Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Mississippi

Adding Best Management Practices Reduces Bacteria in the Buttahatchee

Waterbody Improved

Nonpoint sources of fecal coliform (FC) bacteria, including animal waste from livestock and wildlife, as well as failing septic systems, caused the Buttahatchee River to violate the state's FC bacteria water quality standards. As a result, the Mississippi Department of Environmental Quality (MDEQ) placed a 29-mile segment of the Buttahatchee River on the state's Clean Water Act (CWA) section 303(d) list of impaired waters in 1998 for not supporting its secondary contact recreation designated use because of FC bacteria. Using CWA section 319 and matching funds from partnering agencies, project partners installed 59 best management practices (BMPs) on 4,702 acres within the watershed. Bacteria levels declined and now meet water quality standards, prompting MDEQ to remove this segment from the state's list of impaired waters in 2012.

Problem

The Buttahatchee River is a major waterbody in the Tombigbee River Basin. From its headwaters in Winston and Marion counties in Alabama, the river flows southwesterly approximately 59 miles to the Mississippi state line. It then continues another 35 miles to its confluence with the Tombigbee River at the boundary of Lowndes and Clay counties in Mississippi (Figure 1). The Buttahatchee River watershed covers approximately 77,581 acres and is composed of approximately 7 percent cropland, 14 percent pastureland and 79 percent timberland.

In the mid-1990s, monitoring data showed exceedances of the state's bacteria water quality standard. The seasonally adjusted standard requires that from May to October, when water contact recreation activities are expected to occur, the maximum allowable level of FC bacteria concentration may not exceed a geometric mean of 200 colony forming units (CFU) per 100 milliliters (mL) of water; plus, no more than 10 percent of the samples examined during any month may exceed 400 CFU/100 mL. From November to April, when water contact recreation activities are not expected to occur, the maximum allowable level of FC bacteria concentration may not exceed a geometric mean of 2,000 CFU/100 mL, and no more than 10 percent of the samples examined during any month may exceed 4,000 CFU/100 mL. Because 1990s data showed water quality exceedances, MDEQ added a 29-mile-long segment (MS 019M) of the Buttahatchee River to Mississippi's 1998 CWA section 303(d) list of impaired waters as only partially supporting its secondary contact recreation designated use due to impairment caused by FC bacteria.

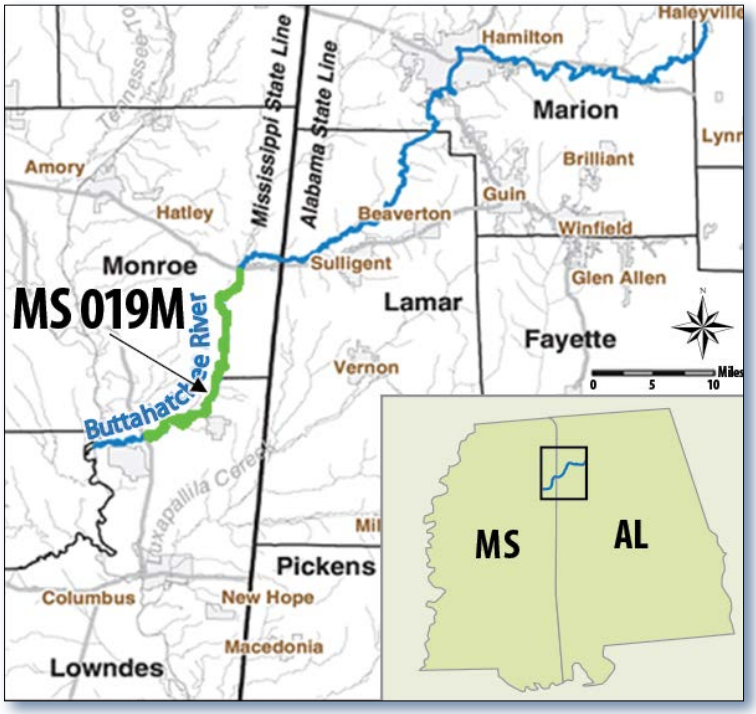

Figure 1. The Buttahatchee River watershed includes portions of Alabama and Mississippi. Restoration efforts reduced FC bacteria levels and led to the delisting of a 29-mile segment (MS 019M).

In 1999 MDEQ's Water Quality Division developed a total maximum daily load (TMDL) to bring Buttahatchee River segment MS 019M into compliance with state bacteria water quality standards. Using low-altitude photography, the state identified failing septic tanks and animals in the streams as likely sources of FC bacteria loading into the Buttahatchee River. On the basis of this information, the TMDL established goals of reducing FC bacteria

Figure 2. Landowners installed fencing to keep livestock out of streams.

loading from failing septic tanks and cattle in streams by 50 percent and 85 percent, respectively.

Project Highlights

In 2004 project partners finalized the *Buttahatchee River Watershed Implementation Plan*, which provided a framework to guide restoration efforts. Between 2004 and 2006, the Mississippi Department of Health (MSDH) generated a map of failing septic systems in the watershed and worked with MDEQ to distribute educational pamphlets on septic system maintenance/repair to the local community throughout the watershed. These efforts encouraged landowners to address failing septic systems, thereby reducing FC bacteria loadings to the Buttahatchee River.

From 2005 to 2007, project partners installed 59 agricultural BMPs at participating sites throughout the Buttahatchee watershed, covering approximately 4,702 acres. The BMPs included pasture and hay land planting on 1,266 acres; heavy-use area protection (stabilization of areas frequently and intensively used by people, animals or vehicles to control runoff) on 224 acres; prescribed grazing on 1,198 acres; nutrient management practices on 1,932 acres; installation of 24,449 feet of livestock exclusion fencing (Figure 2); and installation of three tanks/troughs for livestock watering on 28 acres.

Several partners played key roles in the BMP implementation efforts. MDEQ distributed CWA section 319 funding for BMP implementation in targeted areas throughout the watershed and managed those projects. The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)

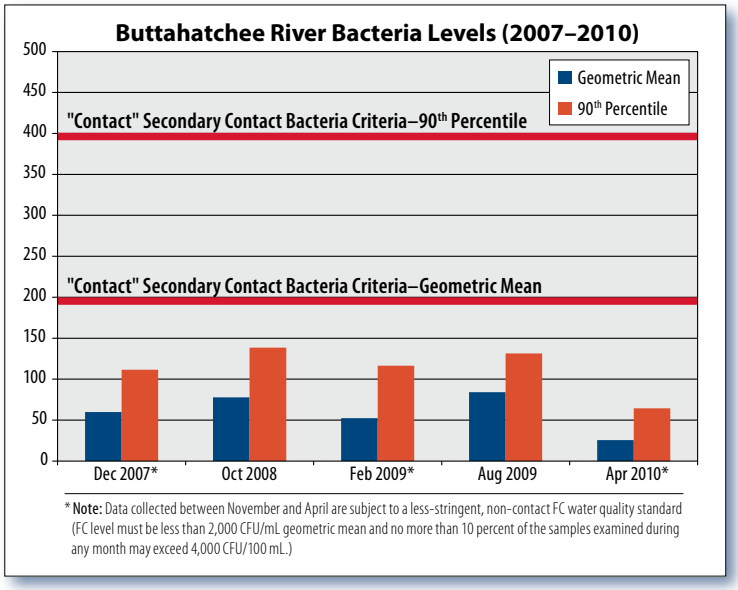

Figure 3. Data collected from 2007 to 2010 shows that the Buttahatchee River consistently meets the secondary contact recreation use FC bacteria water quality standard year-round.

provided the BMP standards and helped with final inspections of BMPs. The Lowndes and Monroe County Soil and Water Conservation Districts worked with landowners to implement BMPs.

Results

Watershed restoration efforts reduced the FC bacteria loads entering the Buttahatchee River. Based on post-BMP implementation water quality monitoring data (collected between 2007 and 2010), bacteria levels now meet Mississippi's water quality standards (Figure 3). In addition, EPA pollutant reduction models run after 2007 indicated that installed BMPs had reduced sediment loading into Buttahatchee River segment MS 019M by 19,462 tons. On the basis of these data, MDEQ has determined that segment MS 019M now meets water quality standards to support the secondary contact recreation designated use and therefore has removed the 29-mile segment from the state's list of impaired waters (in 2012).

Partners and Funding

Support for this project came from $178,077 in U.S. Environmental Protection Agency CWA section 319 funds and $122,784 in matching funds from the partnering agencies. Partners include MDEQ, Mississippi Soil and Water Conservation Commission, NRCS, and the Lowndes and Monroe County Soil and Water Conservation Districts.

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