



NONPOINT SOURCE SUCCESS STORY

Louisiana

Implementing Agricultural Best Management Practices Reduces Total Dissolved Solids in Bayou Queue de Tortue

Waterbody Improved

As far back as 2002, the Louisiana Department of Environmental Quality (LDEQ) Integrated Report (IR) has indicated total dissolved solids (TDS), total suspended solids (TSS), sedimentation/siltation and turbidity as impairments to fish and wildlife propagation (FWP) use support in Bayou Queue de Tortue. LDEQ chose Bayou Queue de Tortue, LDEQ subsegment 050501, as one of the 40 priority watersheds and partnered with the Louisiana Department of Agriculture and Forestry (LDAF) and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) to implement best management practices (BMPs) to improve the health of the waterbody. The 2014 IR shows that FWP is no longer impaired due to TDS. It remains impaired by turbidity, but water quality data show progress.

Problem

Bayou Queue de Tortue is 56 miles long and flows from the city of Duson to the Mermentau River in Riceville, Louisiana (Figure 1). The bayou receives much of its flow from agricultural runoff from rice and soybean production, and is heavily hydromodified in the upper and middle reaches. Dredging has caused a reduction in flow velocity and eroding spoil banks have increased the amount of solids found in the water column contributing to high turbidity and TDS.

LDEQ has listed the FWP use in this subsegment as impaired since 2002 with suspected causes of impairments including low dissolved oxygen (DO), turbidity, TSS, TDS, sedimentation/siltation, phosphorus (total), nitrate/nitrite (nitrate + nitrite as N), mercury in fish tissue and Fipronil (a broad-spectrum insecticide). Suspected sources of impairments were irrigated crop production, atmospheric deposition—toxics, natural conditions, flow alterations from water diversions, and non-irrigated crop production.

Project Highlights

LDAF began implementing BMPs in 2004 and completed implementation in January 2017. BMPs implemented to date include conservation crop rotation (328 sites; 1,117.4 acres [ac]), residue management (344 sites; 6,008.2 ac), grade stabilization structures (410 sites; 32 ac), irrigation land leveling (464 sites; 4,638.72 ac), shallow water for wildlife (646 sites;

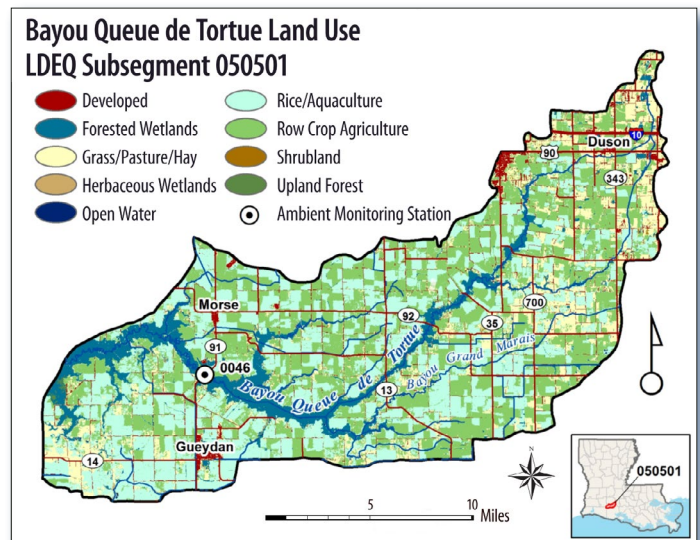


Figure 1. Southwestern Louisiana's Bayou Queue de Tortue watershed is influenced by agricultural uses including pastureland and rice and soybean production.

3,112.4 ac), nutrient management (590 sites; 17,052.2 ac), pest management (595 sites; 17,052.2 ac), record keeping (tracking pesticide and nutrient use to avoid overapplication) (748 sites; 17,052.2 ac), and dry seeding (2,232.4 ac).

A watershed implementation plan was developed for Bayou Queue de Tortue in 2013. Bayou Queue de Tortue was made a priority in The Gulf of Mexico Initiative (GoMI). BMP implementation occurred in 2012–2014 to improve ecosystem health in the Gulf of



Figure 2. Irrigation land levelling in the Bayou Queue de Tortue watershed.

Mexico, and also as part of the National Water Quality Initiative (NWQI) starting in 2014.

After reviewing the BMPs implemented and their purposes, LDEQ determined that the most effective in reducing the TDS loads are the grade stabilization structures (constructed between October 2013 and September 2016) and the irrigation land leveling technique (implemented between April 2013 and March 2017) (Figure 2).

LDEQ and its partners began to see steady improvement in the TDS levels in early 2016. LDEQ plans to continue monitoring improvements from BMP implementation, and will use the information to apply to future restoration efforts in other watersheds.

Results

As a result of BMP implementation, water quality has improved, prompting LDEQ to remove TDS as a cause of FWP impairment in the 2014 IR. The FWP use is considered impaired if more than 30 percent of the TDS samples for a reporting period (typically one year) exceed 260 milligrams per liter (mg/L). The ambient water quality network data in Figure 3 shows only one TDS exceedance between May 2012 and September 2016, well below the 30 percent threshold.

In 2014 the TSS sedimentation/siltation and turbidity impairment classifications were combined and listed simply as turbidity. Although turbidity is still indicated as a cause of impairment to FWP, the ambient and monitoring data show a downward trend throughout 2016. Only two data points exceed 150 nephelometric turbidity units (NTU), a criterion for FWP use support

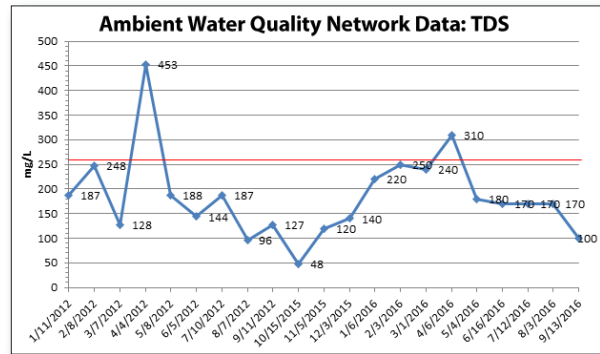


Figure 3. Ambient Water Quality Network data for TDS at site 0046 from January 2012 to September 2016.

in the Mermentau River (downstream of Bayou Queue de Tortue). In the watershed implementation plan, LDEQ predicted that the average turbidity would be reduced to 149 NTU by 2016. The average of the 2016 monitoring data is 84 NTU, which is 44 percent better than predicted!

Partners and Funding

DEQ spent a total of \$108,350 of Clean Water Act (CWA) section 319 funds on the Bayou Queue de Tortue Project: \$10,350 on laboratory analysis and \$98,000 on sampling staff and supplies. LDAF and NRCS were instrumental in implementing BMPs in the Bayou Queue de Tortue watershed. A total of 5,827.8 acres are currently under contract. The total payments made in the Bayou Queue de Tortue CWA section 319 project from LDAF are \$981,777.67 from 2013 to 2017. The total match received is \$1,337,336.58.

The conservation programs used to support the goals and objectives of the GoMI are the USDA's Environmental Quality Incentives Program (EQIP), Conservation Stewardship Program, Wetlands Reserve Program, Grasslands Reserve Program, and the Farm and Ranch Lands Protection Program. This watershed project receives EQIP funds which in some cases are leveraged by funds from local and state partners. The sign up for the Bayou Queue de Tortue 319 Project occurred in February 2013. The Acadia and Vermilion Soil and Water Conservation District boards set a cap of \$40,000 per contract with a maximum of one contract per farm entity per parish. A total of 45 applications were received and 38 contracts were written for a total of \$1,059,967. The total amount allocated for BMPs was \$1,075,000.



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