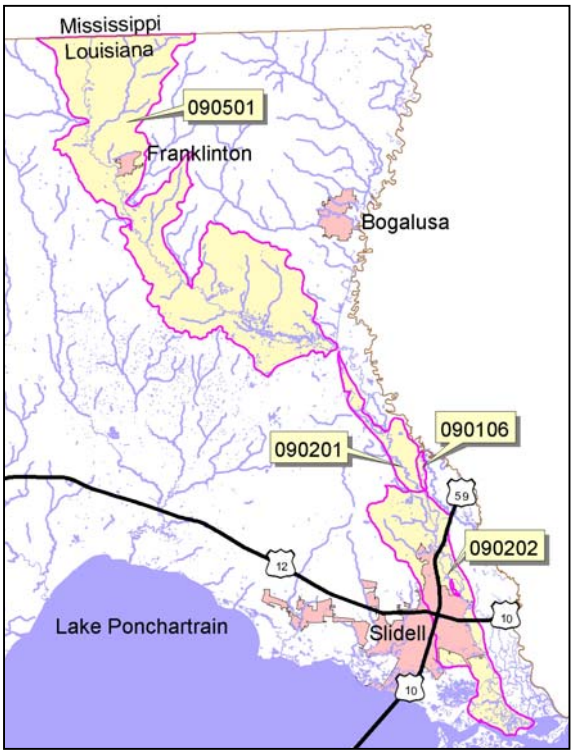
TMDLS FOR TURBIDITY FOR SUBSEGMENTS 090106, 090201, 090202, AND 090501 IN THE PEARL RIVER BASIN, LOUISIANA
Fact Sheet



Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's (EPA) Regulations (Title 40 of the *Code of Federal Regulations* [CFR] Part 130) require states to develop total maximum daily loads (TMDLs) for waterbodies that are not meeting water quality standards. A TMDL establishes the amount of a pollutant that a waterbody can assimilate without exceeding its water quality standard for that pollutant. TMDLs provide the scientific basis for establishing water quality-based controls to reduce pollution from both point and nonpoint sources to restore and maintain the quality of the state's water resources.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody, and may include a future growth (FG) component.

This report presents TMDLs that have been developed for turbidity for Holmes Bayou (subsegment 090106), West Pearl River (subsegments 090201 and 090202), and Bogue Chitto River (subsegment 090501). All of these subsegments are located in the Pearl River basin in southeastern Louisiana. The portion of the Pearl River basin that is in Louisiana is bounded by the State of Mississippi on the north and east. These four subsegments are primarily undeveloped areas with significant amounts of wetlands, forest, and grass/shrub in each subsegment, with the exception of subsegment 090202, which has a large amount of urban area (Slidell).

All four of these subsegments were included on Louisiana's final 2004 303(d) list as not supporting their designated uses of fish and wildlife propagation and outstanding natural resource waters. These subsegments were ranked as priority #2 for TMDL development. The suspected source varied for the subsegments, but all of the subsegments cited sources outside of Louisiana as a cause (upstream drainage from Mississippi), along with natural sources (all subsegments except 090202), silviculture (subsegments 090202 and 090501), and gravel mining (subsegment 090202).

Because turbidity cannot be expressed as mass load, these turbidity TMDLs were expressed using TSS as a surrogate for turbidity. Regressions between TSS and turbidity were developed for these subsegments and were used to establish target TSS concentrations using turbidity criteria from the state water quality standards. The applicable turbidity criterion for these four subsegments was 25 NTU because all four subsegments are designated as scenic with outstanding natural resource as a designated use.

These TMDLs were developed using a load duration curve method. This method determines allowable pollutant loadings for a wide range of stream flow conditions. There are five primary steps for applying this methodology.

The first step is to develop a flow duration curve using a long record of daily flows from a USGS flow gage on the impaired stream or as close as possible to it. Next a load duration curve is developed by multiplying the stream flow values in the flow duration curve by the target TSS concentration. The resulting values are loads of TSS per day. In the third step, observed loads are calculated by multiplying observed TSS concentrations by the stream flow for that day. The observed loads are plotted with the load duration curves made in the second step.

The fourth step is to calculate the TMDL, MOS, FG, WLA, and LA. The TMDL is calculated as the area underneath the load duration curve. The MOS and FG were each set to 10% of the TMDL to be consistent with typical TMDL procedures used by the Louisiana Department of Environmental Quality (LDEQ). The WLAs were calculated using data retrieved from the permits for each point source that discharges inorganic TSS (since organic TSS would be addressed in dissolved oxygen TMDLs). For permits without TSS limits or flow rates, these parameters were assumed to calculate a WLA. Each LA for nonpoint sources was then calculated as the TMDL minus the MOS, FG, and WLA.

The fifth step is to calculate percent reductions required to meet water quality criteria. The percent reductions were calculated by reducing the observed TSS loads until none of the observed loads are above the load duration curve. The results of the calculations for the TMDL components and percent reductions are summarized in Table 1.

Table 1. Summary of turbidity TMDLs for four subsegments in the Pearl River basin.

Subsegment	Stream Name	Loads (tons/day of TSS)					Percent Reduction Needed
		WLA	LA	MOS	FG	TMDL	
090501	Bogue Chitto River	1.7E-2	203.4	25.4	25.4	254.3	66%
090201	West Pearl River	0	693.9	86.7	86.7	867.3	89%
090106	Holmes Bayou	0	231.7	29.0	29.0	289.7	89%
090202	West Pearl River	7.8E-3	957.5	119.7	119.7	1196.9	78%

For More Information

EPA is seeking input on these draft TMDLs, including comments, information, and data from the general and affected public. For additional information on this TMDL project, please contact the EPA staff listed below:

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