

US EPA

REGION 4

Nonpoint Source Program Success Story

Alabama

Brier Fork/Beaverdam Creek Watershed Best Management Practices Reduce Sediment and Improve Water Quality

Waterbody Improved

Agricultural practices and other land uses had caused excessive erosion and increased sediment in the Brier Fork/Beaverdam Creek Watershed. To address these issues, best management practices (BMPs) including conservation tillage, alternative water sources, fencing, grassed waterways, underground outlets and sediment basins were installed in the watershed. As a result, monitoring data indicate that fish and benthic populations have improved and erosion control BMPs have reduced sedimentation levels.

OVERVIEW

The Brier Fork/Beaverdam Creek Watershed is just north of Huntsville in Madison County and lies within the Wheeler Lake Watershed in the Tennessee River Basin. Both Brier Fork and Beaverdam Creek are tributaries to the Flint River. The watershed encompasses approximately 67,208 acres (40% cropland, 24% pasture-land, 16% forestland, 13.5% urban land, 6.2% open water and wetlands, and 0.03% other). Brier Fork has a drainage area of approximately 40.8 sq. miles and Beaverdam Creek has a drainage area of approximately 37.2 sq. miles.

Urban sprawl from Huntsville increasingly threatens the watershed; agricultural sources include both row crops and pasture grazing. Erosion and sediment from both agriculture and land development are impairing Brier Fork and Beaverdam Creek; the water use classification for both streams is Fish and Wildlife. Brier Fork is listed on the Section 303(d) List as impaired from the Flint River to the Alabama-Tennessee State line (20-mile segment), while Beaverdam Creek is listed on the Section 303(d) List as impaired from Brier Fork to its source (19-mile segment).

HIGHLIGHTS

The primary goals of the ongoing Brier Fork and Beaverdam Creek projects are to develop watershed management plans and implement BMPs to improve water quality. The projects are designed to bring Brier Fork and Beaverdam Creek into compliance with state water quality standards. To recruit landowner participation, a continuous sign-up process was announced and 34 applications were initially accepted. Twenty of the applications were for BMPs that address erosion, such as terraces, grassed waterways, sediment basins, and underground outlets to reduce soil loss on crop land. Livestock practices such as stream crossings and heavy use feeding areas were also requested to help reduce erosion.

A watershed-based plan has been developed and will be implemented through partnerships between public and private organizations. The Madison County Soil and Water Conservation

District (SWCD) has significant experience in identifying and resolving watershed issues and coordinates the local watershed protection implementation efforts.



Winter Cover Crop in the Brier Fork/Beaverdam Creek Watershed

RESULTS

As a result of the Brier Fork/Beaverdam Creek Watershed projects, over 6,000 acres of farmland have been improved using cover crops as well as conservation tillage. Nine sediment basins have been installed and 54,270 feet of broad-based terraces to address gulley erosion have been implemented. A 2,900-foot grassed waterway and 4,604 feet of underground outlet have been installed. Cropland has been converted to permanent hay on 65 acres and 113 acres of pastures have been planted and improved by five different cattle producers. Four watering facilities, three heavy use areas, two livestock stream crossings, and 1500 feet of exclusion fencing have been completed.

The following table summarizes BMPs installed in the watershed:

BMPs Installed in the Brier Fork/Beaverdam Creek Watershed	
BMP	Size/Units
Alternative Water Sources	4 Units
Conservation Tillage	6000 Acres
Fence	1500 Ft
Grassed Waterway	2900 Ft
Heavy Use Area Protection	3 Units
Livestock Stream Crossing	2 Units
Pasture & Hayland Planting	113 Acres
Sediment Basin	9 Units
Terrace	54270 Ft
Underground Outlet	4604 Ft



Livestock exclusion fencing in the Brier Fork Watershed

Through erosion control BMPs, the Brier Fork/Beaverdam Creek Watershed projects have improved water quality with a sedimentation-siltation load reduction estimate of 102,000 tons/year. In addition, the Tennessee Valley Authority (TVA) has conducted an Index of Biological Integrity survey on two sites within the targeted area of the Brier Fork Watershed. Sampling revealed that fish and benthic populations and diversity have improved since the last sample period. The results are likely related to the first Brier Fork and Beaverdam Creek 319 project initiated in 2006.



Newly installed sediment basin in the Brier Fork Watershed

A second phase of the ongoing Brier Fork/Beaverdam Creek Watershed projects started in 2008 with a kickoff meeting held at the Alabama A&M University Experiment Station. The Madison County SWCD accepted twenty-two applications for BMPs to include conservation tillage and winter cover crops, terrace projects to address gully erosion on crop land, grazing land requests, and cropland conversion to permanent vegetation.

Education and outreach activities have included the 2008 environmental education teacher workshop, the 2008 Madison County Drinking Water Festival, the 2008 Madison County Land Judging Contest, the 2008 Earth Day festival, and two Flint River Canoe Cleanups, newsletters, and newspaper inserts.

PARTNERS AND FUNDING

The two phases of this project are funded by \$635,130 in US Environmental Protection Agency Section 319 funding. The first phase of this project, which is now complete, had a state match of \$316,894. The 2nd phase of this project, which is ongoing, has a match of \$77,489. The match from both phases of the project was provided by Landowners, Madison County Soil and Water Conservation Board, District Administrative Coordinator; Tennessee Valley Authority, and the Watershed Advisory Committee. Participating partners include the: Alabama Department of Environmental Management; Madison County Soil and Water Conservation District; Tennessee Valley Authority; the Flint River Conservation Association; and the Clean Water Partnership.

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