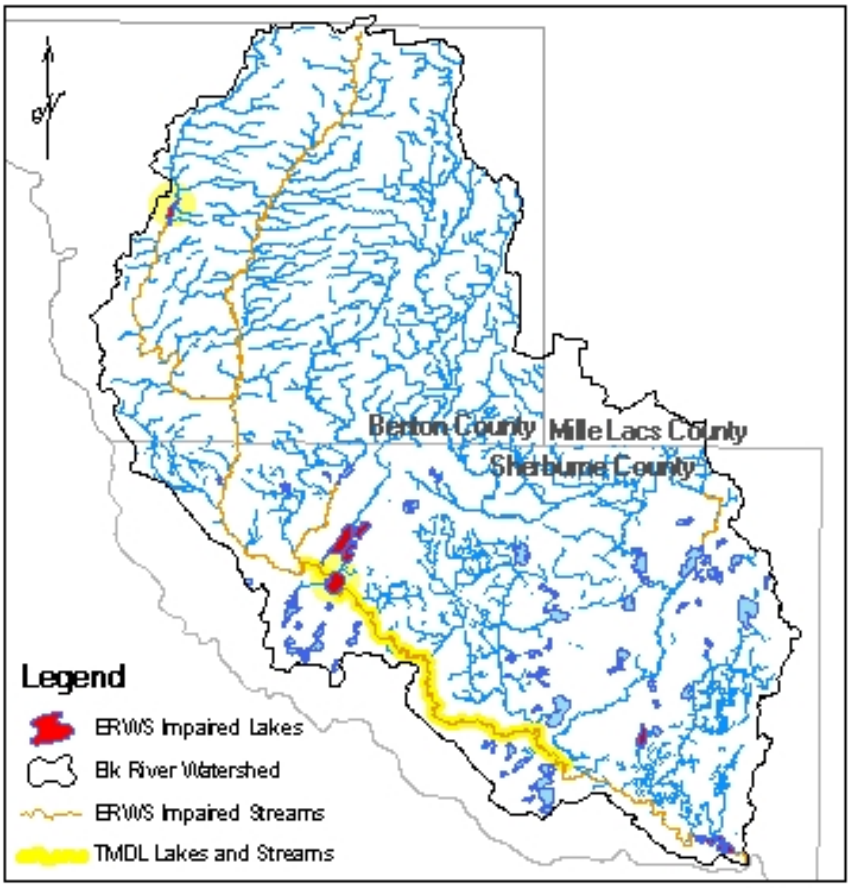
Left: All sites monitored within the ERWS in 2007. Monitoring in 2007 focused on fecal coliform bacteria analysis as well as the analysis of nutrients in the Briggs chain of lakes.

Education and Information

A major focus of the 2007 programs in the Elk River Watershed was the promotion of information and education as they relate to programs available in the watershed and how they affect water quality. The following were activities completed in 2007:

- Elk River Watershed Currents fall 2007, an ERWSA newsletter, was mailed out to 17,716 residents in the Sherburne portion of the ERWS. This newsletter informed residents of programs available to them and summarized activities that have been completed in the past.
- Sherburne SWCD held presentations for the Big Lake Community Lakes Association on stormwater BMPs and Shoreland Revegetation: 50 residents attended.
- Shoreland BMP presentation at Contractors and Realtors workshop: 27 attended.
- Stormwater BMP presentation at Briggs Lake Chain Association meeting: 19 attended
- Rain Garden Workshop at MN Horticultural Society: 130 attended.
- Low Impact Lawn Care presentation at Elk River Energy Expo.
- Five stormwater signs and lettering were produced and installed.
- 10 AgBMP brochures were distributed through AgBMP literature boxes.

Impaired Waters List



Above: ERWS Impaired Waters

The federal Clean Water Act (CWA) requires states to adopt water-quality standards to protect waters from pollution. Such standards identify how much of a pollutant can be in the water and still allow it to meet its designated use. The standards are set for an array of pollutants such as nutrients, bacteria, turbidity and mercury. A water body is considered impaired if it does not meet one or more of the water quality standards. In order to determine if the water body is impaired it must first be monitored and its corresponding data assessed. Once enough data is collected, if a water body is determined to be impaired, it is put on a list called the 303(d) impaired waters list. Once a water body is on the list, law requires the completion of a Total Maximum Daily Load (TMDL) study. TMDLs are water management plans that identify impairments to streams and lakes, identify sources of pollutants (what causes impairments), and set limits of thresholds for those pollutants in the stream or lake. Coupled with implementation plans, TMDLs are basically water quality improvement plans. Local water management organizations are drawn to complete these studies on impaired waters because once the TMDL and implementation plan are complete, funding to implement the plan and therefore, begin to clean up the water can be sought after.

Elk River Watershed Water bodies on the 2008 Impaired Waters List

Water	Reach	Pollutant
Rice Creek	Rice Lake to Elk River	Dissolved Oxygen, Turbidity
Elk River	Elk Lake to St. Francis River	Turbidity, aquatic macroinvertebrate bio-Assessments, fecal Coliform
Elk River	Headwaters to Mississippi River	Mercury*
Mayhew Creek	Headwaters to Elk River	Aquatic macroinvertebrate and fish bioassessments
Battle Brook	Co. Ditch 18 to Elk Lake	Aquatic macroinvertebrate bioassessments
Mayhew Lake	N/A	Excess Nutrients (total phosphorus)
Big Elk Lake	N/A	Excess Nutrients (total phosphorus)
Julia Lake	N/A	Excess Nutrients (total Phosphorus)
Rush Lake	N/A	Excess Nutrients (total Phosphorus)
Birch Lake	N/A	Excess Nutrients (total phosphorus)
Briggs Lake	N/A	Excess Nutrients (total phosphorus)
Lake Orono	N/A	Excess Nutrients (total phosphorus)

* State wide Mercury TMDL approved by EPA in March 2007

2008 Projects Planned and Complete

Projects planned for 2008

AgBMP test plots to be initiated
2 plans for wetland restoration/enhancement to be drafted

3 wetland restoration/enhancement projects will be initiated

1 rain garden project plan to be completed

2 shoreline revegetation projects to be planned

Continue monitoring fecal coliform at select stream sites

Projects planned for 2008 Continued

Hold a shoreline revegetation site maintenance workshop

Publish Lakeshore Weed Guide

Projects Complete/ in Progress 2008

4 Shoreland Revegetation Projects

Mass balance for the Briggs Lake Chain and Big Elk Lake (page 7)

Hiring of a Watershed Coordinator

Total Maximum Daily Load Studies (TMDLs)

Introduction to 2008 Complete/ in Progress Projects

Hiring of a Watershed Coordinator

A Watershed Coordinator was hired in May of 2008 by Sherburne SWCD; however, the position is shared between Sherburne and Benton SWCDs. The Watershed Coordinator was hired to coordinate efforts in the ERWS as part of the ERWSA Joint Powers Board. Funding for the new position was made possible by the efforts of Sherburne and Benton Countyies in addition to a grant received by the ERWSA from the MPCA. The Watershed Coordinator is responsible for the implementation of watershed initiatives in the ERWS. A major focus of the position will include coordination and administration of TMDL studies. In addition, the Watershed Coordinator will provide a variety of technical, educational and administrative assistance duties under policies established by the Sherburne and Benton SWCDs.

Total Maximum Daily Load Studies (TMDLs)

In order to address impaired waters in the ERWS, a Joint Powers Agreement between the MPCA and the ERWSA was formed in 2008. Through this conglomeration of organizations a grant in the amount of $128,400 was awarded by the MPCA to the ERWSA. Additionally, Wenck Associates Inc. was contracted to assist the ERWSA in the development of TMDLs through a Master Contract with the MPCA. The Master Contract adds an additional $123,581 to the grant total. The mentioned funds will provide the means to complete TMDLs on three of the waters on the 303(d) list over the next three years. TMDL waters include: Big Elk Lake (excess nutrients), Mayhew Lake (excess nutrients) and the Elk River from Big Elk Lake to the St. Francis River (turbidity and fecal Coliform).

The TMDLs will take place in three phases. Phase I will consist of a review of existing information which will aid in identifying data gaps and in developing plans for collecting additional information. Phase II consists of a stepped-up monitoring program identified with work completed in the phase prior. Finally, Phase III will identify and set the TMDL, or threshold, for the pollutants in each of the impaired water bodies and the development of an implementation plan.