Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Virginia

Conservation Stewardship Puts Muddy Creek and Lower Dry River Watersheds on Path to Recovery

Waterbodies Improved

Runoff from agricultural and residential activities and livestock stream access contributed to water quality impairments to Virginia's Muddy Creek and Lower Dry River. Both waterbodies violated state water quality standards for fecal coliform bacteria and nitrate, and excess sediment and phosphorus loads further degraded aquatic life in Muddy Creek. These water quality problems caused the state to place Muddy Creek and the Lower Dry River on Virginia's 303(d) list of impaired waters.

Over four years, project partners installed a number of agricultural and residential best management practices (BMPs) that helped mitigate many of the causes of water quality degradation. Fecal coliform counts have significantly declined in both streams since 2001; those in the Lower Dry River are approaching the levels that trigger delisting.

Problem

Muddy Creek and the Lower Dry River are in Rockingham County, approximately 15 miles west-northwest of the city of Harrisonburg in Virginia's Shenandoah Valley. Both waterbodies drain into the North River, which empties into the South Fork Shenandoah River.

Agriculture is the predominant source of bacteria to Muddy Creek and the Lower Dry River. Pasture and cropland runoff, as well as livestock in and near the streams, delivers significant bacteria loads. Failing septic systems and straight pipes also contribute to the problem. By 1996 Virginia had placed a 10.36-mile segment of Muddy Creek on its 303(d) list for impairments due to fecal coliform contamination. The same impairment resulted in the 1998 listing of 6.47 miles of the Lower Dry River. In addition, the state listed both waterbodies for violating its nitrate public drinking water standard, and Muddy Creek failed to meet aquatic life use criteria due to excess sediment and phosphorous loads.

Project Highlights

In response to the problem, stakeholders worked to implement total maximum daily loads (TMDLs) developed for the larger North River watershed. To address livestock and cropland contributions to the water quality problem, the agricultural community developed systems to manage waste, reduce soil compaction, and minimize runoff from livestock resting areas. Project funding supported the installation of 10 miles of livestock exclusion fencing and 1,200 acres of cover crops. Funding also helped farmers to implement nutrient management plans that called for applying fertilizer on cornfields only when the crop needed it and could use it most efficiently. Finally, project funding enabled landowners to pump out 30 septic tanks, repair or replace 13 septic systems, and install 5 alternative waste treatment systems.

Voluntary stream exclusion fencing keeps livestock away from Muddy Creek.

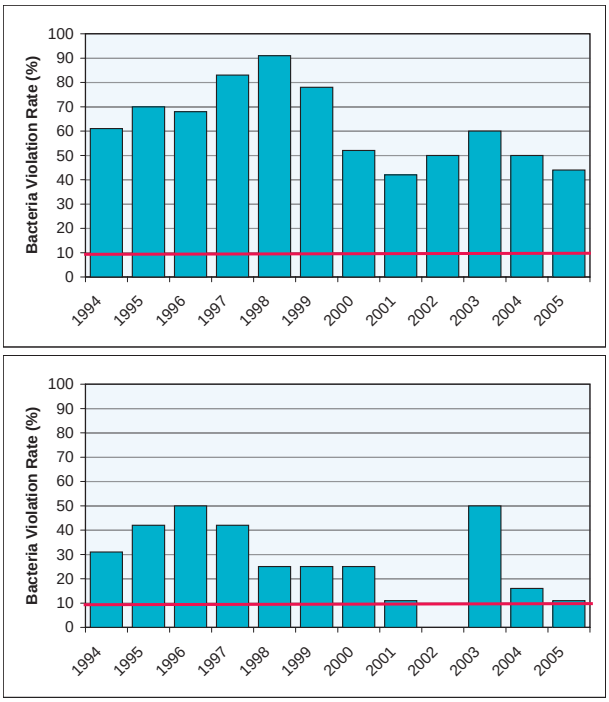
To promote the various agricultural and residential BMPs throughout the watershed,

project partners conducted numerous on-site tours, gave presentations to civic clubs, mailed postcards advertising the program, personally contacted farmers and residents, and held meetings to update the community on water quality improvements.

Results

Early results from the BMP implementation effort are encouraging. As shown in the accompanying graphs, fecal coliform counts in Muddy Creek and the Lower Dry River have declined overall. By 2005, the Lower Dry River showed an 11 percent violation rate of the state fecal coliform standard. This rate is down from a high of 50 percent and just above the state's 10 percent violation rate threshold for 303(d) listing.

Muddy Creek has improved as well. Its 44 percent fecal coliform violation rate in 2005 is a significant improvement over its 1998 rate of 91 percent. In addition, state monitoring personnel have observed substantial improvements in the Muddy Creek benthic community.



Violation rate of the 1,000 colony-forming units/100 mL instantaneous standard for fecal coliform bacteria in Muddy Creek (top) and the Lower Dry River (bottom). To be delisted for impairments caused by fecal coliform bacteria, a waterbody may not have a bacteria violation rate greater than 10 percent (represented by the red line).

Partners and Funding

Residential and agricultural successes have largely been the result of partnerships between the Shenandoah Valley Soil and Water Conservation District (SVSWCD), Virginia Department of Conservation and Recreation, Virginia Department of Environmental Quality, Virginia Cooperative Extension, Rockingham County Farm Bureau, and USDA's Natural Resources Conservation Service.

In addition to these agency partners, the watershed's Old Order Mennonite community played a significant role in the project's success. The community strongly values land and water resources and took the initiative to voluntarily implement extensive BMPs such as stream exclusions, loose housing barns, and numerous manure storage units. Religious beliefs preclude the community from accepting any financial assistance to implement BMPs. Community members refused any cost share assistance and assumed complete financial responsibility for 8.3 of the 10 miles of livestock exclusion fencing installed throughout the watershed.

Since 2002 more than $309,000 in section 319 funding has supported two full-time SVSWCD staff, who provide technical assistance to the Mennonite community and others in the project area. This support has generated nearly $839,000 in cost-share funds—approximately $200,000 of which came from farmers—to implement agricultural and residential BMPs. Finally, project partners used $130,000 in USDA/EQIP funds to install BMPs throughout the North River watershed.

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