

Elm Creek improvements multiply



Partners in a Martin Soil & Water Conservation District project that is keeping 64 tons of sediment out of Elm Creek annually included willing landowners, the Fox Lake Conservation League and the University of Minnesota. A Minnesota Board of Water and Soil Resources Clean Water Fund grant is also in play. Previously, Elm Creek was one of four pilot watersheds for the Minnesota Agricultural Water Quality Certification Program. This treatment wetland is part of the project.

Photo Credit:
Martin SWCD



Conservation work is paying greater-than-anticipated dividends on Elm Creek, a Blue Earth River tributary known as one of its top sediment contributors.

The Blue Earth River is, in turn, one of the top sediment contributors to the Minnesota River Basin. The Minnesota is a leading source of Mississippi River sediment. Sediment can decrease water quality, degrade habitat and carry pollutants.

Conservation projects the Martin Soil & Water Conservation District (SWCD) accomplished with willing landowners and partners are keeping nearly five dump truck loads worth of sediment — nearly 64 tons' worth — out of Elm Creek annually. The \$219,425 in projects also cut phosphorus by nearly

73 pounds per year, and nitrate-nitrogen by 425 pounds a year.

Funding included \$171,575 in Clean Water Fund grant dollars. Landowners, the Fox Lake Conservation League and an Environmental Protection Agency grant available through the University of Minnesota provided the match.

Elm Creek flows from northeastern Jackson County east through Martin County, and then into northwestern Faribault County where it enters the Blue Earth River near Winnebago. The Blue Earth joins the Minnesota near Mankato.

Elm Creek is set in the prairie potholes region. Pre-settlement, wetlands covered more than half of the watershed. Today, 85 to 90 percent of the watershed produces corn and soybeans. Changes in ground cover and land use have greatly affected water flow and quality. Elm Creek's impairments are primarily related to fecal coliform and turbidity.

Among the many past conservation efforts in the Elm Creek Watershed: It was one of four pilot watersheds for the Minnesota Agricultural Water Quality Certification Program.

The Clean Water Fund grant Martin SWCD received from the Minnesota Board of Water and Soil Resources (BWSR) in 2014 furthers water-quality improvements. The grant focused on surface and tile water treatment to cut sedimentation and nitrate delivery, and addressed the Total Maximum Daily Loads (TMDL) for Elm Creek.

Two saturated buffers and two treatment wetlands were proposed; additional sites were considered. The practices have the potential to reduce sediment and phosphorus delivery to surface waters. With deep-rooted native vegetation and increased resonance



Outlet pipes for a treatment wetland plus a bioreactor meant to reduce nitrate-nitrogen are elements of a "treatment train," which strings together a series of practices to maximize pollution reduction. It replaced the saturated buffer originally proposed.
Photo Credit:
Martin SWCD

time, they can reduce nitrogen losses. Those reductions will improve water quality and provide better wildlife habitat.

The project faced its share of challenges.

Wet weather and corresponding high stream flows caused delays. Unforeseen issues that arose during construction — such as the need for more gully stabilization and the discovery of more tile lines — caused more delays and increased the budget. One landowner opted for a different conservation option.

Local staff and project

engineers adapted while keeping grant objectives clear. The completed projects involved three landowners.

A "treatment train" approach, a series of practices strung together for increased pollution reduction, replaced one saturated buffer originally proposed along Elm Creek in Nashville Township. Practices put in place included gully stabilization with the use of rock chutes, a treatment wetland and a bioreactor for nitrate-nitrogen reduction. University of Minnesota staff helped with initial project design. South

Central Technical Service Area (TSA) staff provided engineering services.

A 3-acre treatment wetland in Center Creek Township was installed adjacent to a county ditch that outlets into Elm Creek. TSA staff followed Natural Resource Conservation Service (NRCS) engineering standards here, and on a second, 2-acre constructed treatment wetland adjacent to Elm Creek in Elm Creek Township.

Although the original project scope was scaled back, the total pollution reduction exceeded estimates provided in the grant application.