Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Oklahoma

Implementing Agricultural Best Management Practices Decreases Turbidity in Wildhorse Creek

Waterbody Improved

High turbidity, due in part to practices associated with cattle production, resulted in impairment of Wildhorse Creek and placement on Oklahoma's Clean Water Act (CWA) section 303(d) list of impaired waters in 2008. Implementation of best management practices (BMPs) to promote better quality grazing land and cropland decreased sediment loading into the creek. As a result, an 11-mile-long segment of Wildhorse Creek was removed from Oklahoma's 2012 CWA section 303(d) list for turbidity impairment. This segment of Wildhorse Creek is now in full attainment of its fish and wildlife propagation (FWP) designated use.

Problem

Wildhorse Creek is located in Stephens County in southwestern Oklahoma (Figure 1). Land use in the 22,870-acre watershed is primarily pasture for cattle production, with some wheat cropland. Poor grazing land and cropland management contributed to excess sedimentation in the creek. In the 2008 water quality assessment, monitoring showed that 23 percent of Wildhorse Creek's seasonal base flow water samples exceeded 50 nephelometric turbidity units (NTU). A stream is considered impaired by turbidity if more than 10 percent of the seasonal base flow water samples exceed 50 NTU (based on 5 years of data before the assessment year). On the basis of these assessment results, Oklahoma added an 11-mile-long segment of Wildhorse Creek (OK310810040140 _ 00) to the 2008 and subsequent CWA section 303(d) lists for nonattainment of the FWP designated use due to turbidity impairment.

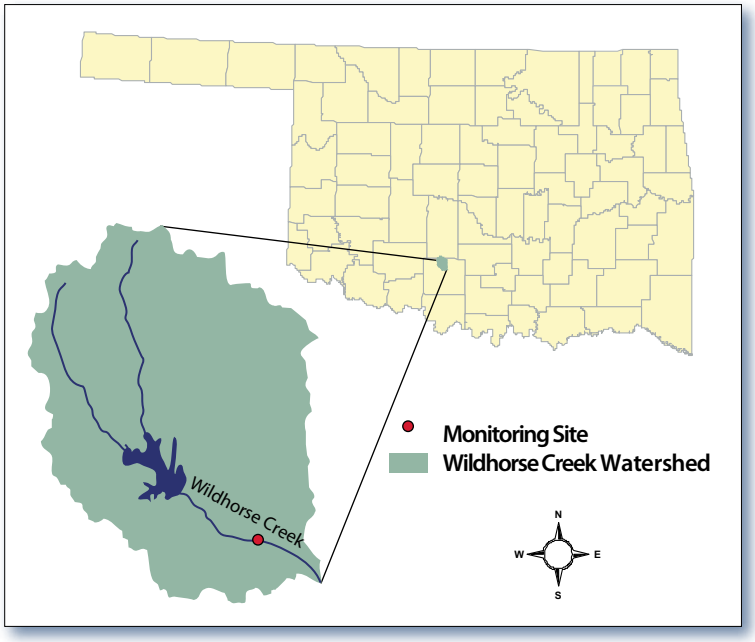

Figure 1. The Wildhorse Creek watershed is in southwestern Oklahoma.

Project Highlights

Landowners implemented BMPs with assistance from Oklahoma's locally led cost-share program and through the local U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP), general conservation technical assistance program, and Conservation Stewardship Program (CSP). From 2008 to 2011, landowners in the watershed reduced the potential for erosion from grazing lands by implementing prescribed grazing on 2,271 acres and proper nutrient management on 2,434 acres and by installing 14 diversions (diverting water flow to less erosion-prone areas) and 29 grade stabilization structures. Over 800 acres of range and pasture received supplemental vegetative planting in erosive areas, and 2,272 acres of pest (weed) management helped to improve the quality of grazing lands. Installation of cross-fencing and alternative water supplies optimized usage of grazing lands. Conservation cover crop rotations and conservation

tillage methods instituted on more than 3,000 acres helped to address erosion from cropland.

Additional BMPs implemented in 2012 include cross-fencing, 28 ponds, eight diversions, another grade stabilization structure, forage/biomass planting in critical areas and pastures, and additional nutrient management.

Results

The Oklahoma Conservation Commission's (OCC's) Rotating Basin Monitoring Program, a statewide nonpoint source ambient monitoring program, documented improved water quality in Wildhorse Creek due to landowner implementation of BMPs (Figure 2). BMPs designed to improve pasture and rangeland result in denser vegetation and fewer bare spots, which equates to less potential runoff of soil into waterbodies. In the 2008 assessment, 23 percent of seasonal base flow water samples exceeded the turbidity criteria of 50 NTU. This exceedance was reduced to zero percent in the 2012 assessment (Figure 3). Accordingly, Wildhorse Creek has been removed from Oklahoma's 2012 CWA section 303(d) list for turbidity impairment and is now in full attainment of the FWP designated use.

Partners and Funding

The Rotating Basin Monitoring Program is supported by U.S. Environmental Protection Agency CWA section 319 funds at an average annual cost of $1 million. Monitoring costs include personnel, supplies, and lab analyses for 18 parameters from samples collected every 5 weeks at about 100 sites. In-stream habitat, fish, and macroinvertebrate samples are also collected. Approximately $600,000 in CWA section 319 funding supports statewide education, outreach, and monitoring efforts through the OCC's Blue Thumb program. The Oklahoma cost-share program provided $11,719 in state funding for BMPs in this watershed through the Stephens County Conservation District, and landowners contributed $8,035 through this program. The NRCS spent approximately $1,250,000 for implementation of BMPs in the watershed from 2008 to 2011 through NRCS EQIP, CSP, and general technical assistance funds. An additional $193,000 was spent in 2012. Landowners provided a significant percentage toward BMP implementation in these programs as well.

Figure 2. Wildhorse Creek following the implementation of best management practices.

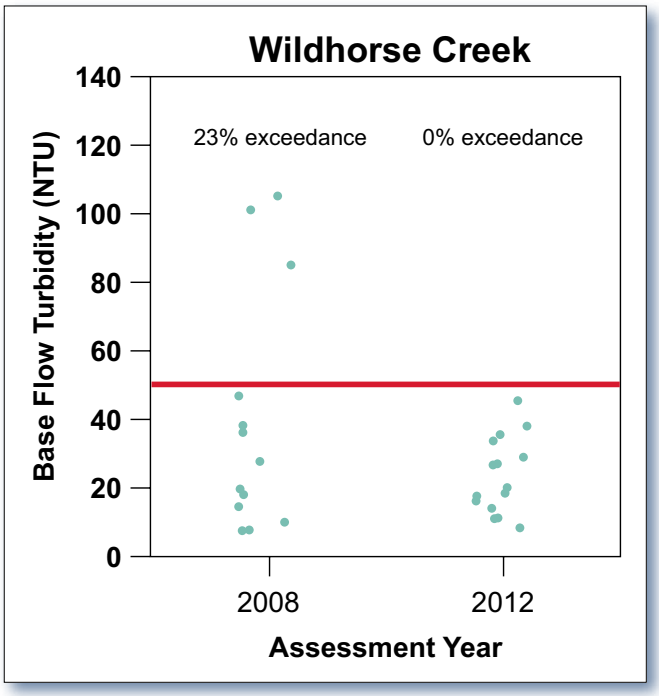

Figure 3. Monitoring data show that turbidity levels in Wildhorse Creek have declined.

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