



NONPOINT SOURCE SUCCESS STORY

Oklahoma

Conservation Practices Increase Oxygen Concentrations in Finn Creek

Waterbody Improved

Low dissolved oxygen (DO) levels resulted in impairment of Finn Creek and placement on Oklahoma's Clean Water Act (CWA)

section 303(d) list of impaired waters in 2008. Pollution from cropland and grazing lands contributed to this impairment. Implementing conservation practice systems (CPs) to promote better land management decreased pollutant runoff and increased oxygen levels in the stream. As a result, Oklahoma removed the DO impairment in 2016 from its CWA section 303(d) list. Finn Creek now fully supports its warm water aquatic community (WWAC) designated beneficial use.

Problem

The Finn Creek watershed covers approximately 42,420 acres in Garvin and McLain counties in Oklahoma (Figure 1). Land use in the watershed is about 77 percent managed pasture and cropland, the majority of which is pasture land. Most of the cultivated fields lie in the flat lands along the stream. Approximately 15 percent of the watershed is rangeland. The primary agricultural products from the watershed are wheat, soybeans, hay and cattle.

Water quality monitoring in the mid-2000s determined that challenges with grazing land and cropland management contributed to a 2008 listing of a 14.15-mile segment of the stream as impaired by DO, when at least 15 percent of readings exceeded acceptable limits. A stream is considered impaired for DO if more than 10 percent of samples fall below 6.0 milligrams per liter (mg/L) from April 1 through June 15 or fall below 5.0 mg/L (with allowances for a 1 mg/L excursion for one hour per day) during the remainder of the year. Based on these results, Oklahoma added segment OK310810020020_00 to the CWA section 303(d) list in 2008 for nonattainment of the WWAC designated beneficial use.

Story Highlights

More than 50 landowners in the watershed worked with the Garvin and McClain county conservation districts, the Oklahoma Conservation Commission (OCC) and the Natural Resources Conservation Service (NRCS) to implement CPs through the OCC's Locally Led Cost Share Program (LLCP) and Oklahoma NRCS's

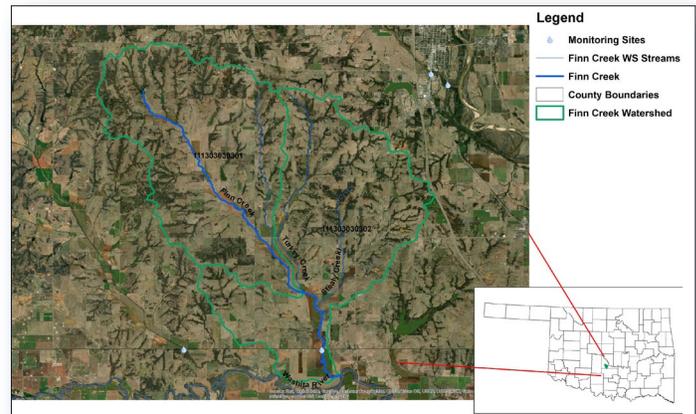


Figure 1. The Finn Creek watershed is in southern Oklahoma.

Environmental Quality Incentives Program (EQIP) and general conservation technical assistance program.

From 2007 to 2018, landowners improved croplands and grazing management, which reduced runoff of sediment and other pollutants by increasing vegetative cover and reducing bare soil.

Landowners implemented access control (25 acres [ac]), brush management (489 ac), conservation cover (1,330 ac), conservation crop rotation (1,795 ac), contour farming (75 ac), cover crop (2,298 ac), critical area planting (24 ac), diversion (4,518 feet [ft]), fence (31,968 ft), forage harvest management (595 ac), firebreak (37,705 ft), grade stabilization structures (12), grassed waterways (4.3 ac), heavy use protection areas (0.3 ac), herbaceous weed treatment (622 ac), nutrient management (7,428 ac), pasture and hayland planting (7,982 ac), pest management (5,497 ac), ponds (15),

prescribed burning (264 ac), prescribed grazing (5,832 ac), no-till (800 ac), reduced tillage (2,498 ac), seasonal residue management (79 ac), terraces (2,8374 ft), tree planting (85 ac), upland wildlife habitat management (181 ac), water wells (4) and watering facilities (1).

Results

The OCC documented improved water quality in Finn Creek due to installation of CPs through its statewide nonpoint source Rotating Basin Ambient Monitoring Program. By 2016, DO exceedances had dropped to 5 percent and remained at similar levels through the 2020 assessment period (Figure 2). Based on these data, Oklahoma removed Finn Creek from the CWA section 303(d) list for DO in 2016. Finn Creek now fully supports its WWAC beneficial use.

Partners and Funding

The OCC monitoring program is supported by the U.S. Environmental Protection Agency's (EPA's) CWA section 319 funding at an average annual statewide cost of \$1 million. Approximately \$500,000 in EPA section 319 funds support statewide water quality educational efforts through Blue Thumb. Approximately \$249,870 of these federal and state matching funds have been devoted to Finn Creek. From 2008 to 2018, NRCS supplied more than \$574,000 for CP implementation in Oklahoma through EQIP. In addition, many practices were funded by landowners based on recommendations through NRCS general technical assistance. Finally, the OCC, Garvin and McClain county conservation districts, and landowners funded more than \$55,193 worth of CPs (at least \$37,553 of which was funded by landowners through the LLCP).

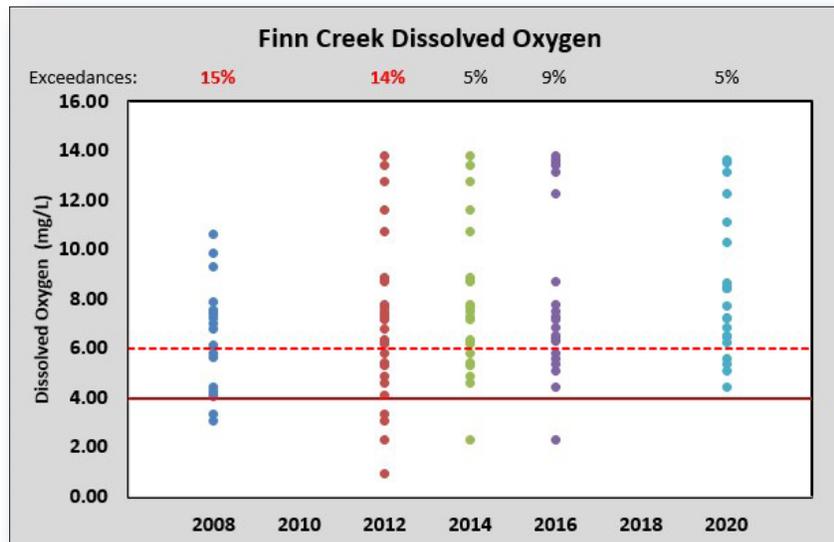


Figure 2. DO in Finn Creek improved with the installation of CPs.



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