Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Tennessee

Heavy Use Area BMPs Reduce Erosion and Improve Water Quality

Waterbody Improved

Polluted runoff from pasture grazing livestock and the removal of riparian vegetation caused siltation and habitat alterations in Rock Springs Branch. This led to the listing of an 8.1-mile segment of Rock Springs Branch as impaired in 2002. Using section 319 funding, Putnam, Smith, and DeKalb County Soil Conservation Districts installed heavy use area (HUA) best management practices (BMPs) on Bates Branch, a tributary to Rock Springs Branch. Fifteen acres of HUA were implemented to help stabilize an area that cattle trod through, helping to improve water quality and prevent soil erosion. This resulted in the removal of the Rock Springs Branch segment from the 2004 303(d) list of impaired waters.

Problem

Rock Springs Branch is located in Putnam County within the Caney Fork River Watershed, and consists primarily of rural/urban land uses with approximately 75% forest and 21% agriculture. The Branch was listed as impaired on the state's 2002 303(d) list due to siltation and other habitat alterations. Polluted runoff carrying sediment from grazing fields was the source of this pollution, which impaired the Branch's ability to meet Tennessee's water quality standards to fully support its designated use classifications for fish and aquatic life. The standard states that there shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits, or sludge banks of such size or character that may be detrimental to fish and aquatic life, and the instream habitat within each subecoregion shall be generally similar to that found at reference streams.

A siltation total maximum daily load (TMDL) was established for the Rock Springs Branch in 2005 by the Tennessee Department of Environment and Conservation.

Project Highlights

Local Soil and Water Conservation District offices in Putman, Smith, and De Kalb counties allocated funding assistance to farmers of pasture grazing lands through a grant from the Tennessee State Agricultural Resources Conservation Fund (ARCF). Using a combination of matched 319 funding as well as state funds, they worked with local landowners to promote and install management practices and structures that would both reduce runoff into Rock Springs Branch and improve their operations.

Heavy use area BMPs were installed on two different farms along both Rock Springs and Bates Branch to reduce soil erosion (Figure 1).

Results

Rock Springs Branch was found to have greatly improved water quality due to the installed BMPs. Using EPA's rapid bioassessment protocol III (RBPIII), state biologists calculated a biological reconnaissance score (biorecon) for the Branch, which is used as a measure of compliance with water quality standards for the beneficial use of fish and aquatic life. Biorecon is one tool used to recognize stream impairment as judged by species richness measures, emphasizing the presence or absence of indicator organisms without regard to relative abundance. The biorecon index is scored on a scale from 1 to 15.

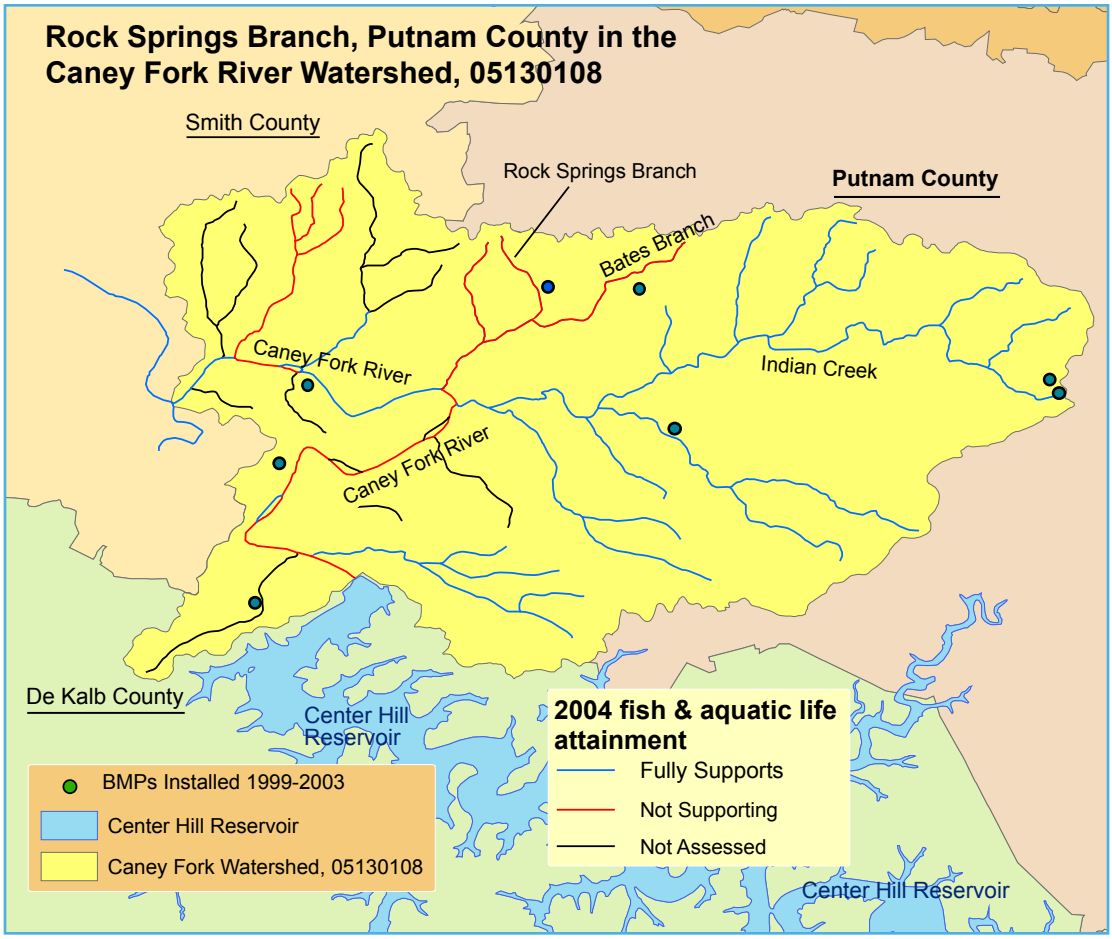

Figure 1. Location of Implemented BMPs

A score of less than 5 is regarded as very poor. A score of more than 10 is considered good. The principal metrics used are the total macroinvertebrate families (or genera), the number of families (or genera) of mayflies, stoneflies, and caddisflies (EPT), and the number of pollution intolerant families (or genera) found in a stream. The biorecon score for Rock Springs Branch indicated 12 EPT families, six pollutant intolerant species, and a total of 29 macroinvertebrate families. Using the Division scoring system for biorecons, this stream scored a 15. The stream got a habitat score of 137, which is better than the established habitat goal for this region. These results indicated the improved water quality and ability to fully support fish and aquatic life. Therefore, the 8.1-mile segment of Rock Spring Branch was delisted from the 2004 303(d) list of impaired waters.

Partners and Funding

Since 2002, Rock Springs Branch has benefited from $57,378.00 provided through cost-share from section 319 grant pool projects. In addition, the State ARCF provided $36,986.72. Key partners in this effort include the Putnam, Smith, and De Kalb County Soil Conservation Districts.

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