



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Oklahoma

Installation of Best Management Practices Results in Significant Fish Community Improvements in Medicine Lodge River

Waterbody Improved

Medicine Lodge River is located in an area of high wheat and cattle production. An assessment of the river's fish community in 2002 revealed a poor condition, resulting in placement on Oklahoma's 2008 Clean Water Act (CWA) section 303(d) list of impaired waters for biological impairment. Implementation of best management practices (BMPs) to promote better quality pastures and cropland decreased pollutant runoff into the river and allowed significant improvement in the fish community. As a result, Oklahoma removed the 14-mile-long Medicine Lodge River from the state's 2012 CWA section 303(d) list for biological impairment. Medicine Lodge River now fully attains its fish and wildlife propagation (FWP) designated use.

Problem

Medicine Lodge River is in Alfalfa and Woods counties in northwest Oklahoma (Figure 1). Poor grazing land and cropland management likely contributed to excess sedimentation and nutrient runoff in the 47,614-acre watershed, which negatively impacted the life in the river. A 2002 fish assessment produced an Index of Biotic Integrity (IBI) score of 17 for Medicine Lodge River. Waterbodies in this ecoregion of the state are considered not supporting the FWP designated use if an IBI score is less than 19. On the basis of these assessment results, Oklahoma added a 13.5-mile segment of Medicine Lodge River (OK621010030010_00) to the 2008 and subsequent CWA section 303(d) lists, for biological impairment of fishes.

Project Highlights

Landowners implemented BMPs with assistance from the local U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP), Conservation Reserve Program (CRP), Wildlife Habitat Incentive Program (WHIP), and general technical assistance program. From 2004 to 2006, landowners implemented 855 acres of conservation crop rotations, no-till/strip-till farming methods, and cover crops. In contrast to traditional tillage, these "conservation tillage" methods retain soil moisture and reduce soil erosion by decreasing the amount of soil exposed to wind and rain. Further

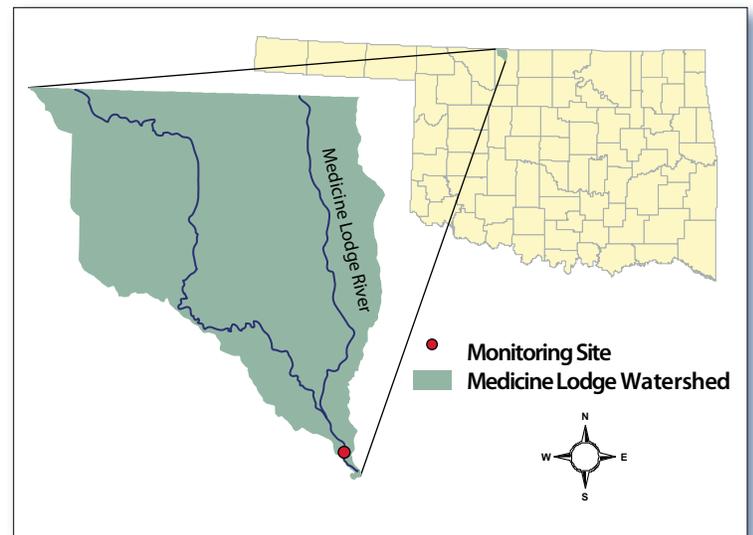


Figure 1. The Medicine Lodge River is in northwest Oklahoma.

reducing erosion potential on cropland, landowners installed 16 acres of grassed waterways and two grade stabilization structures and planted vegetation on 18 critical area acres. To improve the condition of grazing lands, prescribed grazing was implemented on 28 acres, with construction of five ponds, installation of 13 water supplies, and supplemental planting on 42 acres of pasture and 159 acres of range. Nutrient management of 301 acres improved cropland and grazing land condition. Access control was implemented on 258 acres and

upland wildlife habitat management was improved on 569 acres in the watershed.

BMP implementation has expanded and is continuing in the watershed. From 2007 to 2012, over 8,000 acres of conservation tillage, cover crops, and crop rotations occurred. Additional planting in critical areas, pastures, and rangeland; installation of grassed waterways, terraces, grade stabilization structures, and 41 ponds; and approximately 3,000 acres of prescribed grazing and nutrient management has contributed to further improvement in the condition of the watershed.

Results

The Oklahoma Conservation Commission's (OCC's) Rotating Basin Monitoring Program, a statewide nonpoint source ambient monitoring program, documented improved water quality in the Medicine Lodge River due to landowner implementation of BMPs. Dissolved oxygen saturation was significantly increased during the monitoring periods of 2002–2003 to 2007–2008, and phosphorus concentrations were significantly reduced. The biological assessment based on the 2002 fish collection produced an IBI score of 17, with only nine total species observed. Assessment of the 2007 collection resulted in a score of 27, with 18 species collected in the 400-meter reach sample (Figure 2). Hence, Medicine Lodge River was removed from Oklahoma's 2012 CWA section 303(d) list for fish impairment and is now in full attainment of the fish and wildlife propagation designated use (Figure 3).

Partners and Funding

The OCC's 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 Blue Thumb program.



Figure 2. The suckermouth minnow is a pollutant-intolerant species once again present in the Medicine Lodge River.

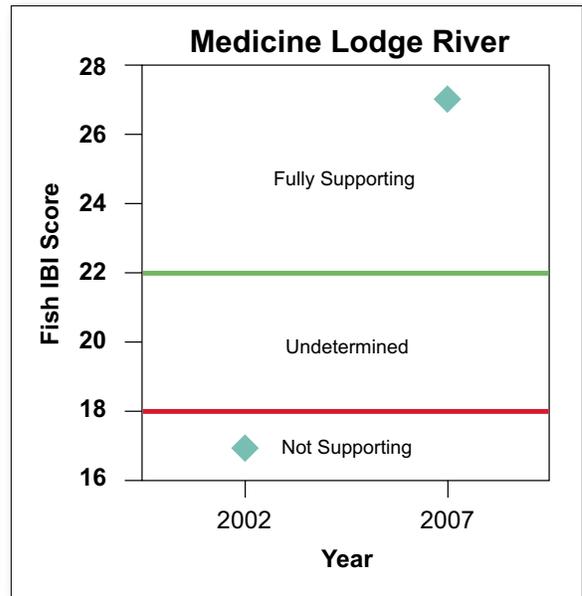


Figure 3. Fish assessment data collected in 2007 indicated that the Medicine Lodge River now fully supports its fish and wildlife propagation designated use.

NRCS spent approximately \$1,714,762 for implementation of BMPs in the watershed from 2003 to 2006. Implementation is continuing, with \$4,721,858 in BMPs installed from 2007 to 2012 through EQIP, CSP, WHIP, and NRCS general technical assistance funds. Landowners provided a significant percentage of funding toward BMP implementation through these programs as well.



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