



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Oklahoma

Installation of BMPs Results in Turbidity Delisting

Waterbody Improved

High turbidity, due in part to practices associated with wheat, cattle, and corn production, resulted in impairment of Mission Creek and placement on Oklahoma's Clean Water Act (CWA) section 303(d) list in 2004. Implementation of best management practices (BMPs) to promote better quality grazing land and cropland decreased sediment loading into the creek. As a result, the Oklahoma Conservation Commission has proposed that Mission Creek be removed from Oklahoma's 2010 CWA section 303(d) list for turbidity impairment. Mission Creek now partially attains its fish and wildlife propagation designated use.

Problem

Mission Creek (Figure 1) stretches just over 18 miles through Osage County in northeastern Oklahoma, an area of high cattle and wheat production as well as some corn and poultry. Poor grazing land and cropland management contributed to excess sedimentation in the watershed. In the 2004 and 2008 water quality assessments, monitoring showed that 16 percent and 14 percent, respectively, of Mission Creek's seasonal baseflow water samples exceeded 50 nephelometric turbidity units (NTU). A stream is considered impaired by turbidity if 10 percent or more 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 the entire length of Mission Creek to the 2004 and subsequent CWA section 303(d) lists for nonattainment of the fish and wildlife propagation designated use due to turbidity impairment.

Project Highlights

Landowners implemented BMPs with assistance from Oklahoma's locally led cost-share program and through the local Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) and general technical assistance program. The Mission Creek watershed is included in a tribal EQIP program focused on reducing erosion on grazing lands. From 2004 to 2007, prescribed grazing was implemented on 5,897 acres, with two ponds installed for alternative water supply. Pasture and hay planting occurred on 34 acres. Landowners improved upland wildlife habitat management on 1,800 acres. Brush management occurred on



Figure 1. Mission Creek is in northeastern Oklahoma.

approximately 2,300 acres, and weed management was applied on 412 acres. This watershed is included in a new NRCS no-till initiative for Oklahoma, so the observed improvement in water quality is expected to continue as erosion from cropland is reduced.

The Oklahoma Conservation Commission's education program, Blue Thumb, has eight actively monitored sites in Osage County. Educational programs have been offered by Blue Thumb staff in the county as well. These activities provide vital education of the residents of the watershed and help facilitate behavior changes. Active volunteer monitoring and education is continuing in the area.

Results

The Oklahoma Conservation Commission's Rotating Basin Monitoring Program, a statewide nonpoint source ambient monitoring program, documented improved water quality in Mission Creek due to landowners implementing BMPs. Because of the implemented practices and the accompanying education of landowners, turbidity decreased in

the Mission Creek watershed. In the 2004 assessment, 16 percent of seasonal base flow water samples exceeded the turbidity criteria of 50 NTU. This exceedance was reduced to 14 percent in the 2008 assessment and further reduced to 6 percent in the 2010 assessment (Figure 2). Hence, Mission Creek has been recommended for removal from Oklahoma's CWA section 303(d) list for turbidity impairment and now partially attains the fish and wildlife propagation designated use.

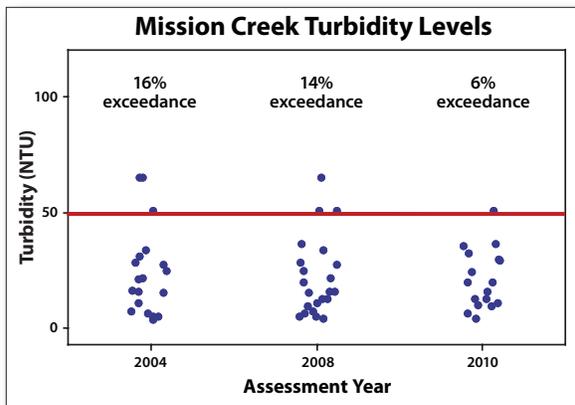


Figure 2. Data show declining turbidity levels in Mission Creek.

Partners and Funding

The Rotating Basin Monitoring Program, which includes both fixed and probabilistic components, is funded through the U.S. Environmental Protection Agency's (EPA's) CWA section 319 program at an average annual cost of \$1 million. Monitoring costs include personnel, supplies, and lab analysis for 19 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 EPA CWA section 319 funding supports statewide education, outreach, and monitoring efforts through the Blue Thumb program. The Oklahoma cost-share program provided \$3,614 in state funding for BMPs in this watershed through the Osage County Conservation District, and landowners contributed \$10,510 through this program. The NRCS spent approximately \$376,433 for implementation of BMPs in the watershed from 2004-2007. Implementation is continuing, with \$381,193 in BMPs obligated in Oklahoma from 2007-2009 through EQIP and NRCS general technical assistance funds. Landowners provided a significant percentage toward BMP implementation in these programs as well.



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