Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Georgia

Using Agricultural Best Management Practices Reduces Bacteria

Waterbody Improved

Fecal coliform from animal agriculture areas, failing septic tanks and impervious surfaces caused Georgia's Hog Creek to violate water quality standards. As a result, Georgia's Environmental Protection Division (EPD) added a 10-mile segment of Hog Creek to Georgia's Clean Water Act (CWA) section 303(d) list of impaired waters for fecal coliform bacteria in 2002 and 2004. Using CWA section 319 and Environmental Quality Incentives Program (EQIP) funds, farmers installed numerous best management practices (BMPs) on pasturelands adjoining the creek's impaired segments. Water quality improved, prompting Georgia EPD to remove the 10-mile segment of Hog Creek from the list of impaired waters for fecal coliform in 2006.

Problem

The 10-mile-long impaired segment of Hog Creek flows through Ware County, just north of where Hog Creek joins the Satilla River in south-central Georgia (Figure 1). Cropland is mostly on the well-drained soils on long, narrow and flat-to-gently-sloping-ridges paralleling many of the stream courses. The broad flats of the watershed are often poorly drained and support pine trees, and the wet, narrow floodplains support bottomland hardwood forests. Pastures, cropland and hayfields cover approximately 22 percent of the area.

Monitoring data collected in the late 1990s show that Hog Creek violated the fecal coliform water quality standard for its fishing designated use classification (its most stringent classification). The standard requires that fecal coliform levels not exceed a geometric mean (four samples collected over a 30-day period) of 200 colony forming units (cfu) per 100 milliliters (mL) in the summer and 1,000 cfu/100 mL in the winter.

Hog Creek violated water quality standards for fecal coliform in one of four geometric mean sampling sets in 1998. Because Hog Creek did not meet criteria to support its fishing designated use classification, Georgia EPD added a 10-mile segment of the creek to Georgia's 2000 CWA section 303(d) list of impaired waters for high fecal coliform levels. Georgia EPD identified the primary sources as animal concentrations, old leaking septic tanks and stormwater runoff.

Georgia EPD developed a total maximum daily load (TMDL) study for pathogen loads in the Satilla River watershed; the U.S. Environmental Protection Agency approved the TMDL in 2000. The TMDL determined that pathogen loading into Hog Creek must be reduced by 85 percent to meet water quality requirements for fishing. The TMDL attributed the pathogen loading to runoff from animal agriculture areas, leaking septic tanks, urban areas and residential areas with pets.

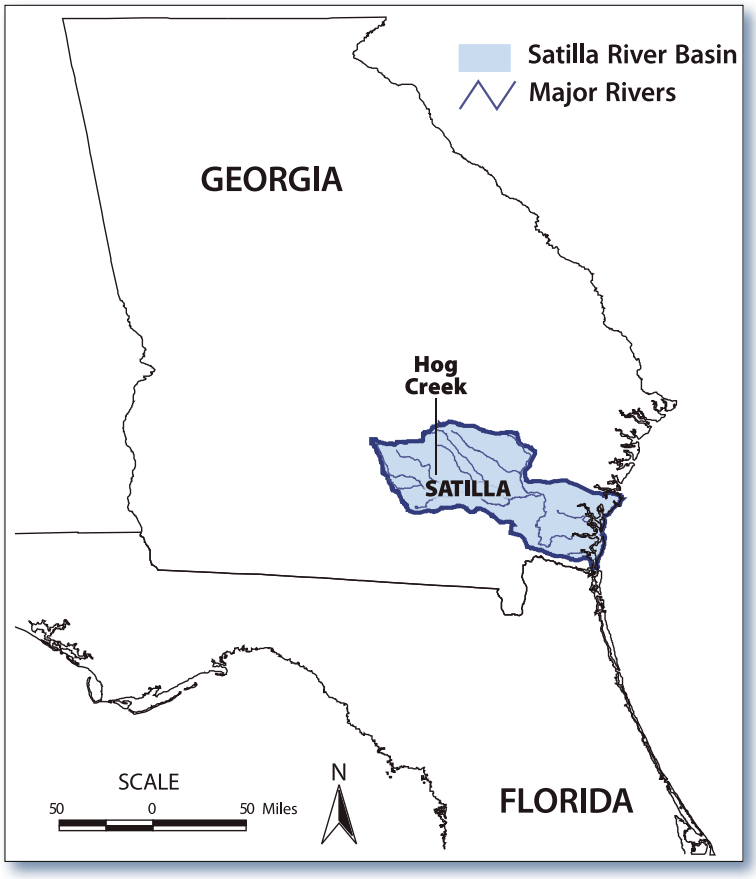

Figure 1. Hog Creek is a tributary of Georgia's Satilla River.

Figure 2. This farmer combined heavy use area protection with an alternate watering source.

Figure 3. This riparian buffer and streambank stabilization project protects Hog Creek.

Project Highlights

Using a combination of CWA section 319 and EQIP funding, the Seven Rivers Resource Conservation and Development Council worked with local landowners to install BMPs that reduce pathogen runoff into Hog Creek and improve the landowners' operations. The U.S. Department of Agriculture's Natural Resources Conservation Service office in Ware County provided additional technical assistance and support. CWA section 319 funds paid for several BMPs along Hog Creek, including installing a foundation to support cattle and soil in heavy-use areas (places where cattle gather for watering and feeding) to prevent erosion (Figure 2), adding a grade-stabilization structure to prevent stream bank failure (Figure 3), seeding a pasture and planting a riparian zone to protect critical areas, and installing pipelines and other alternative water structures such as wells and ponds to keep livestock out of streams. Those water quality control measures also provide livestock health benefits and improve area aesthetics. Local agriculture agency partners advised landowners on the technical design and specifications of BMPs and provided oversight and expertise during installation. Landowners participated voluntarily and provided partial labor and funds for the BMPs, which were installed between 2000 and 2005.

Ware County adopted several ordinances to help improve water quality, including the state model ordinance for soil erosion and sedimentation, a septic tank permit ordinance and an ordinance that requires drainage plan for new subdivisions.

Results

Georgia EPD collected monitoring data on Hog Creek in 2003 as part of a larger effort to update the Satilla River fecal coliform TMDL. These data show that Hog Creek no longer violated standards in 2003. For example, in May 1998 the fecal coliform geometric mean value reached a high of 436 cfu/100 mL. In June 2003 the geometric mean value was 81 cfu/100 mL—well below the summer water quality standard of 200 cfu/100 mL. The revised TMDL, approved in 2006, found that Hog Creek met water quality standards for its designated use and required no additional load reductions. On the basis of that information, Georgia EPD removed the 10-mile segment of Hog Creek from the state's list of impaired waters in 2006.

Partners and Funding

A total of $17,448 in CWA section 319 funding supported projects in the Hog Creek watershed. Producers provided the remaining 40 percent of BMP construction costs for a total of $29,080. Key partners in this effort include the Ware County Soil Conservation District, Seven Rivers Resource Conservation and Development Council, Natural Resources Conservation Service agents and Ware County. Agents of these generous partners provided technical expertise and labor. Landowners in the Satilla River watershed contributed in-kind labor hours and some funding.

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