

ERWSA 2008

2008 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.



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2008 Executive Summary

The Elk River Watershed 2008 Annual 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 2008 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 2008 by the ERWSA.
- Introduce projects that are planned for 2009.

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.

2008 Program Focus

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.

In 2008 the ERWSA continued on their mission to assist landowners within the Elk River Watershed on implementing Best Management Practices (BMPs). However, the ERWSA made a major addition to their regular program focus in 2008. In August of 2008 the ERWSA entered into a contract with the Minnesota Pollution Control Agency (MPCA) to conduct Total Maximum Daily Loads (TMDLs) on two lakes and one stream reach.

MPCA 319 Fund Goals

In 2008, the program focused on utilizing 319 funds similar to that of 2007. The 319 program 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 2008 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.

319 funds are used to offer assistance to install the above mentioned practices where other assistance is not available. Money is also used to dedicate existing SWCD staff to offer technical assistance to landowners who are installing the BMPs.



2008 Program Focus; Continued

TMDL Fund Goals

The TMDL program was initiated by the ERWSA and was developed in order to address impaired water bodies located within the ERWS. This program goes hand-in-hand with the 319 program goals in that the end result will be improved water quality. The funds were utilized to assist in the hiring of a Watershed Coordinator to conduct TMDL studies on Mayhew Lake, Big Elk Lake and the Elk River from Big Elk Lake to the St. Francis River.

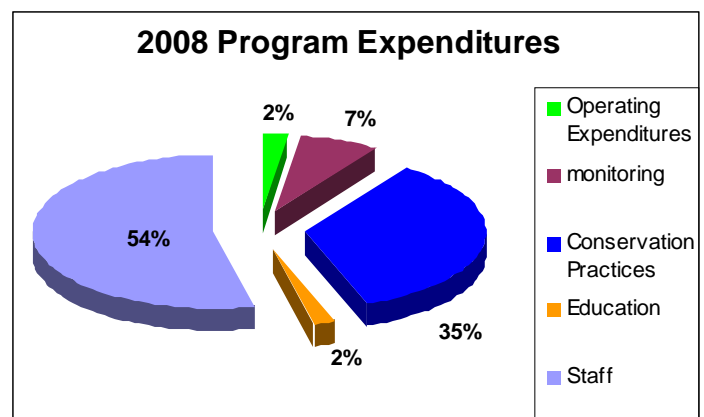
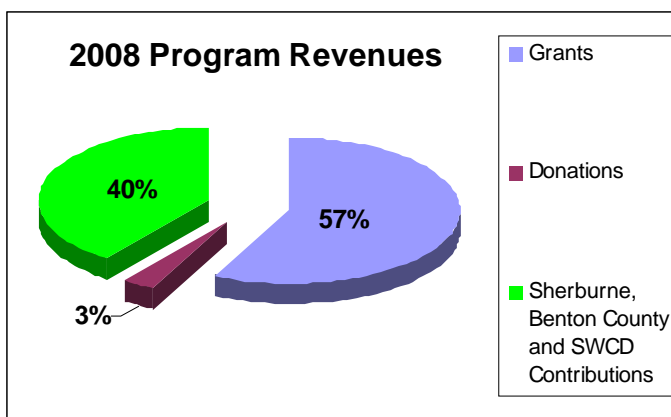
The Watershed Coordinator that was hired through TMDL funds will collect and analyze water quality data, and contract with a consultant to develop models which will identify the sources that are contributing to pollution and to determine how much the pollution should be reduced by. Additional information regarding TMDLs is on page 10.

2008 Elk River Watershed Association Board of Directors

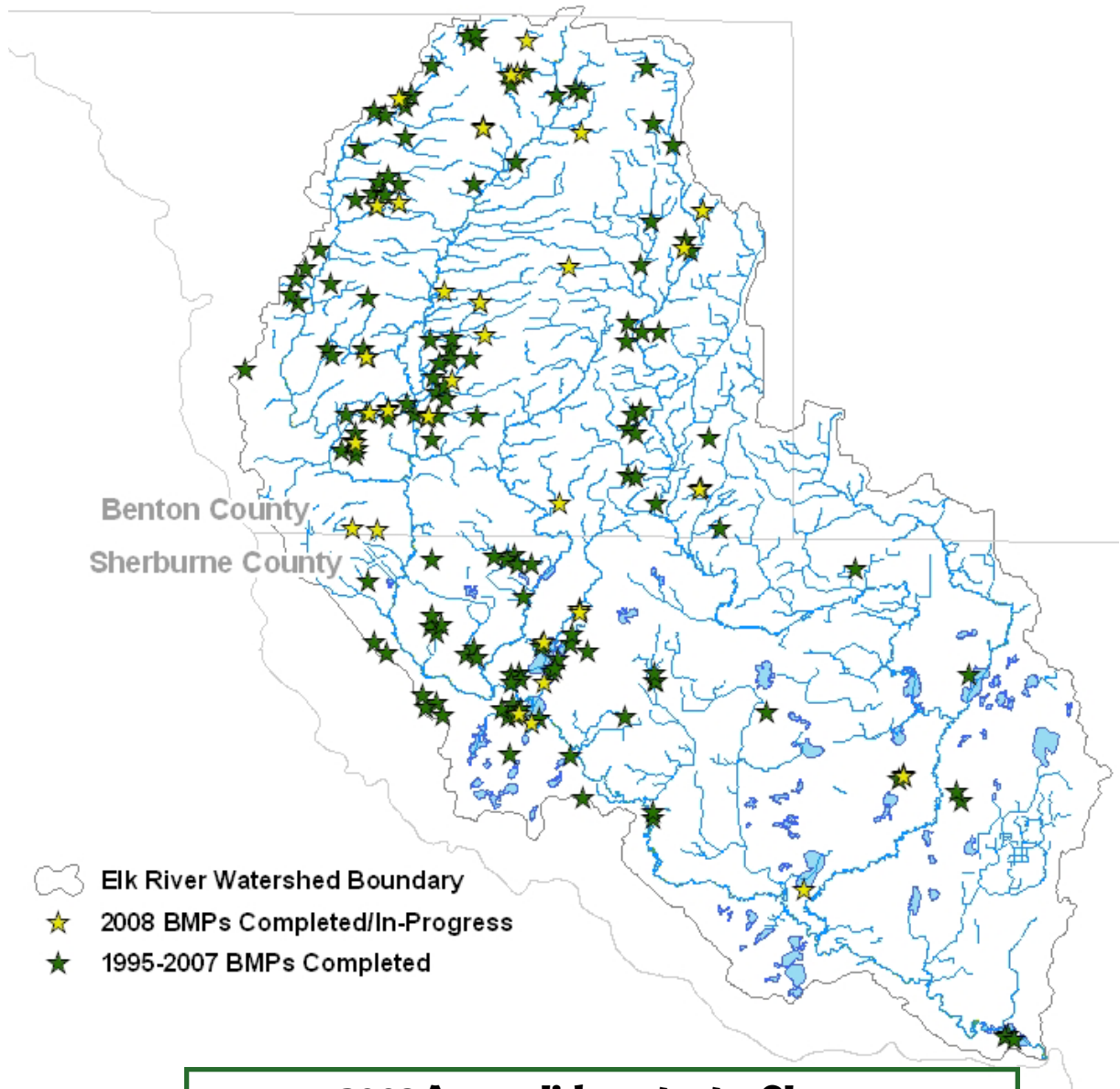


From Left: John Riebel, Sherburne County Commissioner; Mike Hayes, alternate member at large; Leander Schlosser, Sherburne Soil & Water Conservation District Supervisor; Terry Polsfuss, Sherburne County member at large; Brian Kaschmitter, Benton County member at large; Leonard Popp, Benton County member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

Elk River Watershed Association Revenue and Expenditures



Elk River Watershed Association Project, 1995 to 2008



2008 Accomplishments at a Glance

<p>BMPs</p> <ul style="list-style-type: none"> 14 Ag BMP test plots 2 Wetland restorations – in progress 3 Riparian buffer/livestock exclusions 1 Riparian Pasture 4 Shoreland revegetation projects– completed 6 Shoreland revegetation projects– in progress 1 Rain Garden – Complete 2 Rain Gardens – in progress 	<p>Monitoring</p> <ul style="list-style-type: none"> Fecal Coliform Monitoring <p>Education/Information</p> <ul style="list-style-type: none"> Palmer Township Data Summit Published Shoreland Weed ID Guide Held “hands-on” Buffer Maintenance Workshop Developed shoreland revegetation and rain garden fact sheets Elk River Watershed Currents 1st Annual Elk River Cleanup 	<p>Education/Information Cont'</p> <ul style="list-style-type: none"> Presentations: Stormwater BMPs and Shoreland Revegetation Rain Garden Design Workshop Installation of 5 Stormwater BMP Signs Ag BMP Brochures Distributed <p>Other</p> <ul style="list-style-type: none"> Elk River Watershed TMDLs– Phase I
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Agricultural BMPs

Nutrient Management (14 test plots completed in 2008)

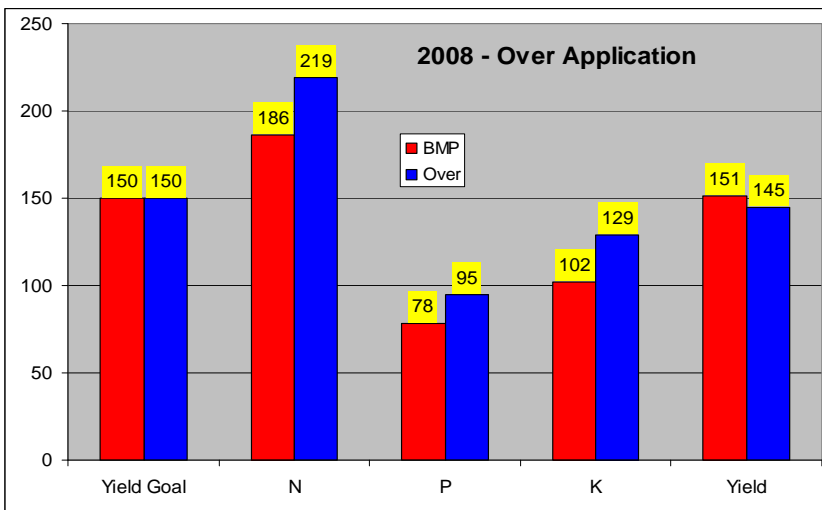
Test plots installed since 1995: 82

Nutrient Management (Ag BMP) 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. These test plots are customized for each farmer.

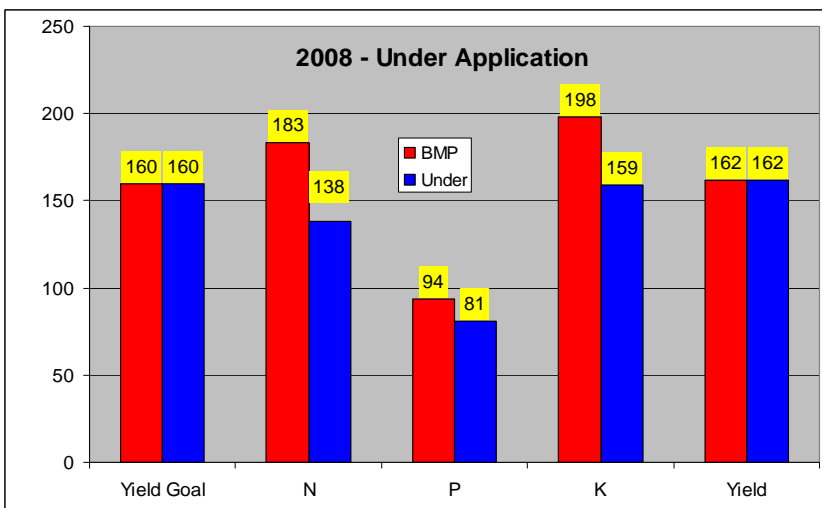
Once again, in 2008 the Benton SWCD completed nutrient management test plots in the Elk River Watershed. Like years past, manure and fertilizer application rates were compared to the University of Minnesota's recommendations. The big change this year was that more farmers compared under application rates versus the U of M recommendations instead of over application rates like years past.



In 2008, 14 test plots were completed with eight different farmers in the ERWS. Test plots were completed on a variety of crops including: sweet corn, soybeans, oats and hay. Our calculations indicate that nitrogen (N) rates were reduced by 30 pounds per acre, phosphorus (P) by 19 pounds per acre, and potash (K) rates were reduced by 49 pounds per acre.



Unlike past years, the results of the 2008 test plots were analyzed to determine how successful the test plots were. The graphs to the left represent the results for the corn test plots for all of Benton County. The graphs show the average yield goals, average application rates for N, P and K and the average yields.



Overall, the analysis results for 2008 indicated that there was little to no difference in yield production when following U of M recommended fertilizer application rates versus the over or under-application rates.



Agricultural BMP; Continued

Wetland Restorations/Enhancements (2 wetland restoration in progress; in 2008)

Wetland restoration/enhancement projects completed since 1995: 9

The ERWSA is supportive of wetland restorations/enhancements due to the fact that wetlands aid in filtering pollution sources, increase groundwater infiltration, and increase wildlife habitat.

In 2008 the ERWSA was very excited to approve a highly visible wetland creation located on the east side of Highway 25 near Foley. The project consists of a wetland creation with a dam in addition to a buffer strip. Due to the high visibility of the project, an educational sign will be placed along the highway. Unforeseen circumstances in the fall of 2008 caused a delay in the completion of the project, the project will be completed as conditions permit over the 2009-2010 season.



The ERWSA also approved a wetland restoration project in the Popple Creek area; construction on the project is expected to begin in the summer of 2009.

Pasture Management (3 riparian buffers/livestock exclusion; completed in 2008)

Management practices completed since 1995: 49

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.

In 2008 the ERWSA approved three riparian buffer strips along with livestock exclusion from surface water. The total area of pasture that was enrolled into ERWSA Riparian Pasture contracts in 2008 was 56.6 acres. This means that this pastureland, located near a stream and/or wetland, would no longer be grazed or utilized any other way by livestock.

The approved pasture management practice pictured right contains two wetland and stream areas owned by the Bromenschenkel Brothers in Benton County that were buffered to approximately 120 feet. The total area of the pasture that was enrolled was 43 acres. This pasture was typically stocked with between 25-29 beef cow/calf pairs throughout the grazing season.

This practice resulted in an estimated phosphorus reduction of 1,496 pounds.



Rural and Urban BMPs

Stormwater Runoff BMPs (1 rain garden complete; 2 in progress; in 2008)

Stormwater BMPs installed/in progress since 1995: 12

Stormwater practices have included filtration and infiltration methods such as: vegetated swales, rain gardens, infiltration trenches, cisterns, bio-retention and filter strips. Rain barrels are also eligible practices.

In 2008 the ERWSA completed one 730 square-foot rain garden project located on Eagle Lake in Big Lake Township (pictured right). This rain garden was completed in a relatively short period of time. This project was a great example of the adaptability of rain gardens to suit the landowner needs and visions. Because the landowner did not envision such a large basin, the inlet of the garden was designed to be maintained



as sod. Reportedly, after a large rainstorm, the sod inlet held up well and the rain garden is working properly to reduce overland runoff into Eagle Lake.



Two other rain garden projects were approved in 2008 and will be installed in the spring of 2009. One of these projects is a City of Becker rain garden with an infiltration trench (pictured left). The excavation was completed in 2008 and the planting will be completed in 2009. The rain garden and trench are located at the end of a cul-de-sac between two homes. The water from this site flows into a ditch along Highway 23, into a golf course pond and then into the Elk River. The plan is for a rain garden and an infiltration trench which will run through a swale and will overflow into a ditch.

Shoreland Revegetation (4 shoreland revegetation's completed; 6 in progress; in 2008)

Shoreland revegetation projects installed since 1995: 30

Revegetation sites have been established along lakes, streams, or ditches in areas where native vegetation has been disturbed due to urban or residential development. Applications for installation of shoreland revegetation increased over 2008 and included contracts with landowners on five lakes where the ERWSA had not yet done projects. The Big Lake Community Lakes Association (BLCLA), in conjunction with the City of Big Lake, became extremely proactive in the pursuit of shoreland revegetation projects on both Big and Mitchell Lakes located in the City of Big Lake. In the spring of 2008 the City of Big Lake, Sherburne SWCD staff, and BLCLA members surveyed 20 public greenways around the two lakes to prioritize and identify areas for revegetation projects. Two of the sites identified in 2008 now have plans completed. There are four other revegetation projects with approved plans on Big and Mitchell Lakes. Other projects completed in 2008 were on Rush Lake and Big Elk Lake.

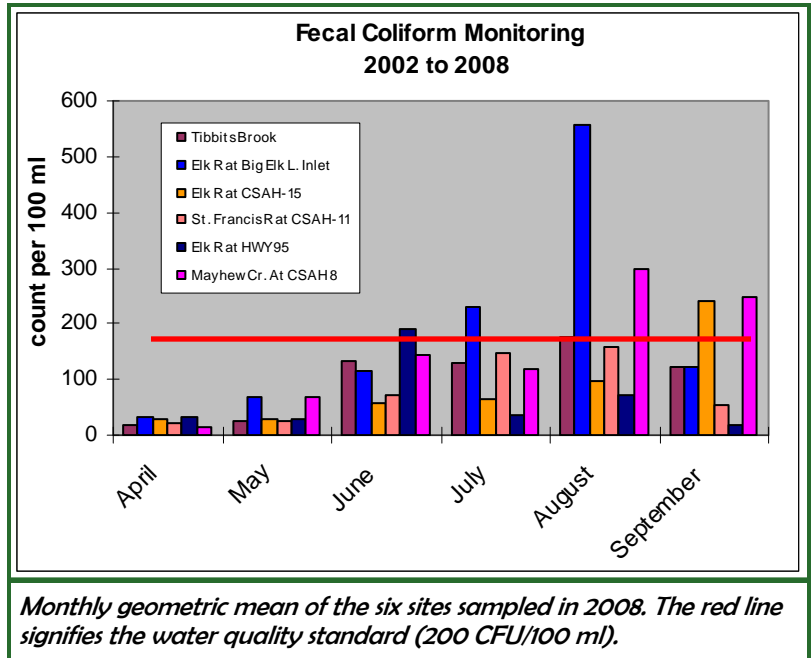


Monitoring

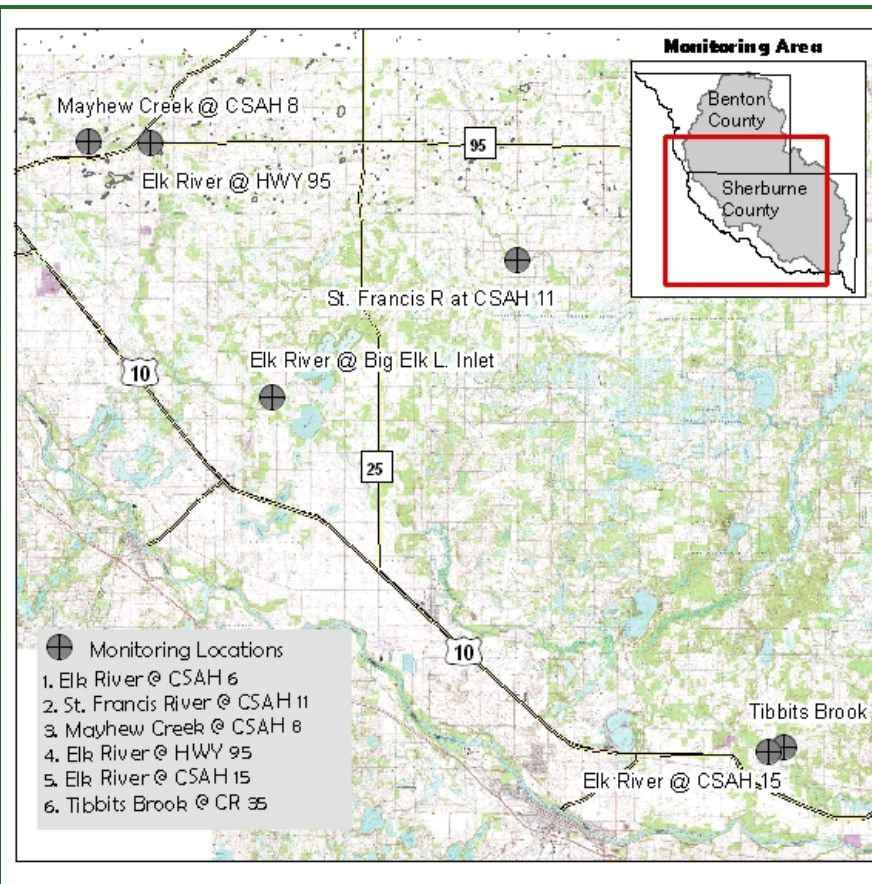
Fecal Coliform Bacteria Monitoring (6 sites sampled in 2008)

Fecal coliform bacteria comes from the intestines of warm-blooded animals. High levels of bacteria in water from human or animal fecal material can cause illnesses in humans if ingested. The ERWSA began monitoring for fecal coliform bacteria in 2006 after frequent warnings were posted at the Lake Orono beach due to high levels of the bacteria. The ERWSA has been collecting the data since 2006 with a goal of determining if stream reaches upstream from Lake Orono meet the fecal coliform criteria for placement on the 303(d) impaired waters list.

Bi-weekly samples were collected from April 1st through October 31st in 2008. The MPCA will assess the data that was collected in 2008 to determine whether or not the stream reaches meet the criteria for placement on the 303(d) impaired waters list. The impaired waters list will be presented by the MPCA in 2010. If the monitored stream sites are determined to be impaired, a Total Maximum Daily Load (TMDL) will be required. See page 10 for a description of a TMDL.



Monthly geometric mean of the six sites sampled in 2008. The red line signifies the water quality standard (200 CFU/100 ml).



The graph above shows a conglomeration of all fecal coliform data, categorized by month, for the sites monitored in 2008. This arrangement allows us to visualize, by site and by month, where fecal coliform exceedances are occurring. The results indicate that bacteria counts exceed the State fecal coliform bacteria standard (200 cfu/100ml). The number of samples exceeding the standard and the amount by which the standard is exceeded varies at each site. The majority of exceedances occurred late in the summer season when water levels and precipitation was low.

Information regarding the listing of impaired waters can be found on the MPCA website at:

<http://www.pca.state.mn.us/publications>

Above: Six stream sites monitored for fecal coliform bacteria in 2008.

Education and Information

2008 was an exciting year for the ERWSA education and information programs. The ERWSA instigated several new initiatives while also continuing on with other re-occurring initiatives. The following were activities completed in 2008:

Presentations:

- **Palmer Township Data Summit:** Three presentations were given by staff regarding the water quality monitoring results from the Briggs Chain of Lakes: 46 attended.
- **Big Lake Community Lakes Association:** A presentation was given on shoreland Best Management Practices: 18 attended.
- **Spectrum High School:** A presentation was given on shoreland buffers and rain gardens: 50 students attended.

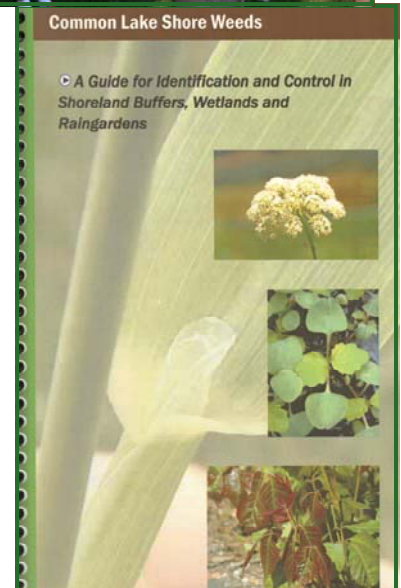


Workshops:

- **Shoreland Buffer Maintenance:** Held a “hands-on” workshop at a Briggs Lake Chain buffer site: 13 attended.

Publications:

- **Shoreland Weed ID Guide:** Developed a Shoreland Weed Guide for use by the public for maintenance of shoreland buffers of native vegetation: 189 printed.
- **Fact Sheets:** Developed shoreland revegetation and rain garden fact sheets.
- **ERWSA Currents Newsletter:** The newsletter was inserted into a Benton County Solid Waste Newsletter, the Rubbish Review, and was mailed to Benton County Residents.



Other Activities:

- **1st Annual Elk River Watershed Cleanup Day:** 33 volunteers participated in cleaning up over three miles of the Elk River. An estimated 300 pounds of debris was removed from the river!

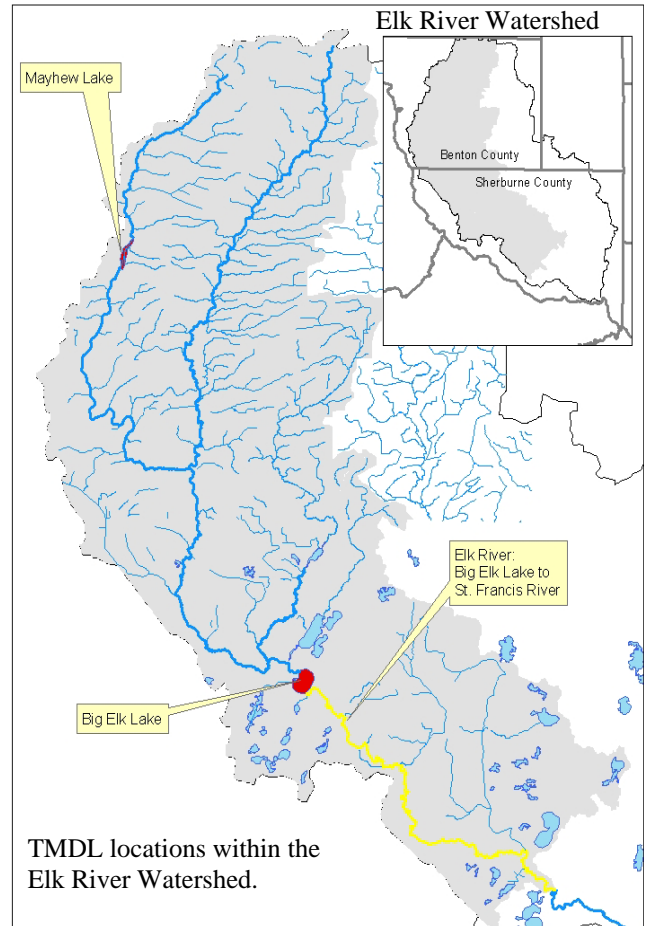


Above: All of the wonderful volunteers that participated at the 1st Annual Elk River Watershed Cleanup. Right: Participants with the debris they removed from the Elk River near Lake Orono.

Elk River Watershed Total Maximum Daily Loads (TMDLs)

In August 2008 the ERWSA, along with their project partners, the MPCA and Wenck Inc., began work on Total Maximum Daily Loads (TMDLs) on three impaired waters in the Elk River Watershed. The ERWSA received funds totaling \$251,981 to complete TMDLs on Big Elk Lake and Mayhew Lake (both impaired for excess nutrients) and the Elk River from Big Elk Lake to the St. Francis River (impaired for fecal coliform bacteria and turbidity). The TMDLs will take place over three phases (see ERWSA TMDLs at a glance).

The first phase was complete by March 2009 and consisted of the collection and review of all existing information pertaining to the impaired waters. Additionally, Phase I consisted of completing of a visual survey of the Elk River and its tributaries. This survey, completed in September 2008, was done to field-verify the possible causes of pollutants along the Elk River and its tributaries. The results of the field survey, along with a summary of all data collected in Phase I, were incorporated into a Phase I TMDL report which lays out the lake and stream sampling that will be carried out over the summer of 2009. The sampling plan outlined in the report will allow professionals to determine where pollution such as E. coli, turbidity and nutrients are originating.



Watershed Coordinator Position

As indicated in the ERWSA 2007 Annual Report, Tiffany Determan (pictured below) was hired as a Watershed Coordinator in May 2008 by the Sherburne SWCD; however, the position is shared between Sherburne and Benton SWCDs (50% of her time is spent on TMDLs, 25% at the Benton SWCD and 25% at the Sherburne SWCD). The Watershed Coordinator will coordinate the efforts in the Elk River Watershed as part of the ERWSA Joint Powers Board. Funding for the position was made possible by the efforts of Sherburne and Benton Counties in addition to the TMDL grant received by the ERWSA from the MPCA. A major focus of the position includes coordination and administration of the TMDLs. In addition, the Watershed Coordinator provides a variety of technical, educational, and administrative assistance duties under policies established by Sherburne and Benton SWCDs.



ERWSA TMDLs at a Glance

Impaired Waters and Pollutants:

Elk River (Big Elk Lake to St. Francis River): turbidity & fecal coliform

Big Elk Lake: excess nutrients (phosphorus)

Mayhew Lake: excess nutrients (phosphorus)

Purpose: To identify the sources of pollutants in the identified impaired waters.

Three Phases:

Phase I: Data gathering, preliminary source assessment, monitoring plant development, report, public meeting (August 2008-March 2009)

Phase II: Detailed surface water monitoring, data analysis, public meeting (April 2009-February 2010)

Phase III: Complete TMDL report and Implementation Plan, public meeting (March 2010-March 2011)

2009 Projects; Planned and Completed

The ERWSA will continue to work towards the completion of the 319 grant by completing the projects listed as “in progress” in this report, as well as seek out additional priority BMPs as listed in this report.

Other projects in the queue for 2009 include:

- 2nd Annual Elk River Watershed Cleanup– scheduled for September 26th, 2009.
- Continued bacteria monitoring at two newly selected stream sites (will now be analyzed for Escherichia Coli).
- Pursue funds to complete TMDLs on impaired waters in the Elk River Watershed.
- Spring mailing of ERWSA Currents newsletter watershed wide. The Upper Mississippi River Source Water Protection Project (UMRSWPP) has granted the ERWSA \$11,200.00 to complete the project.

