Watershed News

April 2006

South Branch of the Root River Watershed Project

PROTECTING SPRINGSHEDS PROTECTS TROUT STREAMS

Southeast Minnesota and, in particular, the South Branch of the Root River are home to some of the premier trout streams in the Upper Midwest. Not only are trout streams environmental assets, they are economic assets that provide many benefits to the areas where they are located.

Protecting a trout stream goes beyond protecting the stream corridor. Trout streams and the fisheries that they support are dependent on springs, which keep the water temperature in the optimum range for trout production. Ground water is the source of the water in springs. Maintaining spring flows depends on precipitation infiltrating into the ground and replenishing ground water supplies where the water can cool before emerging in springs.

The land area that contributes water to a spring is called a *springshed* just as a watershed is the area that contributes water to a stream or lake. A springshed differs from a watershed because it also includes the underground pathways water follows to a spring. In karst areas like southeast Minnesota, sinkholes and other direct connections between the surface and ground water complicate this relationship. Water entering a sinkhole can travel underground and emerge a few hours later in a spring several miles away crossing several surface watershed boundaries along the way. Consequently, springshed boundaries and watershed boundaries do not always match.

Over the past 25 years, the understanding of springsheds has grown because of studies using fluorescent dyes that are released into sinkholes while neighboring springs are monitored to determine where and when the dye emerges. This helps to identify the areas in springsheds needing management practices that improve water infiltration. Dye tracing also identifies the areas affected (and the drinking water wells located there) if a hazardous material enters a sinkhole.

This information also determines where South Branch Root River watershed programs are offered. Since springs in the South Branch and its tributaries are impacted by land use in their springsheds, areas that lie within the springshed are also considered part of the watershed even though the surface drainage may flow in a different direction.

A prime example of this is the farm of Diane and the late Dave Serfling. A dye trace from a sinkhole on their property shows that water flows west underground to the Canfield Big Spring, which forms the headwaters of the trout stream portion of Canfield Creek in Forestville/Mystery Cave State Park. However, water flowing over the surface from their farm goes east to Willow Creek, which enters the South Branch about 12 miles downstream from the confluence with Canfield Creek. Since their land is in the springshed for Canfield Big Spring, it is eligible to be enrolled in South Branch watershed programs, which are aimed at improving water infiltration. The Hay Set-Aside Program pays $50 per acre per year for three years to maintain hay/grass buffers which can be harvested until September 15. Buffer Bonus Payments ($7-10/acre) for conservation tillage and/or planting cover crops also improve infiltration.

Dye trace studies will continue in the South Branch Root River Watershed over the next three years. Please cooperate with researchers when they contact you about gathering this important data. ***Thank you!*** *View maps showing dye trace data from the Mower and Fillmore County Geologic Atlases at http://www.dnr.state.mn.us/waters/groundwater_section/ mapping/status.html.*

FILLMORE COUNTY INVENTORIES THREATS TO PUBLIC HEALTH

In 2004, Fillmore County was one of three counties in the state to receive a $240,000 grant from the MN Pollution Control Agency to do a pilot project to identify septic systems considered to be imminent threats to public health (ITPH). These are septic systems that have sewage discharging to a ditch, stream, or to the ground's surface. This would include systems that have a pipe connected to a drain tile line.

Sewage contains bacteria and other disease-causing organisms that cause serious illness in humans. Even if people do not come into direct contact with sewage, pets and flies, among other things, can transmit the pathogens to humans if the sewage is being openly discharged.

Of the 314 building sites inventoried in Bloomfield and Forestville townships, 33 (11%) were identified as ITPH. Most of these had a straight pipe discharging sewage directly from a septic tank into a road ditch. A properly installed septic system discharges the liquid from the septic tank into a soil treatment system.

Financial Assistance Programs

$300 Grants: If an ITPH system is fixed to meet current code and the owner attends a county-sponsored class on septic system operation and maintenance, the owner receives a $300 grant. Grant applications are available at the Fillmore County Zoning Office (765-3325). These grants are not available to Mower County residents.

Low-interest loans: Loans available for septic system upgrades in the South Branch Root River watershed are 10-year loans administered by the county that can be paid back with the property taxes. No collateral or credit checks are necessary. The loans are a special assessment recorded as a lien on the property. Default of the loan risks losing the property. The only requirements are that the property must be owned by the loan applicant, and the property taxes must be current. The interest rate is 3% in Mower County and 4% in Fillmore County. Contact the Fillmore County Zoning office in Preston for an application. Mower County applicants contact the Mower County Environmental Services office in Austin at (507) 437-9527.

USDA Rural Development Section 504 Repair Loans/Grants: For persons over the age of 62 who meet very low income guidelines, grants of up to $7500 are available through USDA Rural Development for septic system upgrades and other home repairs. Loans are also available through the Section 504 Repair program to anyone of any age who meets the very low income guidelines. The maximum loan amount is $20,000 at an interest rate of 1% and a repayment period of up to 20 years. Contact the USDA Rural Development office in Austin at (507)437-8247, ext. 4 for information about this program.

Did you know...

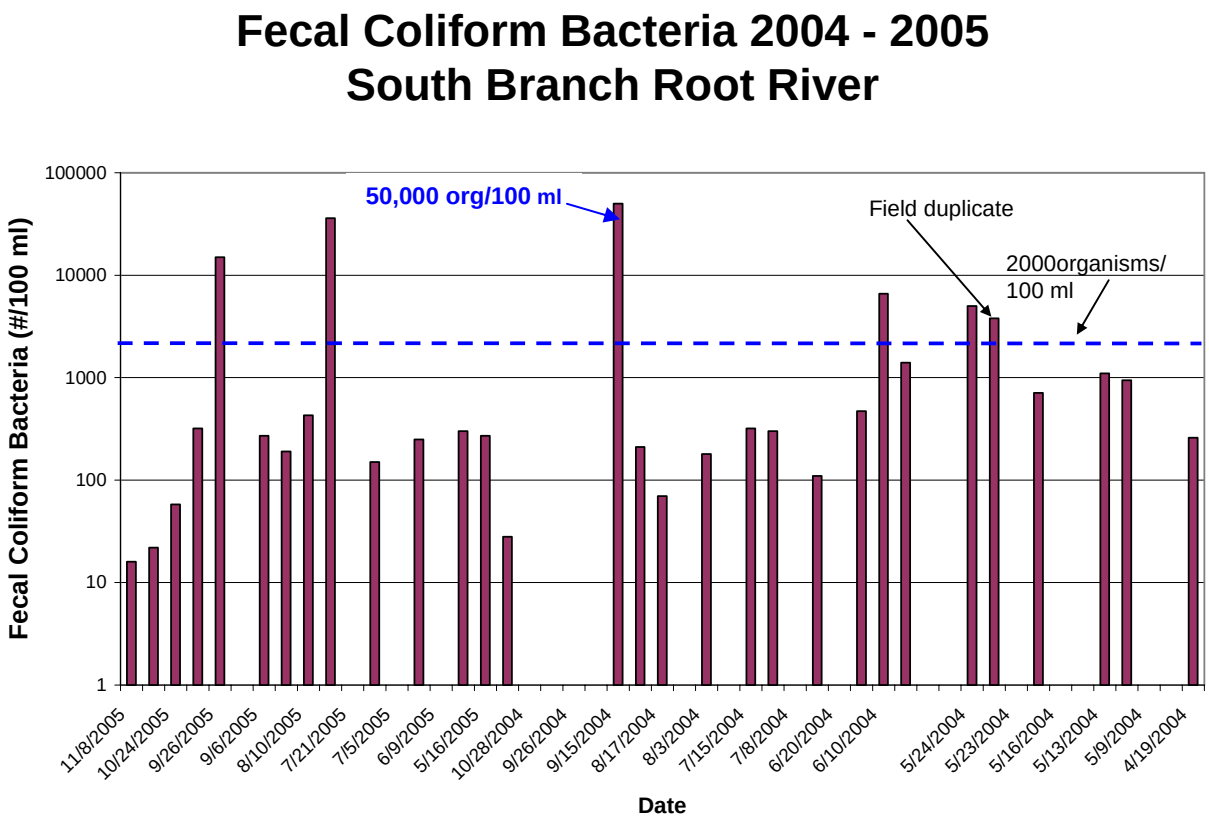
- *There are an estimated 500-600 septic systems in Fillmore County and 800 septic systems in Mower County that are imminent threats to public health?*
- *Sewage from a straight pipe from a septic tank can contain as many as **100 MILLION** bacteria in 100 milliliters of water (about ½ cup)?*
- *Septic systems constructed to current code with 3 feet of unsaturated soil beneath the drainfield remove **100%** of the bacteria found in sewage?*
- *It takes only a few E. coli 0157:H7bacteria (a virulent strain of E. coli) to cause illness in a human being? (E. coli bacteria are a type of coliform bacteria found in the intestines of humans and animals.)*
- *The 2004 list of impaired waters in Minnesota included 102 streams exceeding the water quality standard for fecal coliform bacteria making these streams unsafe for swimming or other water contact activities? Another 17 stream segments in southeast Minnesota are on the draft 2006 list as impaired by fecal coliform bacteria.*
- *Over 30% of the well water samples from Fillmore County over the last 20 years had coliform bacteria present, which makes the water unsafe for drinking?*

Bacteria Monitoring Results in the South Branch Root River

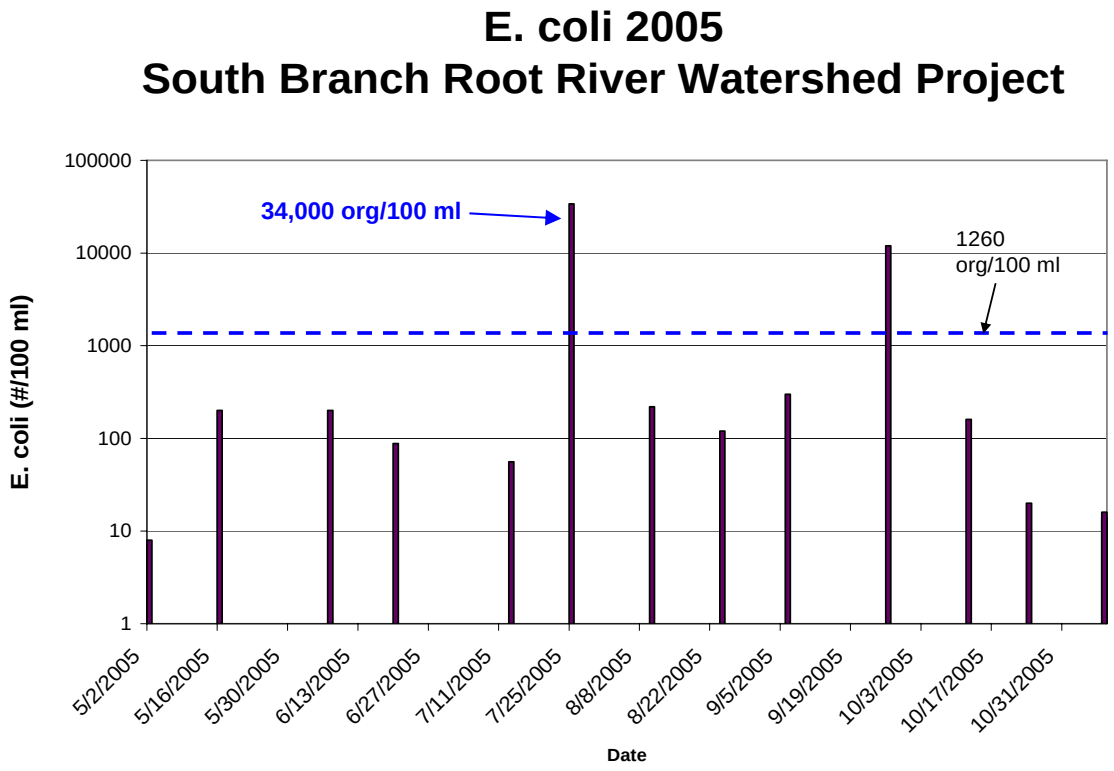
From 1999 to 2002, 83 samples collected in the South Branch Root River and its tributaries were analyzed for fecal coliform bacteria, the bacteria found in waste from animals and humans. The average concentration of fecal coliform bacteria from those 83 samples was 553 organisms per 100 milliliters (ml) of water. This exceeds the water quality standard for streams which is 200 organisms/100 ml by over two times. This monitoring led to the listing of the South Branch from its headwaters to the confluence with Willow Creek southwest of Preston on the 2004 Impaired Waters list submitted by the state to the U.S. Environmental Protection Agency (EPA). A stream with this designation is considered impaired for swimming and other primary water contact activities. The bacteria indicate that there is an increased risk of illness due to harmful bacteria, viruses, or other disease-causing organisms that might be in the water.

In 2004, monitoring resumed when approval for more funding was received for the watershed project. In 2004 and 2005, of 27 samples collected (including 1 field duplicate), five exceeded the single sample water quality standard of 2000 org/100 ml representing 19% of the samples, the highest being 50,000 org/100 ml. The threshold for determining a stream impairment based on single sample numbers is 10% of the samples exceeding the standard. (Please note the difference between the single sample water quality standard and the multiple sample standard of 200 org/100 ml.) This is further evidence that fecal coliform bacteria continue to exceed the levels that can impair the use of the river for swimming and other water contact activities.

The graph below shows the results of the monitoring in 2004 and 2005. Note that the scale for the number of fecal coliform bacteria on the y-axis is a logarithmic scale, so that each line represents a 10-fold increase in the numbers of bacteria.



In 2005, water samples were also analyzed for *E. coli*. The state is proposing changing the surface water quality bacteria standard from a fecal coliform standard to an *E. coli* standard to be consistent with current EPA standards. The proposed *E. coli* standard designates a stream as impaired if the average concentration is over 126 org/100ml for multiple samples or over 1260 org/100 ml for single samples. Again, the threshold for determining a stream impairment is that 10% of the samples analyzed exceed the standard. Of 14 samples analyzed in 2005, 2 exceeded the single sample standard of 1260 org/100 ml, which represents 14% of the samples. The graph below shows these results. Again, the scale on the y-axis showing the number of *E. coli* organisms per 100 ml of water is a log scale, so each line is a ten-fold increase in concentration.



Bacteria concentrations are closely tied to increased stream flows, which is also when the water is usually muddy. The method used to measure water clarity uses a 60-centimeter transparency tube. Water poured into the clear tube is viewed through the top to see a symbol at the bottom of the tube. When the water is clear, the reading is 60 cm; when the water is muddy, the symbol can only be seen if there is less water in the tube, so the reading is lower. A measurement of 20 cm or lower corresponds to an exceedence of the turbidity standard for warm water streams. Turbidity is a measure of the amount of light that travels through the water. Sediments and other particles in the water block sunlight. Streams where turbidity exceeds the water quality standard are considered impaired for use by aquatic life—the fish, bugs, plants and other living things in the water.

The average transparency reading was only 7.6 cm for the five samples collected when fecal coliform bacteria levels exceeded the 2000 org/ml standard, which reinforces this relationship between runoff and high bacteria levels. Land use practices that control runoff can have a dual benefit of lowering bacteria levels in our streams.

WORK PROGRESSES ON JUDICIAL DITCH #1 CLEANOUT

Rick Morrison, Drainage Inspector,Mower County

The cleanout of the J.D. #1 drainage system is progressing fairly well. Mayer Digging of Osage, Iowa has the contract to remove the trees and brush and has been working on that since January when weather permitted. They have less than a mile to complete that part of the project. All the wood is either piled to be burned or piled to be hauled away for manufacturing. There were some trees left standing that were not in the immediate area of the open ditch and would not be in the way of the dredging of the ditch.

Freeborn Construction, Albert Lea, MN, has the contract for the actual cleaning of the open ditch. They have moved their equipment onto the site and plan to start the last week of March or the first week of April. The contractors were required to have an erosion control plan in place so hopefully the downstream impact will be very minimal. The Mower County SWCD along with the NRCS department are working with several landowners to implement filter strips next to the open ditch once the cleaning is completed.

Editor's Note: JD #1 forms the headwaters of the South Branch of the Root River encompassing about 11,000 acres (15%) of the total drainage area upstream of Forestville State Park.

Get Your Well Water Tested for Bacteria and Atrazine

Bacteria Test $5
(normally costs $22)

Atrazine Test $10
(normally costs $42)

Contact Donna Rasmussen
(507)765-3878, ext. 3
donna.rasmussen2@mn.nacdnet.net

AMERICAN FARMLAND TRUST BMP CHALLENGE

Minnesota farmers are eligible to participate in a new program offered by the American Farmland Trust (AFT). The BMP Challenge allows farmers to try Best Management Practices (BMPs) risk-free. This "performance guarantee" compensates the farmer for any losses on acres where nutrient or tillage BMPs are applied. Funding comes from the USDA NRCS, McKnight Foundation, the Great Lakes Protection Fund, and other funding sources. These programs are designed for farmers growing corn for grain and/or silage. For more information, please contact Regina Hirsch at 608-873-8393 or email to regina.hirsch@sbcglobal.net.

And let this be the law: If anyone intentionally pollutes the water of another, whether the water of a spring, or collected in reservoirs, either by poisonous substances, or by digging, or by theft, let the injured party bring the cause before the warden of the city.
-- Plato, *Laws*, c. 400 B.C.

COST-SHARE AVAILABLE FOR AERIAL SEEDING OF RYE COVER CROP

The Fillmore SWCD is beginning a new program to encourage the aerial seeding of rye into corn planted for silage. The program pays the cost of hiring a helicopter ($10/acre) to aerial seed winter rye at the end of August as a cover crop. The rye germinates and begins to grow prior to corn silage harvest and continues to grow after harvest. The farmer provides the rye seed which can be seeded at a rate between 50 lbs. and 90 lbs per acre.

In the South Branch Root River watershed, the payment for this practice will come from the 319 Implementation Grant for the watershed project. South Branch funds can also be used to aerial seed a cover crop into soybeans ($10/acre) or to drill a cover crop into corn silage or soybeans following harvest but before September 15th ($7/acre).

For more information, contact the Fillmore SWCD office at (507)765-3878, ext. 3.

Fillmore SWCD
900 Washington St. NW
Preston, MN 55965

FREE
Nitrate and Radon Clinic

Tuesday, April 25, 2006
4:00 to 7:00 p.m.
Ostrander Community Center

Water samples from private wells will be tested for nitrate. Collect about a cup of water in a clean glass container or plastic container or bag. Samples should be no more than 24 hours old and should be kept cool until tested. No other special precautions are needed. Results are available in 5-10 minutes. Results can be kept confidential by marking the sample container using an ID number or code. If you have a water treatment system (other than a water softener), bring in samples before and after treatment to check the effectiveness of the system.

Radon kits will be available to take home for testing air radon levels. Kits are mailed in and the results returned in the mail.

Septic System Owners' Operation and Maintenance Class

Tuesday, April 25, 2006
7:00 to 8:30 p.m.
Ostrander Community Center

Get a $300 grant if

- You attend this class **AND**
- You fix a septic system that has sewage coming to the surface or discharging from a straight pipe or tile line

Call (507) 765-3325 or 765-3878, ext. 122 for more information.

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