



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Tennessee

Implementing Agricultural Best Management Practices Reduces Siltation

Waterbody Improved

Poorly managed livestock pasture grazing and other agricultural activities around Cove Creek led to erosion and increases in sediment and siltation in the creek. In 2002 the Tennessee Department of Environment and Conservation (TDEC) added a 29.7-mile segment of Cove Creek to the state's Clean Water Act (CWA) section 303(d) list of impaired waters because of siltation and habitat alteration. Landowners implemented agricultural best management practices (BMPs) to control erosion. Water quality improved, prompting TDEC to remove Cove Creek from Tennessee's list of impaired waters in 2008.

Problem

Northeast Tennessee's Cove Creek flows for almost 30 miles through Greene County, beginning near the mountainous Cherokee National Forest and emptying into the Nolichucky River. The upper watershed is mostly forested, while the lower watershed is largely agricultural. TDEC conducted habitat surveys in 2000 that showed that Cove Creek did not support its designated use of fish and aquatic life because of siltation. TDEC added the entire length of Cove Creek (29.7 miles) to the state's 2002 CWA section 303(d) list of impaired waters.

TDEC completed a total maximum daily load (TMDL) study on Cove Creek for siltation and habitat alteration; the U.S. Environmental Protection Agency approved the TMDL in early 2008. The TMDL identifies poorly managed livestock grazing/pasture areas as the primary source of the creek's siltation and consequent loss of biological integrity.

Project Highlights

Local landowners installed agricultural BMPs in the Cove Creek watershed using grants from both the CWA section 319 program and Tennessee's Agricultural Resources Conservation Fund (ARCF). In 2007 landowners used section 319 funds to install 6,300 feet of fence (Figure 1), two pumping plants (facilities that transfer water to livestock watering areas), four alternative watering facilities (Figure 2), 3,100 feet of pipeline, and 0.2 acre of heavy-use area protection. Protecting heavy-use areas involves stabilizing land areas that are frequently used by people, animals or vehicles. For instance, the



Figure 1. Landowners built fences to exclude livestock and establish a riparian zone along Cove Creek.



Figure 2. This recycled earth mover tire serves as part of an alternative watering facility for livestock.

practice is applied in streams where cattle or farm equipment frequently cross, around cattle watering or feeding facilities or in cattle feedlots or walkways. In 2008 landowners used money from the ARCF to build an alternative access road and install more fencing to exclude livestock from Cove Creek. Farmers in the area also participated in Tennessee's voluntary cost share program and installed other BMPs that helped to control erosion and sediment. The locations and types of BMPs implemented in the Cove Creek watershed are shown in Figure 3.

Results

Implementing BMPs successfully reduced erosion and siltation and improved water quality. In 2003 the Tennessee Valley Authority (TVA) performed a biological reconnaissance (biorecon) survey on Cove Creek. A biorecon survey is a tool used to evaluate stream impairment as determined by species richness measures, emphasizing the presence or absence of indicator organisms without regard to relative abundance. The biorecon survey score is used as a measure of compliance with water quality standards for the beneficial use of fish and aquatic life. The principal metrics used are the total macroinvertebrate families (or genera); the number of families (or genera) of mayflies, stoneflies, and caddisflies (collectively referred to as EPT—short for the order names Ephemeroptera, Plecoptera and Trichoptera); and the number of pollution-intolerant families (or genera) found in a stream. The biorecon survey is scored on a scale from 1 to 15—a score of less than 5 is regarded as very poor, while a score of more than 10 is considered good. In the 2003 TVA biorecon survey, Cove Creek received a perfect score of 15.

Furthermore, in 2005 TDEC established a Semi-Quantitative Single Habitat Assessment (SQSH) station on Cove Creek. The SQSH is similar to a biorecon survey but is scored differently. The 2005 SQSH documented 8 EPT genera with 28 total genera, and an overall habitat score of 153 out of 200, which is considered excellent. The Cove Creek SQSH scored 36 out of 42 on the Tennessee Macroinvertebrate Index—a very good score. The multiple results showed that water quality had improved, prompting TDEC to remove the 29.7-mile segment of Cove Creek from Tennessee's list of impaired waters in 2008.

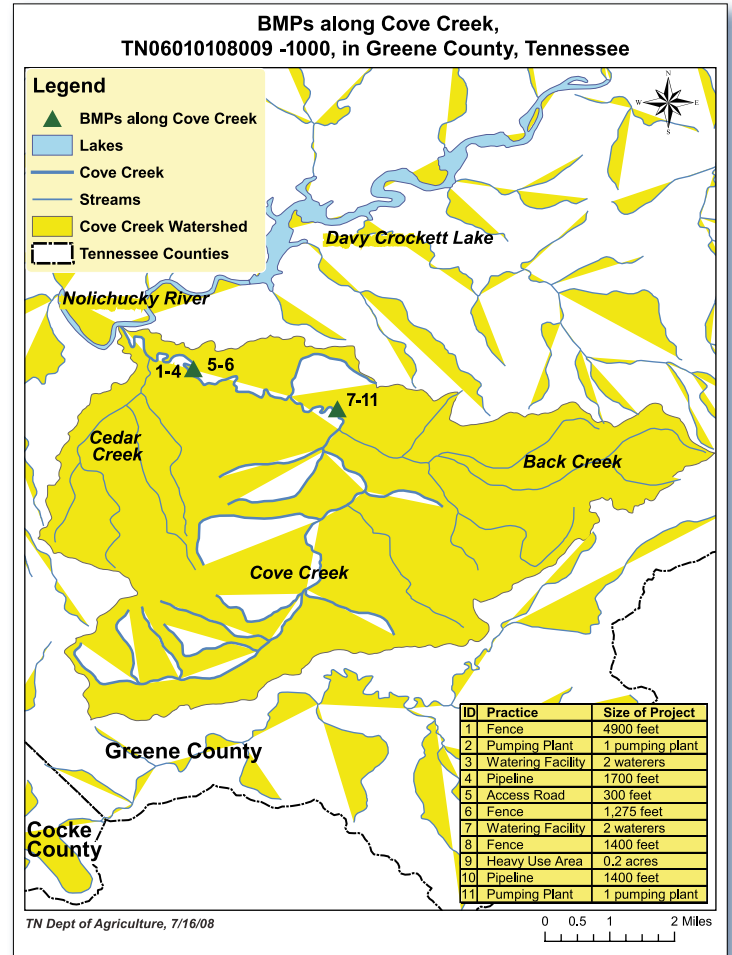


Figure 3. This map shows the location and types of BMPs installed in the Cove Creek watershed.

Partners and Funding

Projects in Cove Creek received funding from the CWA section 319 program (\$15,276 plus additional matching funds of \$5,093) and the Tennessee ARCF (\$5,397 plus matching funds of \$952). Farmers also participated in Tennessee's voluntary cost share program. Key partners include the Greene County Soil Conservation District (for helping to design and implement BMPs) and local landowners (for contributing the majority of the in-kind match for BMPs).



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