Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Tennessee

Livestock Management Restores Waterbody

Waterbody Improved

Polluted runoff from pasture-grazing cattle caused abnormal *Escherichia coli* counts in Hinds Creek, which led to 8.9 miles of the stream being listed on the state's 303(d) list in 2002 and 2004.

Using section 319 funding, farmers installed a number of BMPs on pastureland adjoining the creek. The practices included pasture and hay planting, fencing, streambank protection, and separate watering structures. The farmers' action allowed the Hinds Creek segment to be removed from the 2006 303(d) list.

Problem

Hinds Creek is in the Lower Clinch watershed in eastern Tennessee, a primarily rural watershed with approximately 75 percent forest and 15 percent agriculture (MRLC, 1990–1993). Hinds Creek was listed as impaired on the state's 2002 and 2004 303(d) lists due to high *E. coli* colony counts and in-stream concentrations. Polluted runoff carrying fecal matter and pathogens from pasture-grazing livestock was the source of this pollution.

Hinds Creek has multiple designated use classifications, including fish and aquatic life, livestock watering and wildlife, irrigation, and recreation. Monitoring along Hinds Creek between 1999 and 2004 found that the creek was fully supporting all designated uses except recreation. Analysis results for individual samples collected by the state were in violation of the state-established water quality criteria for *E. coli*. The Tennessee water quality standards state that the concentration of the *E. coli* group in any individual sample must not exceed either (a) 487 cfu/100 mL for lakes, reservoirs, State Scenic Rivers, or Tier II or III waterbodies or (b) 941 cfu/100 mL for all other waterbodies. Hinds Creek is in the latter category.

A TMDL for pathogens in the Lower Clinch watershed, established in 2005 by the Tennessee Department of Environment and Conservation, specified a 49.5 percent reduction in pathogen loading into Hinds Creek.

Before the project, high flows during storm events caused increased erosion.

Project Highlights

Local Soil and Water Conservation District offices in Anderson and Union counties administered the CWA section 319 funding to allocate funding assistance to local landowners. Using a combination of 319 funding and state funds from the Agricultural Resources Conservation Fund (ARCF), they worked with local landowners to promote and install management practices and structures that would reduce pathogen runoff into Hinds Creek and improve landowners' operations.

Installed fencing with stream buffer on left.

The BMPs installed included (1) pasture seeding and riparian zone planting along Hinds Creek and tributaries; (2) stabilization of heavy-use areas using gravel and geotextile fabric; (3) installation of alternative watering facilities, such as tanks, troughs, and ponds fed by pipelines to keep livestock out of streams; and (4) alternative access roads to help combat further erosion.

Pasture and riparian critical areas were seeded with a selection of grasses that were acceptable to livestock and beneficial for proper soil drainage in the area. Problem weed and thistle species were replaced with balanced and native foliage to improve water quality, conserve soil, and increase carbon sequestration.

Local Soil and Water Conservation District agents advised landowners on the technical design and specifications of the BMPs, and they provided oversight and expertise during the installation process. Landowners participated voluntarily, partially providing labor and funds for the BMPs. The BMPs were installed beginning in 2000, and continue to be installed to help continue to meet the load reduction allocations in the 2005 TMDL.

The Hinds Creek Watershed Partnership, a group composed of federal, state, and local partners, is focused on improving water quality and community awareness of water quality issues in Hinds Creek. The Partnership is part of a cooperative water quality monitoring project with the Tennessee Department of Environment and Conservation and the Tennessee Valley Authority that aims to produce comprehensive watershed assessments. Gathering information regarding the health of the watershed will help in prioritizing areas of work.

Results

Recent monitoring in Hinds Creek showed *E.coli* values below the individual sample standard of 941 cfu/mL. Hinds Creek is no longer considered impaired for any of the four designated uses, including recreation. Therefore, the 8.9 total miles previously listed as impaired were not included on the 2006 303(d) list.

Partners and Funding

Since 2001 Hinds Creek has benefited from $39,246.41 of Clean Water Act section 319 funding (including additional matching funds, a total of $57,695.17 was spent). In addition, $30,840.35 was provided by the Tennessee ARCF. Key partners in this effort include the Anderson County and Union County Soil Conservation Districts, whose agents provided technical expertise and labor hours. Landowners in the Lower Clinch watershed contributed in-kind labor hours and some funding.

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