



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Tennessee

Successful BMPs Reduce Siltation and Improve Water Quality

Waterbody Improved

Agricultural practices and land development in the Arrington Creek watershed were contributing to silt runoff that was degrading the water quality of the creek. The waterbody was listed as impaired on Tennessee's 2002 303(d) list due to siltation from agriculture and land development. Best management practices (BMPs) implemented in the watershed successfully improved the water quality of Arrington Creek and allowed for its removal from the impaired list in 2004.

Problem

Arrington Creek is located in Williamson County in central Tennessee. It is in the Harpeth River watershed, Ecoregion 71i. A 24.6-mile segment of Arrington Creek was listed as impaired on the state's 2002 303(d) list for siltation. Arrington Creek was only partially supporting criteria for its designated use classification (fish and aquatic life). The state identified agricultural practices and land development as the primary sources of silt entering the waterbody. A siltation and habitat alteration total maximum daily load (TMDL) was previously developed for this watershed and approved by EPA in 2002.

Project Highlights

Eight BMPs were implemented along Paige Branch, a tributary to Arrington Creek, between 1999 and 2003. The installment of exclusion fencing and an alternative watering facility prevented livestock from entering the stream, thereby reducing the trampling of streambanks. Other BMPs implemented include pasture and hay planting along critical areas, reinforcement of heavy use areas, streambank protection, and planting riparian buffers (Figure 1). These management practices helped reduce the amount of silt and runoff entering the waterway.

Results

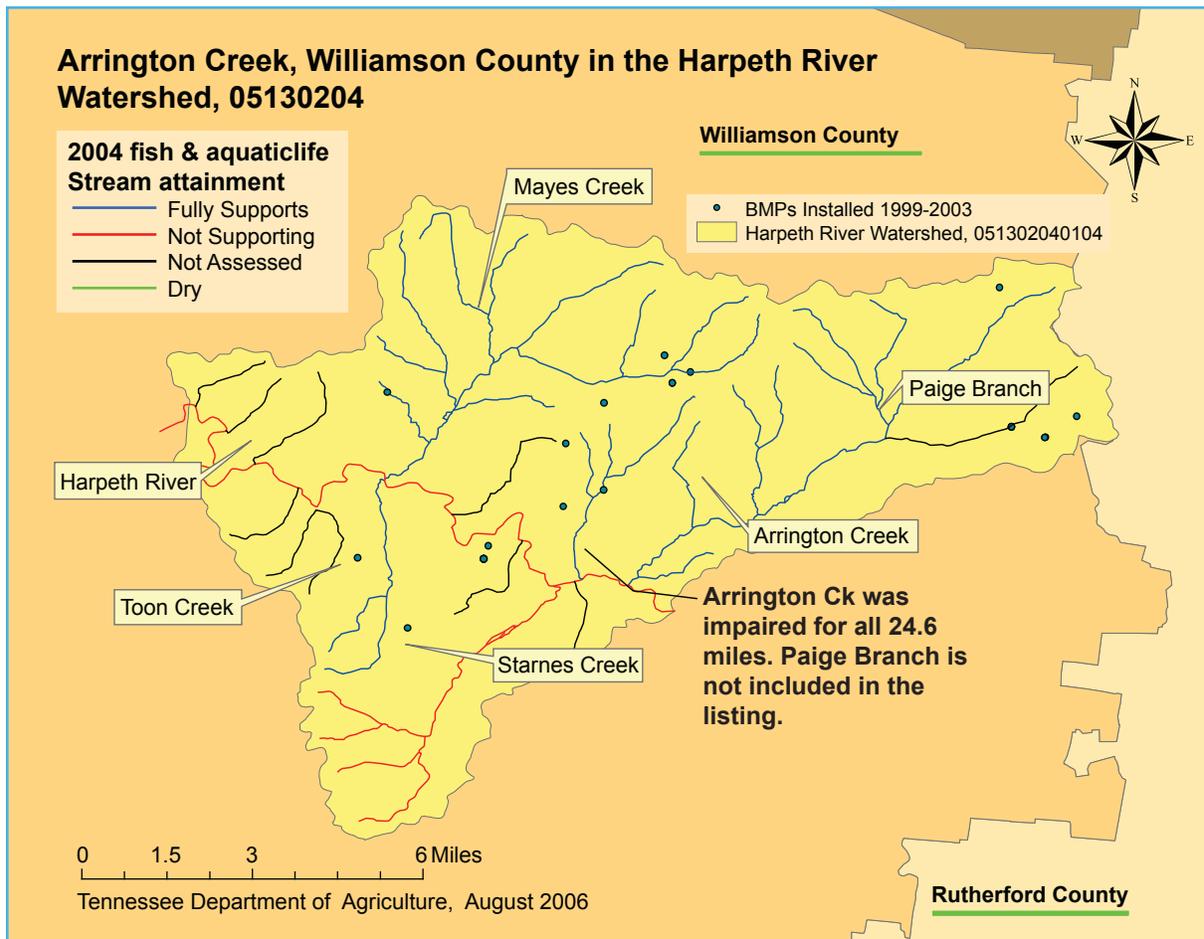
The BMPs implemented along Paige Branch, a tributary to Arrington Creek, have helped reduce the level of siltation entering the waterbody and allowed it to meet its designated water quality standards such that there were no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks. In addition the Branch was found to be no longer detrimental to fish and aquatic life. This stream was reassessed in 2002 by the Tennessee Department of Environment and Conservation (TDEC). Using EPA's rapid bioassessment protocol III (RBPIII), state biologists calculated a biological reconnaissance (biorecon) score for Arrington Creek, which is used to measure a compliance with the state water quality standard for siltation. 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 1–15. A score less than 5 is regarded as very poor. A score over 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 results

for Arrington Creek indicated 10 EPT families, 7 intolerant, and 25 total families. The stream received a score of 15 out of 15, indicating that it is now fully supporting fish and aquatic life. The stream got a habitat score of 115, which is similar to the established habitat goal for this region. The stream has improved since last assessed and therefore Arrington Creek was removed from Tennessee's list of impaired waters in 2004.

Partners and Funding

The Williamson County Soil Conservation District and the Harpeth River Watershed Association helped implement the BMPs with \$12,500 of section 319 direct and matched funding. An additional \$55,627.81 was contributed by the Tennessee Agricultural Resources Conservation Fund and matching funds.

Figure 1. BMPs implemented in the Harpeth River watershed.



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