



NONPOINT SOURCE SUCCESS STORY

North Dakota

Recreational Use Attained By Implementing Best Management Practices and Targeted Technical Assistance in the Thirty Mile Creek Watershed

Waterbody Improved

A 20.07-mile segment of Thirty Mile Creek was first listed in North Dakota's 2002 Clean Water Act (CWA) section 303(d) list of impaired waters for recreational use due to fecal coliform bacteria. With the implementation of a watershed/water quality improvement project, best management practices (BMPs) were installed to improve livestock manure management. Subsequently, bacteria levels declined in the listed segment (ND-10130204-017-S_00) of Thirty Mile Creek, prompting the North Dakota Department of Health (NDDoH) to remove it from the impaired waters list in the 2016 Integrated Report.

Problem

The Thirty Mile Creek watershed is a 164,899-acre watershed in Stark, Hettinger and Grant counties in southwestern North Dakota. It is a subwatershed of the larger Lower Missouri River watershed. The listed segment of concern stretches from Tributary Watershed (ND-10130204-019-S_00) downstream to its confluence with Spring Creek in Hettinger County (Figure 1).

In 2001 the Slope-Hettinger Soil Conservation District (SCD), along with the NDDoH, initiated a project to assess water quality and land use conditions within the Upper Cannonball Watershed, which includes Thirty Mile Creek. Throughout the recreation season, the Slope-Hettinger SCD collected samples at the STORET monitoring site below the listed segment throughout the recreation season and analyzed them for fecal coliform bacteria.

Water quality results indicated elevated total fecal coliform bacteria levels, prompting NDDoH to include a 20.07-mile segment of Thirty Mile Creek on North Dakota's 2002 Clean Water Act section 303(d) list of impaired waters for recreational use. From the water quality data analyses, the SCD determined that the land use practices and potential sources of NPS pollution include pasture/rangeland, degraded riparian areas, and livestock concentration areas in close proximity to the river. The SCD's analyses also indicated that water quality degradation could be slowed

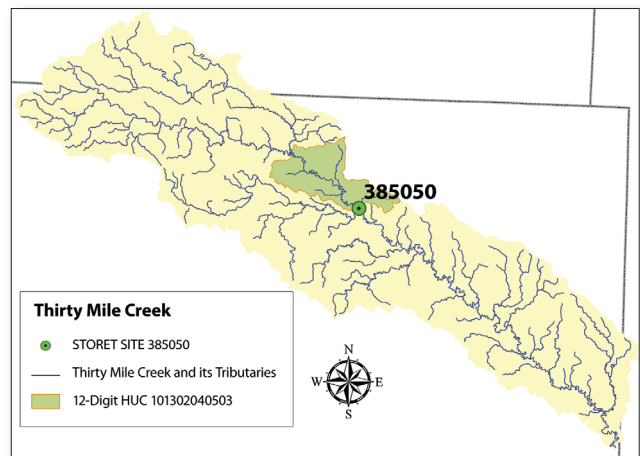


Figure 1. The Thirty Mile Creek watershed is in southwestern North Dakota.

or reversed through positive changes in land management and by implementing BMPs.

Project Highlights

In 2006 the Slope-Hettinger SCD developed a watershed project implementation plan. The plan identified beneficial use improvement and pollutant reduction goals, specific activities for accomplishing these goals, and a method for evaluating progress. The plan targeted conservation planning assistance and voluntary implementation of BMPs in the riparian corridor.

The Slope-Hettinger SCD and its partners established a long-term project goal to restore the recreational



Figure 2. Livestock alternative water source.

uses of the impaired reach of the Thirty Mile Creek to fully supporting status. To support recreational use, fecal coliform bacteria concentrations at established monitoring sites must be reduced to an annual geometric mean of less than 200 colony-forming units per 100 milliliters of water (CFU/100 mL), with less than 10 percent of the samples exceeding 400 CFU/100 mL. Approximately midway through the project, the NDDoH transitioned to *Escherichia coli* bacteria sampling. The standards for *E. coli* bacteria require that geometric mean concentrations must remain less than 126 CFU/100 mL, and no more than 10 percent of the samples may exceed 409 CFU/100 mL.

Objectives created to effectively deliver and implement the project included informing and educating all residents within the Upper Cannonball Watershed on water quality topics related to manure management. Specific CWA section 319 practices implemented in the Thirty Mile Creek watershed as part of this project effort included 5,700 linear feet (ft) of fencing; 28,651 linear ft of pipeline; 1,545 acres of prescribed grazing; 17 acres of use exclusion; two wells; and two full-containment livestock waste management systems (Figure 2).

In addition to the practices implemented through the watershed project, numerous practices were planned and installed in cooperation with the local district conservationist using Environmental Quality Incentives Program (EQIP) funding. These included 5 acres of critical area planting; 480 cubic yards (cu yds) of dike; 2,361 cu yds of diversion; 1,140 linear ft of fencing; 15,738 cu yds of heavy use protection; 450 linear ft of manure transfer; 600,000 gallons of manure for nutrient management (liquid); 2,918 tons of manure for nutrient management (solid); three obstruction

Table 1. 2011 *E. coli* bacteria geometric mean data for Thirty Mile Creek sampling site 385050.

Sampling Date	May 2011	Jun 2011	Jul 2011	Aug 2011
Number of samples	10	9	8	9
Geometric mean	29	66	62	51
Percent exceeding 409 CFU/100 mL*	0%	0%	0%	0%
Use attainment	Full support	Full support	Full support	Full support

*The *E. coli* bacteria water quality standard require that geometric mean concentrations must remain less than 126 CFU/100 mL, and no more than 10 percent of the samples may exceed 409 CFU/100 mL.

removals; 50 linear ft of pipeline; 5,634 cu yds of pond sealing/lining/clay; 181 linear ft of roof runoff structure; 15 cu yds of solid waste separator facility; 940 linear ft of tree planting; 17,074 of underground outlet; 10,552 cu yds waste storage facility; and 5,100 tons waste utilization.

Results

As a result of BMP implementation, water quality has improved in the Thirty Mile Creek listed segment. Water quality data (Table 1) show improved *E. coli* bacteria results that allowed the NDDoH to delist segment ND-10130204-017-S_00 in the 2016 Integrated Report.

Partners and Funding

The Slope-Hettinger SCD led the watershed assessment and the development of the Thirty Mile Creek watershed project implementation plan. The SCD hired staff to assist producers in the watershed with the development of contracts and delivery of technical assistance for BMP implementation. In addition, project staff worked closely with partners at the federal, state and local levels to achieve the goal of the watershed implementation project.

The U.S. Environmental Protection Agency granted \$380,622 in CWA section 319 funds, which were matched by \$253,748 in local funds. Most of the local nonfederal match (\$175,050) was provided by agricultural producers participating in the project. The NDDoH provided oversight for project management, developed the quality assurance project plan, conducted training for proper water quality sample collection, and helped develop and implement information and education activities.



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For additional information contact:

Jim Collins, 701-328-5161 • jcollins@nd.gov
Pam Meier, 701-824-3218 • pamela.meier@nd.nacdn.net
Eric Steinhaus, 303-312-6837 • steinhaus.eric@epa.gov