



NONPOINT SOURCE SUCCESS STORY

Oklahoma

Conservation Practices Reduce Turbidity in Rock Creek

Waterbody Improved

High turbidity levels resulted in the impairment of Rock Creek and placement on Oklahoma's Clean Water Act (CWA) section 303(d) list of impaired waters in 2008 for turbidity. Pollution from grazing lands and poor forest management contributed to this impairment. Implementing conservation practice systems (CPs) to promote better pasture and forest management decreased turbidity levels in the creek. As a result, Oklahoma removed Rock Creek from its 2014 CWA section 303(d) list for turbidity. Rock Creek partially supports its Fish and Wildlife Propagation (FWP) beneficial use.

Problem

Rock Creek is a 12.35-mile stream flowing through McCurtain County before it crosses into Arkansas (Figure 1). Land use in the 28,587 acre (ac) watershed is about 73 percent deciduous and evergreen forests and about 20 percent grazing lands. Approximately 6 percent of the watershed is developed (primarily roads and farm homesteads). There is some poultry production in the watershed as well.

Challenges with forest and grazing lands management contributed to listing the river as impaired for turbidity in 2008 when 18 percent of samples violated the turbidity criteria for a cool water aquatic community. The FWP designated use is considered impaired if 10 percent or more of baseflow samples are greater than 10 nephelometric turbidity units (NTU). Based on these results, Oklahoma added Rock Creek (OK410200030010_00) to the 2008 CWA section 303(d) list for nonattainment of its FWP designated beneficial use.

Story Highlights

Landowners in the watershed worked with the Little River Conservation District and the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) to implement CPs through NRCS's Environmental Quality Incentives Program (EQIP), Grazing Lands Conservation Program (GLC), and general conservation technical assistance program.

CPs installed from 2002 to 2017 focused on animal waste management (including feral swine eradication) and other methods of reducing erosion and pollutant runoff from forest and grazing lands in the watershed.

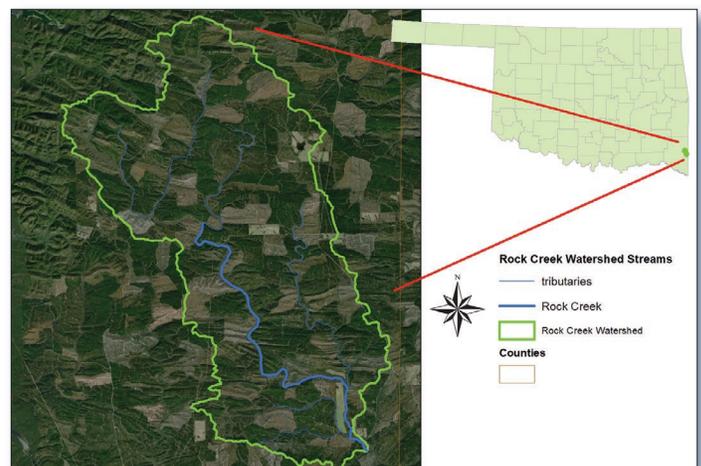


Figure 1. The 28,587-acre Rock Creek Watershed is in southeastern Oklahoma.

Specific CPs installed included 13 comprehensive nutrient management plans, brush management (1,334 ac), forest stand improvement (1,356 ac), nutrient management (2,291 ac), tree/shrub site preparation (224 ac) and establishment (225 ac), pest management (2,673 ac), forage harvest management (114 ac), forage and biomass planting (1,196 ac), wildlife habitat management (15 ac of wetland; 757 ac upland), and feral swine management (450 ac). Additional CPs included 13 ponds, fencing (43,671 feet [ft]), waste recycling (857 ac), one waste facility cover, one water well, heavy use area protection (68 ac), livestock pipeline (990 ft), cover crop (39 ac), prescribed grazing (3,465 ac), herbaceous weed treatment (131 ac), five waste storage facilities, filter strips (62 ac), four waste facility closures, and critical area planting (18 ac).

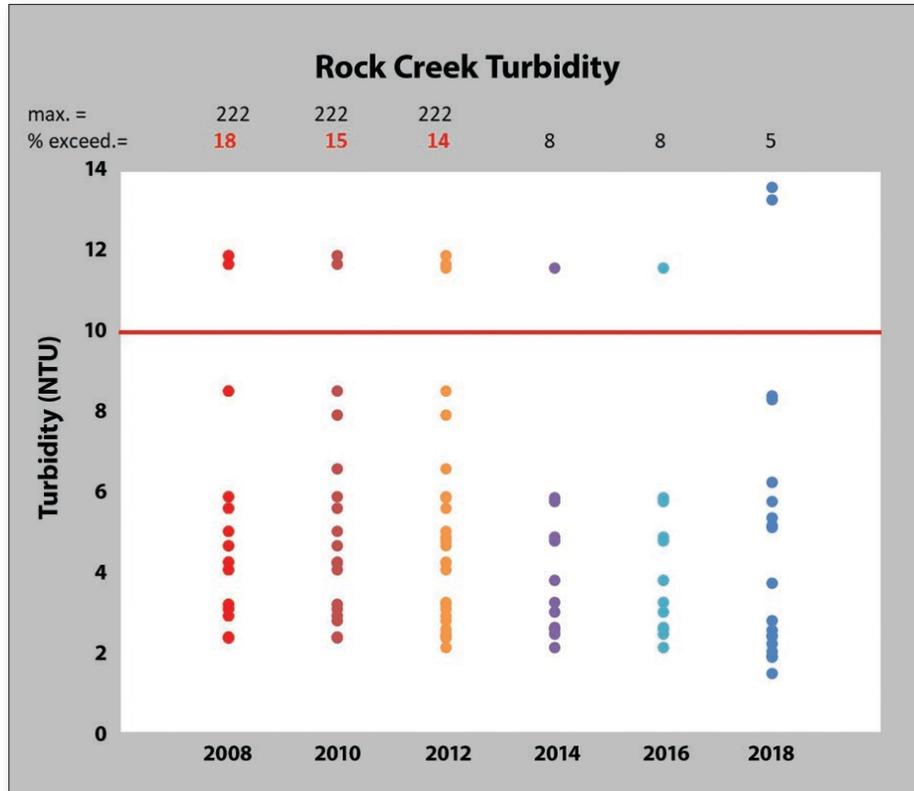


Figure 2. Turbidity decreased in Rock Creek after CPs were installed.

Results

The Oklahoma Conservation Commission (OCC) documented improved water quality in Rock Creek due to installation of CPs. The installed CPs worked to decrease the amount of sediment eroding and entering downstream waterbodies. Monitoring data compiled for the 2008 integrated report showed that Rock Creek turbidity levels violated the turbidity 18 percent of the time (Figure 2). However, by the 2014 assessment, turbidity levels had dropped and only violated the criteria 8 percent of the time. Based on these data, Oklahoma removed Rock Creek from the CWA section 303(d) list for turbidity in 2014. Rock Creek now partially supports its FWP beneficial use.

Partners and Funding

The OCC monitoring program is supported by U.S. Environmental Protection Agency (EPA) CWA section 319 funding at an average annual statewide cost of \$1 million. Approximately \$500,000 in EPA 319 funds support statewide water quality educational efforts through Blue Thumb. Approximately \$145,000 of these federal and matching state funds have been devoted to Rock Creek. From 2002 to 2017, NRCS supplied approximately \$210,000 for implementation of CPs in the watershed through EQIP. Additional funds were provided through NRCS for technical assistance. In addition, many practices were funded by landowners based on recommendations through NRCS general technical assistance and GLC conservation planning.



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