Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Tennessee

Implementing Agricultural Best Management Practices Improves Water Quality

Waterbody Improved

Erosion from poorly managed livestock pasture grazing areas around Kyker Branch caused increased sediment and siltation in the creek. As a result, the Tennessee Department of Environment and Conservation (TDEC) added the branch to the state's 2002 Clean Water Act (CWA) section 303(d) list of impaired waters because of siltation and habitat alteration. Local farmers installed agricultural best management practices (BMPs) to exclude livestock from the branch and control erosion. Water quality improved as a result of the efforts, prompting TDEC to remove Kyker Branch from Tennessee's CWA section 303(d) list of impaired waters in 2008.

Problem

The Kyker Branch watershed, which empties into the Nolichucky River, is approximately 7 miles northeast of Parrottsville in Greene County, Tennessee. Erosion and runoff from poorly managed livestock pasture grazing areas caused increased sediment levels in the creek. The increased siltation caused the creek to lose its biological integrity. TDEC performed a water quality biological assessment survey in 2000 that confirmed that Kyker Branch was unable to support its designated use of aquatic life. On the basis of this information, TDEC placed 2.5 miles of Kyker Branch on the state's CWA section 303(d) list of impaired waters in 2002.

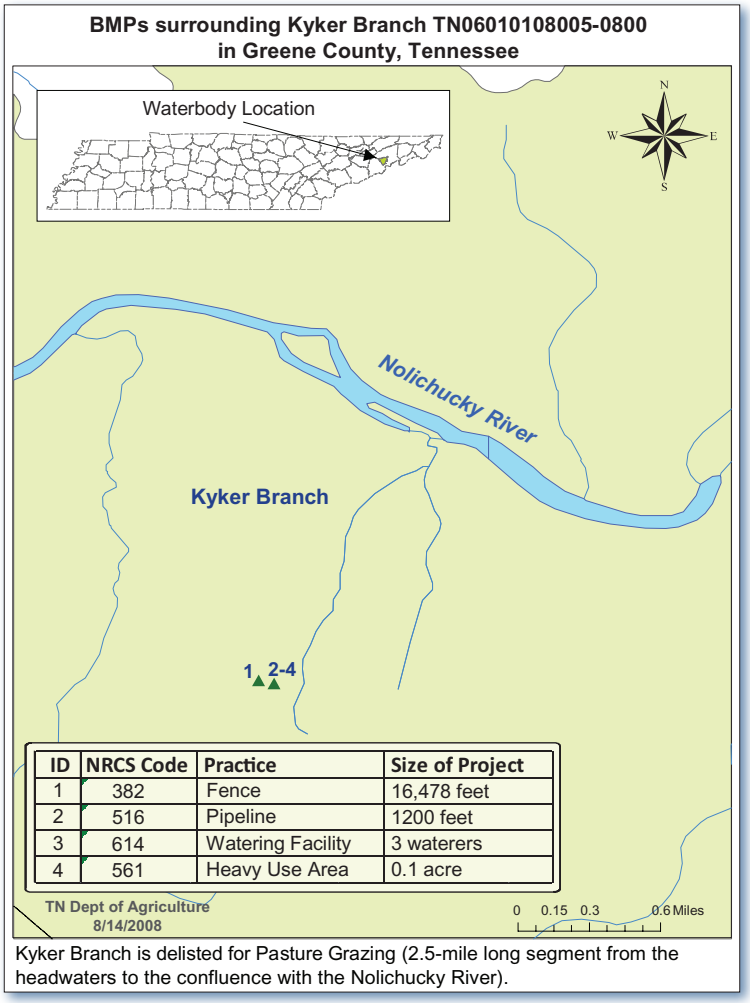
Project Highlights

Local landowners installed agricultural BMPs in the Kyker Branch watershed using grants from both the CWA section 319 program and Tennessee's Agricultural Resources Conservation Fund. With help from the Greene County Soil Conservation District, farmers installed 16,478 feet of fencing that excludes cattle from the branch (Figure 1), added three alternative watering facilities, built 1,200 feet of pipeline that carries water to new alternative watering facilities, and protected 0.1-acre of heavy-use area.

Figure 1. Landowners built fences to exclude livestock and establish a riparian zone along Kyker Branch.

Protecting heavy-use areas involves stabilizing land areas that people, animals or vehicles frequently use. For instance, the practice is applied in streams where cattle or farm equipment frequently cross, around cattle watering and feeding facilities, and in cattle feedlots and walkways. 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 Kyker Branch watershed are shown in Figure 2.



ID	NRCS Code	Practice	Size of Project
1	382	Fence	16,478 feet
2	516	Pipeline	1200 feet
3	614	Watering Facility	3 waterers
4	561	Heavy Use Area	0.1 acre

Figure 2. This map shows the location and types of BMPs installed in Kyker Branch watershed.

Results

The new BMPs are helping to control erosion, reduce siltation and restore biological integrity in Kyker Branch. To assess the restoration effort's success, TDEC established a Semi-Quantitative Single Habitat Assessment (SQSH) station at mile 0.1 at Offinger Dairy driveway in 2005–2006. SQSH 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 SQSH documented 8 EPT genera and 32 total genera, earning a score of 38 out of 42 on the Tennessee Macroinvertebrate Index—a very good score. The habitat assessment also received a good score of 140 out of 200. The multiple results showed that water quality had improved, prompting TDEC to remove 2.5 miles of Kyker Branch from Tennessee's 2008 CWA section 303(d) list of impaired waters.

Partners and Funding

Kyker Branch has benefited from $6,522 in CWA section 319 funding (including additional matching funds of $20,828). Tennessee's Agricultural Resources Conservation Fund provided $4,041 (plus another $1,348 in matching funds). Key partners were the Greene County Soil Conservation District for BMP assistance and landowners for contributing the majority of the in-kind matching funds.

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

EPA 841-F-10-001S
September 2010

For additional information contact:

Sam Marshall
Tennessee Department of Agriculture
sam.marshall@tn.gov • 615-837-5306