NONPOINT SOURCE SUCCESS STORY

North Dakota

Upper Spring Creek Project is Improving Water Quality

Waterbody Improved

Sampling results indicated that areas of Upper Spring Creek in western North Dakota were impaired due to high concentrations of *Escherichia coli* bacteria from numerous small and medium livestock grazing operations. In spring 2019, partners on a Clean Water Act (CWA) section 319-funded watershed implementation project began installing numerous conservation practices on Upper Spring Creek. *E. coli* concentrations have decreased, and a second phase of this project has been approved; therefore, further improvements are anticipated for Upper Spring Creek.

Problem

The 179,111-acre Upper Spring Creek subwatershed is within western North Dakota's Knife River watershed (Figure 1). The Upper Spring Creek watershed lies primarily in Dunn County, with a small portion on the eastern edge extending into Mercer County. A land use analysis showed that the subwatershed includes 56% native grassland and cropland area; 26% tilled acreage; and 18% tame/reseeded grass, light development, woodland, and water/wetland areas. A number of small-to-medium livestock operations are present in the watershed.

In 2010, Spring Creek was listed as impaired. A 2011 total maximum daily load (TMDL) indicated the recreational uses for Upper Spring Creek stream reaches were "fully supporting but threatened" due to *E. coli* bacteria. Primary sources of *E. coli* included excess grazing in riparian areas, small and medium livestock winter feeding areas, and overgrazed pastures and native rangelands.

Story Highlights

The Spring Creek Watershed Project began in 2011 through the coordinated efforts of the Mercer County and Dunn County soil conservation districts (SCDs). Upon conclusion of the project in fall 2019, data from four monitoring sites showed that the upper stream reaches of Spring Creek continued to be impaired. The Dunn County SCD successfully sought CWA section 319 funding support beginning in 2019 to focus on the upper reaches—additional best management practice (BMP) planning and implementation in the Upper Spring Creek watershed. As part of this project, monitoring was conducted at two creek sites in 2019–2021.

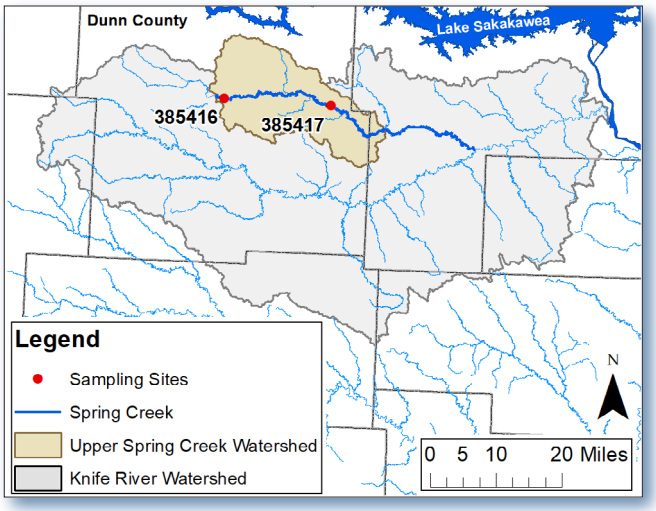

Figure 1. Upper Spring Creek is in western North Dakota.

To improve the overall condition of the watershed, the local SCD targeted conservation planning assistance, along with voluntary implementation of BMPs. A project implementation plan was developed that identified beneficial use improvement and pollutant-reduction goals, specific activities for accomplishing these goals, and a method for evaluating progress.

The Dunn County SCD and its partners developed a project goal to restore (and then maintain) the recreational use of Upper Spring Creek as "fully supporting" through improved livestock management. As the primary sponsor, the Dunn County SCD employed project staff to develop contracts and provide technical assistance to local producers for implementing BMPs.

With the assistance of the CWA Section 319 Program, BMPs were implemented on 67,448 acres. Practices included decommissioning one well and adding

860 acres of cover crops; 60,846 linear feet of fencing; 508 acres of pasture/hayland planting; 5,234 linear feet of pipelines; four livestock wells; and four watering troughs/tanks (Figure 2).

In addition to the practices applied through the CWA Section 319 Program, the SCD worked with the Bakken Working Lands Development Program to implement 95 acres of cover crops in 2021. Using the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service's (NRCS's) Environmental Quality Incentives Program funds, partners also added 43,830 feet of pipeline; 20 tanks; 36,609 feet of fence; 21,153 feet of trees; 1,397 acres of cover crop; and 199 acres of forage planting.

Results

Water quality data indicate improvements as a result of BMP implementation in the Upper Spring Creek watershed (Figure 3). Data analyses show improving trends in annual (arithmetic) mean *E. coli* bacteria concentrations, which is backed up by reductions in the percentage of samples above the 409 colony-forming units (CFU) per 100 milliliters (mL) threshold and 30-day geometric means. Although the status of the waterbody remains "fully supporting but threatened," improving trends are expected to continue through Phase II of the project with ongoing education and implementation of BMPs.

Partners and Funding

The Dunn County SCD led the development and implementation of the Upper Spring Creek Watershed Project. The SCD hired staff to manage the project, assist producers with BMP planning, oversee BMP implementation, and conduct educational activities. In addition, project staff worked closely with local NRCS staff to achieve the goals of the watershed implementation project. The North Dakota Department of Environmental Quality provided oversight for project management, developed the quality assurance project plan, analyzed water quality samples, developed water quality reports, and conducted training for water quality sample collection. Public involvement

Figure 2. A producer installed this watering tank using CWA section 319 funds.

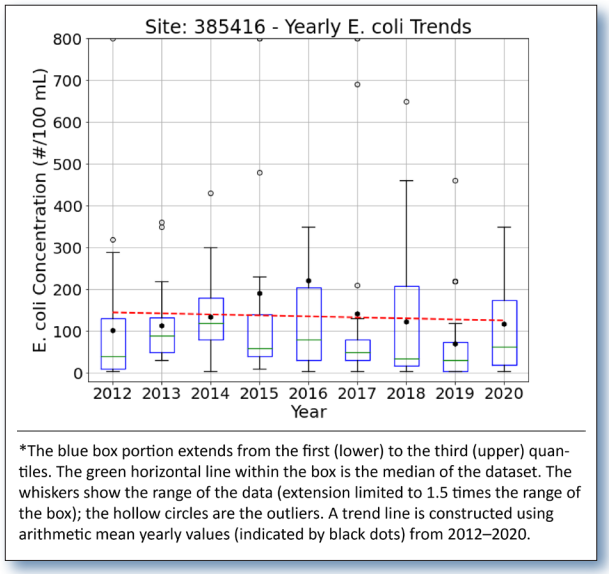

Figure 3. The box plots depict the distribution of sample results for *E. coli* at monitoring station 385416 organized by sampling year (2012–2020).

was encouraged and maintained through educational presentations at the annual meeting hosted by the SCD and quarterly newsletters.

The U.S. Environmental Protection Agency (EPA) granted $250,419 in CWA section 319 funds that were matched by $166,946 in funds (cash and in-kind services) from the local producers and SCDs. In addition, the Dunn County Extension Office and the USDA Farm Services Agency provided technical assistance services.

U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-22-001M
June 2022

For additional information contact:

Dunn County SCD – Killdeer Field Office
Shasta Blackford • 701-764-5991 (x114) • shasta.blackford@nd.nacdnet.net
Mikayla Lardy • 701-764-5991 (x110) • mikayla.schlegel@nd.nacdnet.net

ND Department of Environmental Quality
Greg Sandness • 701-328-5232 • gsandnes@nd.gov
Emilee Lachenmeier • 701-328-5240 • elachenmeier@nd.gov

EPA Region 8, Watershed Section, Clean Water Branch
Erika Larsen • 303-312-6083 • larsen.erika@epa.gov