NONPOINT SOURCE SUCCESS STORY

Georgia

Installing Best Management Practices within the Mill Creek Watershed Improved Dissolved Oxygen Levels

Waterbody Improved

In 2004, Mill Creek, a tributary of the Ogeechee River in Bulloch County, Georgia, was listed as impaired for dissolved oxygen (DO). The Georgia Environmental Protection Division (GAEPD) awarded the Central Savannah River Resource Conservation and Development (RC&D) Council a Clean Water Act (CWA) section 319 grant to assist local landowners with installing agricultural best management practices (BMPs) in the Mill Creek watershed from 2010 to 2013. Farmers received technical and financial assistance to develop nutrient and conservation management plans and install BMPs for better control of runoff containing animal waste, sediment, nutrients and chemical fertilizers into Mill Creek. Based on water quality monitoring data, GAEPD noted this waterbody as supporting its designated use (fishing) in 2014 and removed it from the CWA section 303(d) list of impaired waters.

Problem

Mill Creek is in the Southern Coastal Plain of southeast Georgia. In 2004 GAEPD put a 16-mile segment of Mill Creek (Newsome Branch to Ogeechee River near Statesboro: GAR030602020401) on Georgia's CWA section 303(d) list of impaired waters as not supporting its designated uses for fishing due to low DO.

One of the more predominant land uses in the Mill Creek watershed is agriculture, which can lead to low levels of DO due to surface water runoff that contains pollutants such as animal waste, sediment, nutrients and chemical fertilizers. Oxygen is needed to decompose the organic load from livestock, and excessive nutrient loading stimulates aquatic vegetation growth. As a result, when aquatic vegetation dies it requires additional oxygen to decompose the plant matter.

In September 2007 GAEPD published the *Revised Total Maximum Daily Load (TMDL) Evaluation for Twenty-Three Stream Segments in the Ogeechee River Basin for Dissolved Oxygen*. The dissolved oxygen TMDL for the Ogeechee River Basin was established as 133.9 pounds (lbs) per day measured as Average Annual Oxygen Demanding Substances to meet the water quality standard of a daily average of 5.0 milligrams per liter (mg/L) and no less than 4.0 mg/L at all times for waters supporting warm water species of fish.

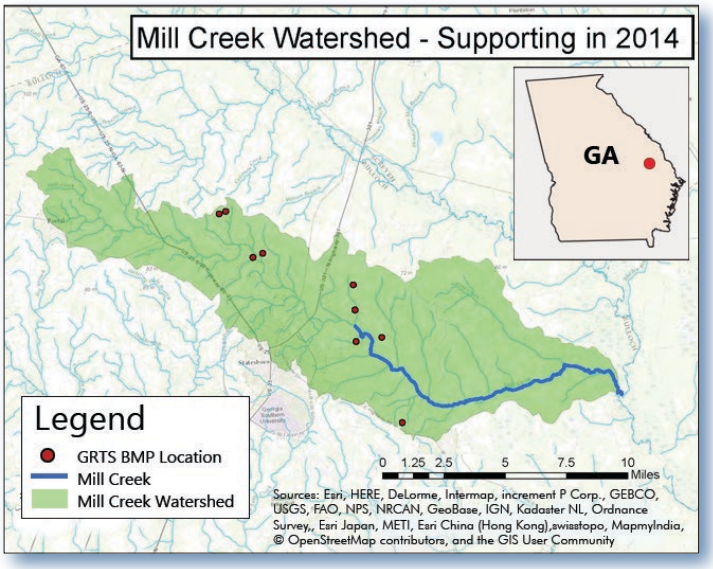

Figure 1. Landowners implemented agricultural BMPs in multiple locations throughout southeast Georgia's Mill Creek watershed.

Project Highlights

The Central Savannah River RC&D Council installed a series of 42 agriculture BMPs and wrote comprehensive nutrient/conservation management plans for six producer properties from July 2010 through January 2013 (Figure 1). The BMPs included fencing out livestock from streams with alternative watering

Figure 2. Watershed landowners installed numerous BMPs in the Mill Creek watershed, including (1) a fence and an alternative watering source practice that keeps cattle out of the stream (top photo) and (2) pasture hay planting that holds soil in place and reduces erosion (bottom photo).

sources and planting pasture/hay land areas (Figure 2). The U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS) had already assisted other farmers in the Mill Creek watershed with cost-share BMPs and also provided technical advisement to Central Savannah River RC&D Council during this project. In addition, the Ogeechee River Soil and Water Conservation District (District) helped the Central Savannah River RC&D convene a Steering/Advisory Committee that recruited farmers to participate in the project.

Results

Data show that this segment of Mill Creek now meets the water quality standards for DO and fully supports its fishing designated use (Figure 3). As a result, GAEPD removed the 16-mile segment of Mill Creek from Georgia's 2014 impaired waters list. The U.S. Environmental Protection Agency approved the

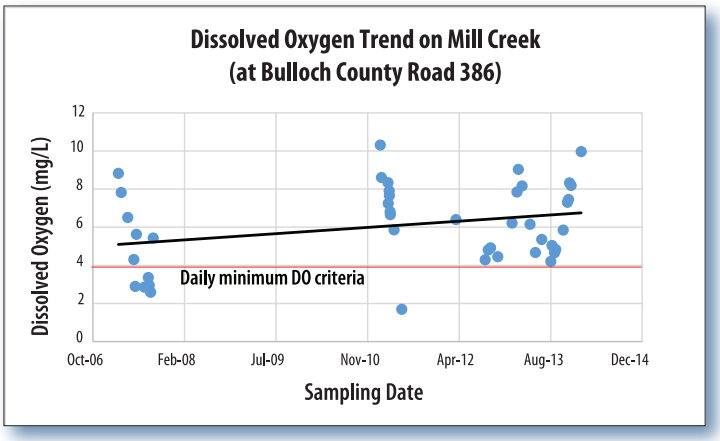

Figure 3. Data from Mill Creek sampling station 0202040301 show improving dissolved oxygen levels over time.

delisting of this stream segment in May 2014. Load reduction estimates indicated that completed BMPs were successful in decreasing loadings of organic material and chemicals, resulting in less consumption of oxygen. Total load reductions for nitrogen, phosphorus and sediment were modeled to be 2,495 lbs per year (yr), 1,089 lbs/yr and 1,055 tons/yr, respectively.

Partners and Funding

The District provided in-kind labor through their service on the advisory council. They assisted with promoting the Mill Creek project and approved proposed landowner contracts for BMPs. Agri-Supply Company helped fund a BMP Demonstration Field Day. The Central Savannah River RC&D and the District indicated they might use the completed BMP installations as demonstration sites for future educational events to promote BMP usage and further the advancement of conservation practices. NRCS assisted with educational outreach to landowners and approval of BMP installations.

GAEPD awarded the Central Savannah River RC&D a $313,370 CWA section 319 grant for project items approved in the work plan, *Lotts Creek & Mill Creek Water Quality Improvement Project*. Including in-kind match contribution, the total project amount was $522,624. These funds paid for agricultural BMPs, equipment, personnel, travel and supplies. Matching funds ($209,306 total) included local landowners' BMP cost-share funds as well as in-kind labor provided by landowners, the District, and Central Savannah River RC&D.

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