



NONPOINT SOURCE SUCCESS STORY

Mississippi

Implementing Best Management Practices Restored the Biological Integrity of Bahala Creek

Waterbody Improved

The Mississippi Department of Environmental Quality (MDEQ) placed Bahala Creek (Waterbody ID 513811) on the state's 2006 Clean Water Act (CWA) section 303(d) list of impaired waters for aquatic life use impairment. Implementation of best management practices (BMPs) through U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) programs helped to abate sediment entering streams in the watershed from contributing land use activities. As a result of the BMPs implemented in the watershed, impacts from sediments were reduced and the water quality in Bahala Creek improved. In 2022, Bahala Creek was assessed as attaining the aquatic life use in the state's CWA section 303(d) list and is no longer on the impaired waters list.

Problem

Bahala Creek is in the Russell Creek-Bahala Creek watershed (HUC 031800030101) in Mississippi's Copiah County. This watershed is within Mississippi's Pearl River drainage basin. The watershed spans approximately 35,521 acres (ac) and is part of the larger Pearl River drainage basin. Land use within the Russell Creek-Bahala Creek Watershed is 59.8% forest, 17.7% pasture/grassland, 5.9% urban, 9% scrub-barren, 7.3% wetland, and less than 1.0% water (Figure 1). Bahala Creek runs through the center of the watershed and serves as the primary receiving stream for water flowing through the watershed.

Biological community data are routinely used by MDEQ to determine if streams are healthy enough to support a balanced aquatic community. Bahala Creek (Waterbody ID: MS513811) was monitored as part of Mississippi's biological monitoring program. Using MDEQ's index of biological integrity, the Mississippi Benthic Index of Stream Quality (M-BISQ), Bahala Creek scored below the attainment threshold used to assess aquatic life use for this region of the state. MDEQ placed Bahala Creek on the state's 2006 CWA section 303(d) list of impaired waters for aquatic life use impairment. Upon additional investigation, it was determined that excessive sedimentation was causing the impairment. As a result, MDEQ developed a sediment TMDL for Bahala Creek in 2009 that called for a 98% reduction in sediment loading to the stream.

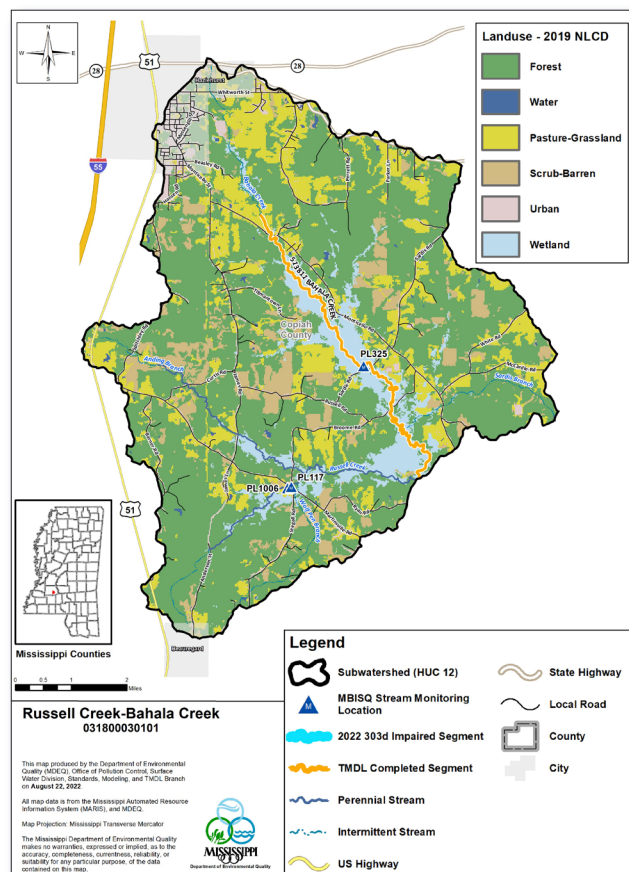


Figure 1. The Russell Creek-Bahala Creek watershed is in southwest Mississippi's Copiah County.



Figure 2. Grade stabilization structure BMP.



Figure 3. Heavy use area protection BMP.

Story Highlights

The Environmental Quality Incentives Program (EQIP) is a voluntary conservation program offered by the United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS). The EQIP program provides financial and technical assistance to agricultural and forestry producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation, and improved or created wildlife habitat. From 2005 through 2019, NRCS worked with the Copiah County Soil and Water Conservation District and local producers to implement BMPs, including 18 grade stabilization structures (Figure 2), 38,777 feet (ft) of fencing, 30 ac of critical area planting, and 12,514 ft² of heavy use area protection (Figure 3) in the Russell Creek-Bahala Creek Watershed. Landowners also implemented prescribed grazing, alternative watering facilities, nutrient and pest management, tree/shrub establishment, pasture/hayland planting, and other BMPs. The implementation of these BMPs is estimated to save more than 781 tons of soil per year, with additional load reductions of nearly 6,709 pounds of phosphorus and more than 34,221 pounds of nitrogen per year.

Results

In 2020 MDEQ returned to Bahala Creek to collect biological community data (Figure 4). The M-BISQ data was above the attainment threshold used to assess aquatic life use support for this region. Using this 2020 biological community data, Bahala Creek was assessed



Figure 4. Bahala Creek during M-BISQ sampling.

as attaining the aquatic life use with an M-BISQ score of 44.7 (reference condition score: 43.7). As a result, MDEQ removed Bahala Creek from the state's CWA section 303(d) list in the 2022 cycle.

Partners and Funding

The restoration of Bahala Creek was a collective effort between NRCS, the Mississippi Soil and Water Conservation Commission (MSWCC), the Copiah County Soil and Water Conservation District, and local producers. From 2006 through 2019, nearly \$828,000 were used in the Russell Creek-Bahala Creek watershed. MDEQ works with NRCS, MSWCC, and other partners to evaluate existing water quality information and data to measure environmental improvements achieved from implementing conservation practices. This evaluation links actions with outcomes that result in better water quality in Bahala Creek.



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