How Best Management Practices Are Improving Water Quality in Southwest Minnesota

What: The Heron Lake Watershed District is hosting a BMP Site-Seeing Event. This tour will include stops at a Streambank Stabilization along Okabena Creek, a Bioretention Basin west of Graham Lakes, and a Biodetention Basin located along the west side of Fulda Lakes. The event is free of charge and open to the public.

When: The event will take place on Thursday, April 21, 2016 from 9:00 a.m.-11:00 a.m.

Where: Participants will meet on the west side of Brewster City Park and depart at 9:15 a.m.

How: If you are interested in attending, please register by April 20, 2016 at 507-793-2462 or jan.voit@mysmbs.com.

Attendees will follow a guided tour. Please carpool if possible.

In 2013, the Heron Lake Watershed District (HLWD) received funding from the Minnesota Environment and Natural Resources Trust Fund (ENRTF) as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR) to install practices in Nobles, Jackson, and Murray Counties. Over the last three years, five projects were implemented. They included construction of a biodetention basin, multiple terrace projects, and...
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For over ten years, the HLWD has been collecting water samples at three key locations within the watershed area as shown in Figure 2. They include: Jack Creek, Okabena Creek, and the Heron Lake Outlet.

Location three: Fulda Biodetention Basin (located along S Lafayette Street on the west side of First Fulda Lake)
The ENRTF funds were used to continue sampling at these three sites. Each site had a set of lab and field parameters that were tested. Each bottle sample was collected by HLWD staff and sent to Minnesota Valley Testing Laboratories (MVTL) to be analyzed. Lab parameters included: TSS, total phosphorus (TP), volatile suspended solids (SVS), NO₂ + NO₃, turbidity, NH₃, Kjeldahl nitrogen (TKN), Orthophosphorus (OP), and E.coli. Field parameters included: water temperature, conductivity, pH, dissolved oxygen, and a Secchi Tube reading. Throughout the sampling season, results were recorded in a database and averaged at the end of the season (see Graphs 1 and 2).

**Phosphorus**

Phosphorus is a key nutrient in plant growth. The concentration of phosphorus affects the amount of algae and other aquatic plants that can grow in bodies of water. Sources of phosphorus include fertilizers, animal waste, septic systems, plant decomposition, and sediment. Graph 1 indicates that most of the sampling sites showed a decrease in TP over the project period. Okabena Creek, however, showed an increase.

**Graph 1. Average TP Concentrations 2013-2015**

**Total Suspended Solids**

TSS is a measurement of solid materials, both organic and inorganic, that are suspended in water. Pollutants, nutrients, pesticides, bacteria, and metals may also attach to the particulate matter. TSS concentrations vary with physical factors such as soil type, land use, and stream flows. Graph 2 illustrates that all sites showed a decrease in average TSS concentrations over the project period.
The ENRTF grant demonstrated multiple projects to prevent TP and TSS nutrients from entering nearby streams and lakes. Other agricultural practices that reduce nutrient movement include decreasing tillage intensity, using cover crops, establishing a buffer, and/or adding a third crop such as wheat or alfalfa to the crop rotation.

If you have any additional questions about these project or would like more information, please contact Catherine Wegehaupt, Watershed Technician, by phone 507-376-9150 ext. 111 or email catherine.wegehaupt@noblesswcd.org.

Funding for this was provided by the Minnesota ENRTF as recommended by the LCCMR. The Trust Fund is a permanent fund constitutionally established by the citizens of Minnesota to assist in the protection, conservation, preservation, and enhancement of the state’s air, water, land, fish, wildlife, and other natural resources.