NONPOINT SOURCE SUCCESS STORY

Missouri

Mining Land Reclamation Efforts Improve Water Quality in the East Fork Little Chariton River

Waterbody Improved

Coal mining operations occurred in the East Fork Little Chariton River Watershed until 1955. Eroding coal waste areas near Huntsville and in other areas of the watershed resulted in acid mine drainage (AMD) that degraded water quality in the East Fork Little Chariton River. Missouri identified 48.5 miles of the East Fork Little Chariton River as impaired by sulfate for the public drinking water supply beneficial use, causing the Missouri Department of Conservation (MDC) to add this waterbody to Missouri's 2006 Clean Water Act (CWA) section 303(d) list. Through a collaborative effort with watershed stakeholders, best management practices were implemented to address mining-related problems. Because water quality monitoring assessments showed that the public drinking water designated use had been attained, MDC removed the East Fork Little Chariton River from the Missouri section 303(d) list in 2010.

Problem

The East Fork Little Chariton River (Waterbody ID 0682) flows south and west through Macon, Howard, Randolph and Chariton counties in Missouri. The East Fork Little Chariton River is dammed near the city of Macon, forming Long Branch Lake, a 2,430-acre impoundment that provides both flood control and drinking water for surrounding areas.

Erosion of coal waste areas occurred near coal mines located throughout the watershed (Figure 1). Erosion of an area just east of Huntsville sent large amounts of coal wastes into Sugar Creek, a major tributary to the East Fork Little Chariton River, and spilled coal wastes onto more than 5 acres of farmland. AMD and sediment runoff from uncovered coal waste piles were aggravated by sulfate-rich drainage water from a flooded underground mine located below the city of Huntsville. Based on U.S. Geological Survey (USGS) water quality data collected in 2002–2005, the mean sulfate concentration was just above the 250 milligrams per liter (mg/L) criterion for protection of the public drinking water supply. As a result, a 48.5-mile segment of the East Fork Little Chariton River was placed on the 2006 Missouri CWA section 303(d) list of impaired waters.

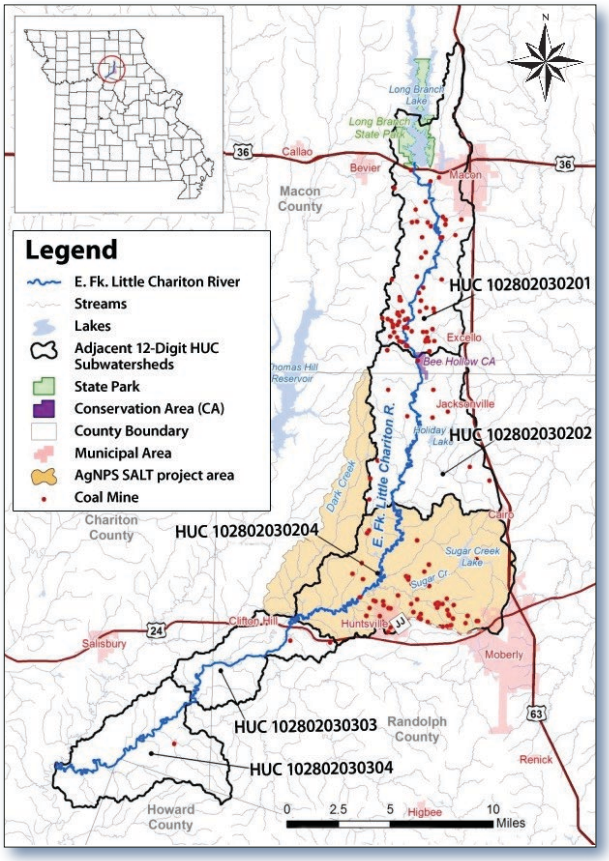

Figure 1. Location of coal mines and the AgNPS SALT project area in the East Fork Little Chariton River watershed in Missouri.

Story Highlights

Several projects and activities were implemented by stakeholders that led to improved water quality in the East Fork Little Chariton River. Voluntary installation of conservation practices by landowners was supported by state and federal soil and water conservation programs, including a positive response to the U.S. Department of Agriculture (USDA) Conservation Reserve Program (CRP), which removed environmentally sensitive lands from agricultural production and planted species that improved environmental quality. Other key projects included:

1. A 2005 CWA section 319 project, "The Assessment and Reclamation of Acidic Drainage from Abandoned Coal Mines near Huntsville, Missouri," assessed the effects of AMD on water quality in Sugar Creek and its tributaries and recommended options for remediation.
2. The MDC mine reclamation project remediated AMD problems within the 10-acre coal mining area in the Bee Hollow Conservation Area in 2009.
3. The Missouri Department of Natural Resources' (MDNR's) Land Reclamation Program required all mined lands to be reclaimed to an equal or better land use capability than existed before the mining operations. This included covering coal wastes and other AMD materials with a minimum of 4 feet of nontoxic material and replacing topsoil. Grazing of livestock or farming was supported on many of these reclaimed lands.
4. The Dark and Sugar Creek Watershed Agricultural Nonpoint Source Special Area Land Treatment (AgNPS SALT) Project (see Figure 1) implemented conservation practices from 2002 to 2009. Practices were selected in consultation with the Associated Electric Cooperative Incorporated (AECI) to help reduce AMD. The AgNPS SALT project covered a large area that included more than 50 abandoned coal mines intermingled among the agricultural lands, including the highest-priority abandoned mine areas near the city of Huntsville. The Randolph County Soil and Water Conservation District emphasized the placement of conservation practices on former mining lands and worked with landowners to implement practices that would help restore the land to its pre-mining use.

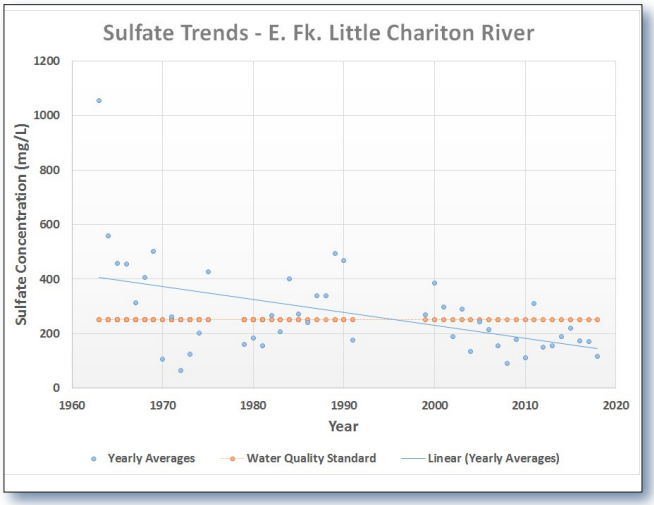

Figure 2. Sulfate levels in the East Fork Little Chariton River have declined and consistently meet standards.

Results

Data showed that the mean sulfate value of the East Fork Little Chariton River was reduced to 227 mg/L in 2008, as a result of sound planning by watershed partners; mine reclamation actions by MDNR, MDC and coal mining companies; conversion of intermingled reclaimed mining lands and cropland areas to CRP easements; and implementation of select soil and water conservation practices throughout the watershed to reduce erosion and runoff of coal wastes and sediments. As a result, the U.S. Environmental Protection Agency (EPA) approved the delisting of the East Fork Little Chariton River in 2010. More recent samples have continued to show that sulfate levels are steadily declining in the East Fork Little Chariton River (Figure 2).

Partners and Funding

Key project partners included the MDNR, MDC, USDA Natural Resources Conservation Service, USDA Farm Service Agency, USGS, EPA, the U.S. Department of the Interior's Office of Surface Mining Reclamation and Enforcement, AECI, private landowners, and Randolph, Chariton, Macon, and Howard county soil and water conservation districts. Three EPA CWA section 319 projects totaling $124,071 supported the watershed planning and remediation efforts.

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