



NONPOINT SOURCE SUCCESS STORY Update

Oklahoma

Conservation Practices Improve Water Quality in the Medicine Lodge River

Update Overview

Update Overview This Nonpoint Source Success Story Update highlights the removal of additional impairments (turbidity and *Escherichia coli* (*E. coli*)) from the Medicine Lodge River (OK621010030010_00). Oklahoma added Medicine Lodge to the 2004 Clean Water Act (CWA) section 303(d) list for *E. coli*, the 2006 list for turbidity, and the 2008 list for the biological impairment of fishes. The fish impairment was removed in 2012 (see the April 2014 Nonpoint Source Success Story, [Installation of Best Management Practice Results in Significant Fish Community Improvements in Medicine Lodge River](#), for more details). Because recent data show that *E. coli* and turbidity levels comply with water quality standards, Oklahoma removed the turbidity impairment in 2010 and the *E. coli* impairment in 2016.

Problem

Challenges with grazing management contributed to elevated bacteria and turbidity in Medicine Lodge River. Data from the 2006 assessment indicated that 24 percent of samples violated the turbidity criteria for a warm water aquatic community. A stream is impaired if more than 10 percent of samples violate the criteria. In 2004, the recreational season geomean for *E. coli* was 243 colony forming units per 100 milliliters (CFU/100 mL). A stream is impaired if the *E. coli* geomean is greater than 126 CFU/100 mL. Based on these results, Oklahoma added river to the section 303(d) list in 2004 for *E. coli* and 2006 for turbidity.

Story Highlights

Much of the work contributing to the improvement is described in the April 2014 Medicine Lodge success story; however, landowners have continued to partner with U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), Farm Services Agency (FSA), and the Oklahoma Conservation Commission's (OCC's) Locally Led Cost Share Program to install conservation practices (CPs). Landowners installed additional CPs from 2007 to 2017 including no-till (4,532 acres), livestock access control (674 acres), grassed waterways (38 acres), critical area planting (39 acres), terraces (19,515 feet) and others.

Results

The OCC's Rotating Basin Monitoring Program documented improved water quality. In the 2010 assessment, no baseflow samples violated the turbidity standard (Figure 1). In 2016, the *E. coli* geometric mean of 30.3 CFU/100 mL was below the criteria of 126 CFU/100 mL. As a result, Oklahoma removed Medicine Lodge River from the CWA section 303(d) list for turbidity and *E. coli* impairment; it now fully supports its Fish and Wildlife Propagation and partially supports its Primary Body Contact beneficial uses.

Partners and Funding

Partners highlighted in the April 2014 success story continued to work in the watershed including an additional \$125,000 in water quality monitoring and education from the OCC using U.S. Environmental Protection Agency CWA section 319 funds. NRCS, FSA, OCC, and landowners invested at least \$60,000 in additional conservation program funds for CPs in the watershed from 2012 to 2017.

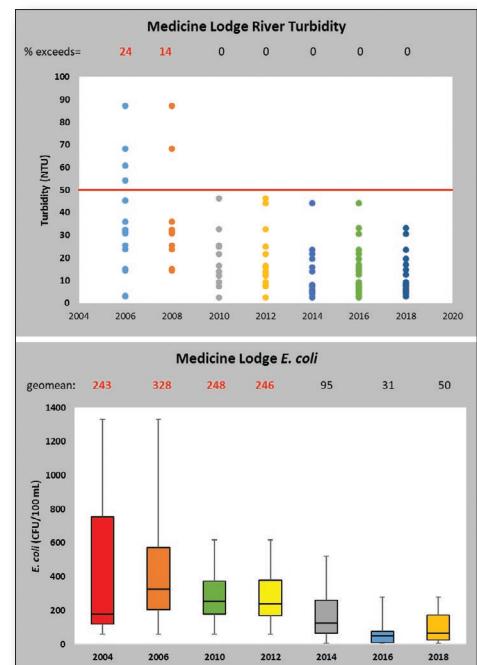


Figure 1. Turbidity and *E. coli* declined as agricultural producers installed CPs.

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