



# NONPOINT SOURCE SUCCESS STORY Update

## Tennessee

### Agricultural BMPs Reduce the Impact of Cattle Grazing in Lick Creek

#### Update Overview

This Nonpoint Source Success Story Update highlights the removal of a second impairment (pathogens) from Lick Creek, a tributary of Spring Creek. In 1998 Spring Creek and its tributaries were added to the Clean Water Act (CWA) section 303(d) list for impairment by organic enrichment/dissolved oxygen and siltation. In 2002 Lick Creek was listed individually as impaired by pathogens and other habitat alterations due to livestock. Lick Creek's habitat impairment was removed in 2006 (for more details, see the September 2007 Success Story, *Agricultural BMPs Reduce the Impact of Cattle Grazing and Improve Quality of Creek's Habitat*). Landowners have installed multiple best management practices (BMPs) since 2012. Because data show that *Escherichia coli* (*E. coli*) bacteria levels now comply with water quality standards (WQS), Tennessee removed the pathogen impairment from Lick Creek in 2018.

#### Problem

Livestock accessing the stream led to impairment of aquatic habitat and contributed pathogens to Lick Creek in Marshall and Rutherford counties. Although the habitat impairment was removed from Lick Creek in 2006, bacteria levels remained high. Analysis of individual *E. coli* samples in 2011 showed amounts up to 1,414 colony forming units (CFUs) per 100 milliliters (mL), which exceeded the instantaneous WQS of 941 CFUs/100 mL.

#### Story Highlights

In 2012 the Marshall County Soil Conservation District (SCD) received a CWA section 319 grant to install BMPs in the Spring Creek watershed. Using these funds, the SCD helped landowners install a total of 42 BMPs within the Lick Creek sub-basin, including fences, pipelines and alternative watering systems, heavy use areas, and a stream crossing. The Tennessee Department of Agriculture's Agricultural Resources Conservation Fund (ARCF) program supported installation of an additional 16 BMPs, including fencing, heavy use areas, and forage planting (Figure 1).

#### Results

In 2014–2015, all 10 samples collected from Lick Creek met the instantaneous WQS. State WQS for *E. coli* also require that the geometric mean of at least five samples not exceed 126 CFUs/100 mL. In 2014–2015, the geometric means of two sets of five samples each (10 total samples) met the WQS (111 CFUs/100 mL and 90 CFUs/100 mL, respectively). As a result, Lick Creek was removed from Tennessee's impaired waters list in 2018 for pathogens. Lick Creek now fully supports all designated uses.

#### Partners and Funding

Marshall County SCD received a 2012 CWA section 319 grant totaling \$370,000 for work in the Spring Creek watershed; approximately \$80,740 was provided as cost share for projects within the Lick Creek sub-basin. To date, Tennessee's ARCF has contributed \$26,546 in incentive payments for BMPs in the sub-basin. Marshall County SCD key partners included the Natural Resources Conservation Service and the Marshall County government.

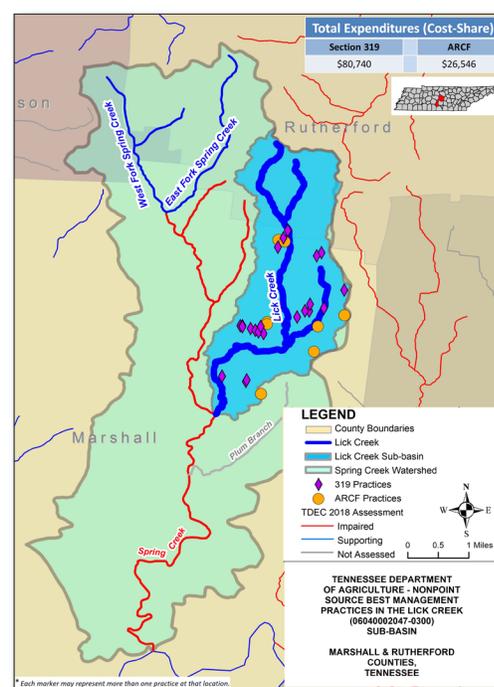


Figure 1. BMPs in the Lick Creek sub-basin.

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