



# NONPOINT SOURCE SUCCESS STORY

## Louisiana

### Implementing Best Management Practices Results in Bayou des Cannes Meeting Its Standard for Total Dissolved Solids

#### Waterbody Improved

Bayou des Cannes, subsegment 050101, was added to the Louisiana Department of Environmental Quality's (LDEQ) 2008 Clean Water Act (CWA) section 303 (d) list for not supporting its fish and wildlife propagation (FWP) designated use, due to elevated levels of total dissolved solids (TDS). The U.S. Department of Agriculture–Natural Resources Conservation Service (USDA NRCS) as well as the Louisiana Department of Agriculture and Forestry (LDAF) implemented best management practices (BMPs) in the watershed. In December 2015, LDEQ Water Surveys began collecting water quality samples to monitor critical areas and to evaluate water quality changes in the watershed. Recent data indicate the subsegment no longer exceeds the TDS standard; as a result, LDEQ removed the waterbody's FWP impairment, due to TDS, from the state's draft 2018 Integrated Report (IR).

#### Problem

Bayou des Cannes is a 68-mile perennial stream located in southwestern Louisiana. The northern portion of the watershed is characterized by rice, pastureland and soybeans, and the southern segment features aquaculture, rice and a large area of forested wetland. The watershed is sparsely populated outside of its municipalities (Figure 1). Excessive nutrient deposition, stemming from agriculture, led to increased concentrations of TDS in the watershed.

TDS data collected during the 2007–2008 ambient water quality network (AWQN) monitoring cycle revealed four of 11 samples (36%) exceeded the standard (i.e., no more than 25% of samples may exceed 260 milligrams per liter [mg/L]) (Figure 2). Therefore, Bayou des Cannes was listed on LDEQ's 2008 IR for not supporting its FWP use. According to LDEQ's 2016 IR, the waterbody's FWP use remained impaired due to high levels of TDS, in addition to increased concentrations of turbidity, nitrate-nitrite, phosphorus (P), and low concentrations of dissolved oxygen (DO).

#### Story Highlights

Between 2009 and 2018, USDA NRCS and LDAF implemented BMPs in Bayou des Cannes to reduce erosion, sedimentation and nutrient runoff (Table 1). Outreach activities were initiated before and during BMP implementation to educate landowners on the

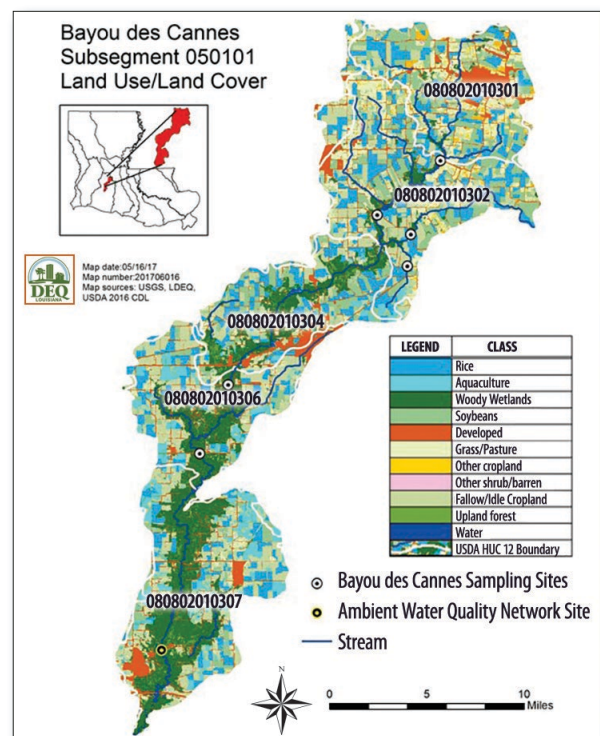


Figure 1. Land use in Bayou des Cannes.

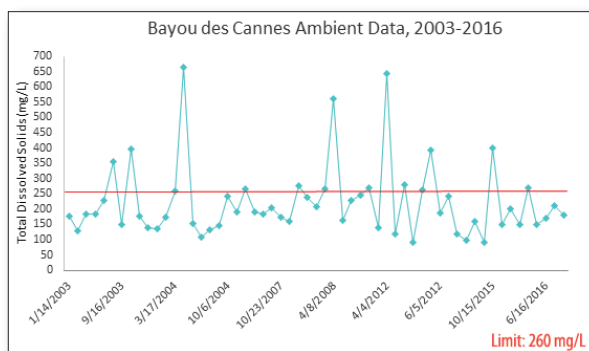
importance of reducing agricultural impacts to the environment. During local soil and water conservation district (SWCD) meetings, technical specialists presented details on the bayou's water quality impairments, sources, causes, and methods of remediation.

**Table 1. Practices installed in the watershed by NRCS (2009–2016) and LDAF (2015–2018).**

Practice type	Amount installed	
	By NRCS	By LDAF
Irrigation land-leveling (acres [ac])	9,102	3,759
Brush management (ac)	135	
Forage and biomass planting (ac)	723	
Grade stabilization structures	256	51
Heavy use protection areas (ac)	2,175	
Irrigation pipeline (feet [ft])	33,838	
Livestock shade structure	1	
Nutrient management (ac)	419	8,857
Pasture and hay planting (ac)	96	
Prescribed grazing (ac)	266	
Shallow water development (ac)	10,368	
Watering facilities (ac)	10	
Critical area planting (ac)	0.5	
Fencing (ft)	6,242	
Mulching (ac)	0.5	
Prescribed burning (ac)	92	
Water control irrigation	6	
Water pipeline (ft)	34,257	
Irrigation water management (ac)		7,783
Conservation crop rotation (ac)		10,225
Pest management (ac)		8,817
Shallow water for wildlife (ac)		2,568

LDAF began implementing BMPs in March 2015, focusing initially on the central and northern areas of the subsegment, which were identified by LDAF as having significantly larger coverage and total acreage of intense agricultural land uses known to cause the impairments. High-priority areas were based on land use/land cover data, output from the Soil and Water Assessment Tool (SWAT) model, and AWQN monitoring data. Output from the model was used to identify critical areas within those prioritized by LDAF, to help develop ranking criteria for selecting applications for implementation. Thirty-four applications have been received and 29 contracts have been written. Implementation will continue through 2023.

LDEQ Water Surveys began collecting water quality samples and in-situ readings at seven locations for field parameters and nutrients in December 2015. The sampling effort entails monitoring critical areas



**Figure 2. Bayou des Cannes TDS data, 2003–2016.**

identified by SWAT, evaluating water quality changes, and utilizing data to aid in future placement of BMPs. Sampling sites were selected based on watershed drainage and hydrology, SWAT results, land use data, implementation areas, and accessibility. In-stream baseline data was collected for 12 months. Long-term monitoring began in January 2017, and will continue throughout the implementation period. Post-BMP monitoring will be performed for approximately one year after implementation. LDEQ developed a watershed implementation plan in 2017.

## Results

TDS data collected from October 2015 to August 2016 show two of 11 samples (18%) exceeded the standard (Figure 2). Based on these data, the subsegment currently supports its FWP designated use due to decreased TDS; as a result, LDEQ removed TDS as a cause of impairment in the draft 2018 IR. The subsegment remains impaired for failing to support its FWP use due to excessive nitrate-nitrite, total P, turbidity, and low DO concentrations.

## Partners and Funding

The U.S. Environmental Protection Agency, LDEQ, LDAF, the Evangeline Parish SWCD, and USDA NRCS are responsible for improving the water quality in Bayou des Cannes. LDAF has allocated approximately \$927,000 for BMP activities, of which \$358,132 has been expended. Approximately \$481,992 has been received in matching funds. LDEQ has allocated approximately \$200,640 (\$120,384 federal and \$80,256 matching funds), for LDEQ nonpoint source staff activities, and water quality sampling and analysis. The USDA NRCS's total financial assistance obligation was approximately \$2,729,790.



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