



# NONPOINT SOURCE SUCCESS STORY

## Iowa

### Farmers Help Bring Back Life to Farmers Creek

#### Waterbody Improved

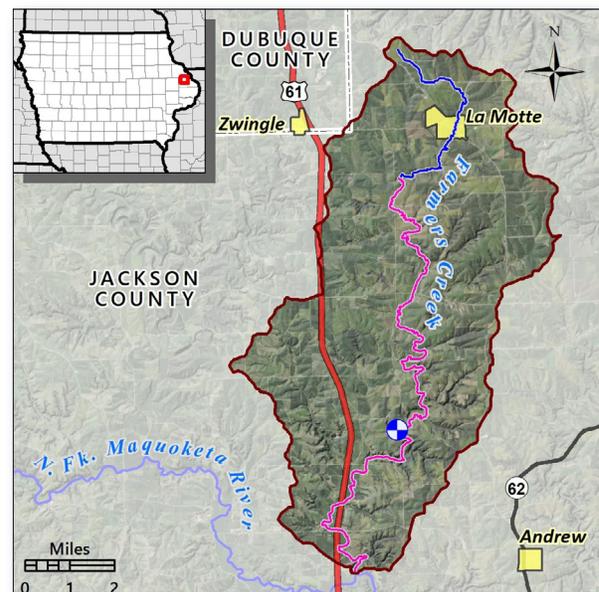
Farmers Creek in Jackson County was placed on Iowa's impaired waters list in 2000 due to fish kills in 1997 and 1998. An additional impairment was added in 2002 due to a decline in the biological community based on biological index scores. Nutrients and increased sediment delivery were identified as pollutants of concern in the watershed. Through the Farmers Creek Watershed Project, farmers and landowners installed conservation practices that reduced nutrients and sediment reaching the creek and improved the habitat for aquatic life. Monitoring shows Farmers Creek now meets the impairment delisting criteria for both the benthic macroinvertebrates and fish, and it is a candidate for delisting from the impaired water's list by the Iowa Department of Natural Resources (DNR) in the 2022 cycle due to the recovery of the biological community.

#### Problem

Farmers Creek is a warm water stream in Jackson County in eastern Iowa's Maquoketa River basin. The Farmers Creek watershed includes a total of 30,590 acres (47.8 square miles) of rolling farmland and bluffs (Figure 1). Due to the steep topography and soil characteristics, 86% of the watershed is considered highly erodible land. Land use in the watershed is primarily agricultural and is managed for row crop and livestock production, totaling 79% of the watershed. The village of LaMotte (population 260) is the only town within the watershed.

Nutrients and sediment delivery were identified as the primary nonpoint pollution concerns in the watershed. Pre-project sediment delivery to the stream estimated a loss of 0.45 tons of soil/acre/year or 13,623 tons/year. Additionally, two fish kills in 1997 and 1998 were determined to have been caused by livestock waste and runoff from land-applied dairy manure. The estimated fish loss in 1997 was 133,000 fish, valued at almost \$32,000. Less than one year later, another 4,264 fish died in another fish kill incident.

Sampling in 1999 found that the biological community in the stream was impaired. Low biological index scores for fish and benthic macroinvertebrates did not meet the criteria for the ecoregion that would ensure



Map: Andy Asell, Iowa DNR

Figure 1. The Farmers Creek watershed with biosampling site marked.

full support of the biological life use of the stream. Benthic macroinvertebrates are aquatic animals like insects, snails, mussels and crayfish that live on the stream bottom. As a result, Farmers Creek was added to the state's impaired waters list in 2000 and 2002 for fish and macroinvertebrate biological impairments.

## Story Highlights

A watershed project was launched in 2005 by the Jackson County Soil and Water Conservation District (SWCD) and ran successfully for 5 years. Led by coordinator Michelle Turner, the project attracted participation by many farmers and landowners who collectively installed the following practices during the life of the project: grassed waterways (83 acres), streambank protection (700 feet), 13 grade stabilization structures, 12 water/sediment control structures and three animal waste systems (Figure 2). Additionally, five cattle crossings were installed, as well as 700 feet of fencing to exclude cattle from the stream. As a result of these efforts, the project met the goal of a 40% reduction in sediment delivery by keeping 5,449 tons of soil/year on the land. That culture of conservation has continued even though the watershed project ended more than a decade ago. Farmers continue to implement practices in the watershed, which has helped to further improve the stream and the biological community.

## Results

Water quality in Farmers Creek improved in all sediment-related measures affecting habitat for aquatic animals. The decrease in sediment reaching the stream is responsible for much of the improvement in the biotic index scores (Figure 3). There is now a greater diversity of species for both fish and invertebrates, as well as increases in species that are sensitive to pollution and habitat disturbance. Farmers Creek now exceeds the impairment delisting criteria for both the benthic macroinvertebrates and fish. It is now a candidate for removal from Iowa's impaired waters list in the 2022 listing cycle.

## Partners and Funding

Funding and technical assistance to the Farmers Creek Project was provided by the Jackson SWCD, by Iowa DNR through U.S. Environmental Protection Agency Clean Water Act Section 319 grants (\$232,013), the Iowa Department of Agriculture and Land Stewardship's Watershed Protection Fund (\$248,751)



Photo: Steve Hopkins, Iowa DNR

Figure 2. Larry Deppe (landowner, left) and Michelle Turner (project coordinator, right) at Farmers Creek.

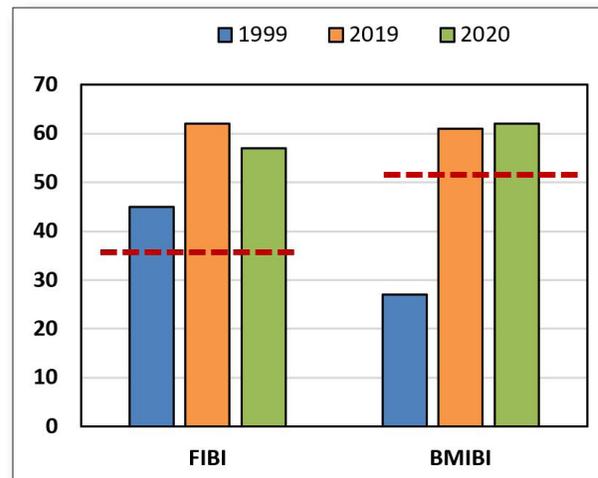


Figure 3. Index of biotic integrity (IBI) scores for fish (FIBI) and benthic macroinvertebrates (BMIBI). The red dotted line indicates delisting criteria scores. Scores above line meet delisting criteria.

and Water Protection Fund (\$18,470), funding from the U.S. Department of Agriculture Natural Resources Conservation Service's Environmental Quality Incentive Program (\$156,688), Iowa Resource Enhancement Assistance Program funds (\$495), and private landowners (\$270,183). Project funding totaled \$926,600.



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