

FINAL

TMDLs for Fecal Coliform Bacteria for Selected Subsegments in the Mississippi River Basin, Louisiana

(070203, 070401, 070403, 070404,
070501, 070502, 070503, 070505, 070601)

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EXECUTIVE SUMMARY

Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's (EPA's) Water Quality Planning and Management Regulations (Title 40 of the *Code of Federal Regulations* [CFR] Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for impaired waterbodies. 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 a state to establish 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 (USEPA 1991).

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. The TMDL components are illustrated using the following equation:

$$TMDL = \sum WLAs + \sum LAs + MOS + FG$$

The study area for this TMDL includes nine subsegments in the Mississippi River Basin in southeastern Louisiana. The Mississippi River originates in Minnesota and flows through Wisconsin, Iowa, Illinois, Missouri, Kentucky, Tennessee, Arkansas, and Mississippi before crossing the Louisiana state border. The upper portion of the Mississippi River in Louisiana forms the boundary between Louisiana and Mississippi, and the lower Mississippi River flows through the southeastern portion of Louisiana in a southeasterly direction (LDEQ 2000). The river flows through Baton Rouge and New Orleans and eventually into the Gulf of Mexico. This report addresses only portions of the Mississippi River below the Mississippi state line.

The upper subsegments in the Mississippi River Basin (subsegments 070203, 070501, 070502, 070503, and 070505) are dominated by forest with some large areas of wetlands in some of the subsegments. There is also a large area of cropland in subsegment 070505 and a large urban area (Baton Rouge) in subsegment 070503. The lower portion of the Mississippi River Basin (subsegments 070401, 070403, 070404, and 070601) is dominated by open water and wetlands.

The Louisiana Department of Environmental Quality (LDEQ) listed nine subsegments in the Mississippi River Basin on Louisiana's 2006 section 303(d) list (LDEQ 2006) for fecal coliform bacteria impairments (Table ES-1). The impaired designated uses for the nine subsegments are primary contact recreation and oyster propagation.

The numeric water quality criteria that apply to the impaired subsegments in the Mississippi River Basin and that were used to calculate the total allowable loads are presented in Table ES-2.

Table ES-1. Section 303(d) listing information for subsegments included in this report

Subsegment number	Subsegment name	Subsegment description	Impaired designated use ^a	Suspected sources of impairment
070203	Devil's Swamp Lake and Bayou Baton Rouge	--	PCR	Discharges from municipal separate storm sewer systems (MS4), sanitary sewer overflows (collection system failures), unknown sources
<u>070401^b</u>	Mississippi River	Passes-Head of Passes to Mouth of Passes (Estuarine) (Includes Southwest, South, North Passes and Pass a Loutre)	OYS	Municipal point source discharges, sources outside state jurisdiction or borders.
070403 ^b	Octave Pass and Main Pass	(Estuarine)	PCR	Municipal point source discharges, sources outside state jurisdiction or borders.
070404 ^b	Tiger Pass, Red Pass, Grand Pass, Tante Phine Pass	(Estuarine)	PCR	Municipal point source discharges, sources outside state jurisdiction or borders.
070501	Bayou Sara	Mississippi State Line to Mississippi River confluence	PCR	Sanitary sewer overflows (collection system failures)
<u>070502</u>	Thompson Creek	Mississippi State Line to Mississippi River confluence	PCR	On-site treatment systems (septic systems and similar decentralized systems)
<u>070503</u>	Capitol Lake	--	PCR	Unknown sources
070505	Tunica Bayou	Headwaters to Mississippi River	PCR	On-site treatment systems (septic systems and similar decentralized systems)
070601	Mississippi River Basin	Coastal Bays and Gulf Waters to State three-mile limit	OYS	Municipal point source discharges, sources outside state jurisdiction or borders.

^a PCR = primary contact recreation OYS = oyster propagation

^b In 2007 and included in the 2008 Integrated Report, subsegments 070401, 070402, 070403, and 070404 have been combined into subsegment 070401.

Source: LDEQ 2006

The fecal coliform bacteria TMDLs in the Mississippi River Basin were calculated using both a load reduction approach and load duration curve approach. The load reduction approach was used for the subsegments in the lower Mississippi River Basin and subsegments 070203 (Bayou Baton Rouge) and 070503 (Capitol Lake) in the upper Basin. These segments represent areas of open water, wetlands, and lakes where streamflow is negligible component of hydrology. Using the load reduction approach, the percent reduction for each LDEQ monitoring station was calculated on the basis of observed levels of constituents. The minimum percent reduction was calculated so that the monitoring data would meet criteria at that station. The percent reduction was applied to the entire subsegment.

The load duration curve approach was used for the remaining subsegments in the upper Mississippi River Basin. The load duration curve methodology illustrates allowable loading at a wide range of streamflow conditions. The steps for applying this methodology were (1) developing a flow duration curve; (2) converting the flow duration curve to load duration curves; (3) plotting observed loads with load duration curves; (4) calculating the TMDL, MOS, FG, WLA, and LA; and (5) calculating percent reductions. Most fecal coliform bacteria TMDLs were developed on a seasonal basis (i.e., calculating allowable loads and percent reductions for both

summer and winter) because of the seasonal water quality criteria. Subsegments with oyster propagation as their designated use had fecal coliform bacteria TMDLs developed to apply year-round.

Table ES-2. Numeric water quality criteria for the listed subsegments

Subsegment number	Subsegment name	Bacteria ^a (colonies/100 mL)
070203	Devil's Swamp Lake and Bayou Baton Rouge	400 (5/01–10/31) 2,000 (11/01–4/30)
070401	Mississippi River	14 (median) 43 (10%)
070403	Octave Pass and Main Pass	None ^b
070404	Tiger Pass, Red Pass, Grand Pass, Tante Phine Pass	None ^b
070501	Bayou Sara	400 (5/01–10/31) 2,000 (11/01–4/30)
070502	Thompson Creek	400 (5/01–10/31) 2,000 (11/01–4/30)
070503	Capitol Lake	400 (5/01–10/31) 2,000 (11/01–4/30)
070505	Tunica Bayou	400 (5/01–10/31) 2,000 (11/01–4/30)
070601	Mississippi River Basin - Coastal Bays and Gulf Waters	14 (median) 43 (10%)

Source: LDEQ 2007

^a Criteria for primary and secondary contact recreation: Primary contact recreation: No more than 25 percent of the total samples collected on a monthly basis shall exceed a fecal coliform bacteria density of 400 colonies/100 milliliter (mL). This shall apply only during the defined recreational period of 05/01 through 10/31. For all other periods, a fecal coliform bacteria density of 2,000 colonies/100 mL for secondary contact recreation applies. Criteria for oyster propagation: The fecal coliform bacteria median most probable number (MPN) shall not exceed 14 colonies/100 mL, and not more than 10 percent of the samples shall exceed an MPN of 43 colonies/100 mL for a five tube decimal dilution test in those portions of the area most probably exposed to fecal contamination during the most unfavorable hydrographic and pollution conditions.

^b This subsegment is not listed in the current version of the Louisiana water quality standards (LDEQ 2007). On the basis of communication with LDEQ on June 26, 2007 subsegments 070403 and 070404 were consolidated into 070401 for purposes of standards. However, because subsegments 070403 and 070404 are currently on the 303(d) list they require TMDLs to be developed. For the purpose of this TMDL, water quality criteria listed for the consolidated subsegment 070401 will be used for 070403 and 070404.

In TMDL development, allowable loadings from all pollutant sources that cumulatively amount to no more than the TMDL must be established and thereby provide the basis for establishing water quality-based controls. WLAs were given to permitted point source dischargers, including Phase I municipal separate storm sewer systems (MS4s). The LAs include background loadings as well as human-induced nonpoint sources. An explicit MOS of 10 percent was included. An FG component of 10 percent was also included in this TMDL.

The reductions for fecal coliform bacteria at the monitoring stations in the Mississippi River Basin during the summer months range from 16 to 84 percent. Winter reductions range from 0 to 89 percent, and annual reductions for the shellfish/oyster propagation areas range from 72 to 83 percent. Summaries of the TMDLs for the subsegments addressed in this report are presented in Table ES-3.

Table ES-3. Summary of fecal coliform bacteria TMDLs, MOS, FG, WLAs, and LAs for the Mississippi River Basin

Subsegment	Designated use	Season	TMDL (#/day)	WLA (#/day)	LA (#/day)	Explicit MOS (#/day)	FG (#/day)	Percent reduction
070203	PCR	Winter	1.96E+11	4.77E+10	1.09E+11	1.96E+10	1.96E+10	17%
		Summer	2.02E+11	4.77E+10	1.14E+11	2.02E+10	2.02E+10	59%
<u>070401</u>	SFP	Annual	1.82E+11	1.20E+07	1.46E+11	1.82E+10	1.82E+10	80%
070403	SFP	Annual	7.75E+10	0.00E+00	6.20E+10	7.75E+09	7.75E+09	83%
070404	SFP	Annual	1.28E+11	9.93E+07	1.03E+11	1.28E+10	1.28E+10	72%
070501	PCR	Winter	1.46E+13	4.11E+09	1.17E+13	1.46E+12	1.46E+12	0%
		Summer	1.28E+12	4.11E+09	1.02E+12	1.28E+11	1.28E+11	16%
<u>070502</u>	PCR	Winter	3.31E+13	4.17E+11	2.60E+13	3.31E+12	3.31E+12	89%
		Summer	2.91E+12	4.94E+10	2.28E+12	2.91E+11	2.91E+11	84%
<u>070503</u>	PCR	Winter	8.61E+10	6.89E+10	0.00E+00	8.61E+09	8.61E+09	76%
		Summer	3.89E+10	3.11E+10	0.00E+00	3.89E+09	3.89E+09	84%
070505	PCR	Winter	6.30E+12	5.23E+07	5.04E+12	6.30E+11	6.30E+11	0%
		Summer	5.53E+11	5.23E+07	4.42E+11	5.53E+10	5.53E+10	72%
070601	SFP	Annual	4.09E+11	3.11E+08	3.27E+11	4.09E+10	4.09E+10	80%

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1 INTRODUCTION

Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's (EPA's) Water Quality Planning and Management 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 supporting their designated uses, even if pollutant sources have implemented technology-based controls. A TMDL establishes the maximum allowable load (mass per unit of time) of a pollutant that a waterbody is able to assimilate and still support its designated uses. The maximum allowable load is determined on the basis of the relationship between pollutant sources and in-stream water quality. A TMDL provides the scientific basis for a state to establish 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 (USEPA 1991).

Monitoring data collected by the Louisiana Department of Environmental Quality (LDEQ) indicate that observed fecal coliform bacteria data sometimes exceed water quality criteria for nine subsegments in the Mississippi River Basin. The impaired designated uses for the nine subsegments are primary contact recreation and oyster propagation. The pollutant causing these impairments is fecal coliform bacteria. Table 1-1 presents information from Louisiana's 2006 section 303(d) list (as part of the 2006 Integrated Report) for the nine subsegments. Some of the subsegments have the suspected source of *unknown sources*, which indicates that various sources might be present, but not enough data are available to identify them.

Table 1-1. Subsegments and fecal coliform bacteria impairments addressed in this report

Subsegment number	Subsegment name	Subsegment description	Impaired designated use ^a	Suspected sources of impairment
070203	Devil's Swamp Lake and Bayou Baton Rouge	--	PCR	Discharges from municipal separate storm sewer systems (MS4), sanitary sewer overflows (collection system failures), unknown sources
<u>070401</u> ^b	Mississippi River	Passes-Head of Passes to Mouth of Passes (Estuarine) (Includes Southwest, South, North Passes and Pass a Loutre)	OYS	Municipal point source discharges, sources outside state jurisdiction or borders
070403 ^b	Octave Pass and Main Pass	(Estuarine)	PCR	Municipal point source discharges, sources outside state jurisdiction or borders
070404 ^b	Tiger Pass, Red Pass, Grand Pass, Tante Phine Pass	(Estuarine)	PCR	Municipal point source discharges, sources outside state jurisdiction or borders
070501	Bayou Sara	Mississippi State Line to Mississippi River confluence	PCR	Sanitary sewer overflows (collection system failures)
<u>070502</u>	Thompson Creek	Mississippi State Line to Mississippi River confluence	PCR	On-site treatment systems (septic systems and similar decentralized systems)
<u>070503</u>	Capitol Lake	--	PCR	Unknown sources
070505	Tunica Bayou	Headwaters to Mississippi River	PCR	On-site treatment systems (septic systems and similar decentralized systems)

Subseg. number	Subsegment name	Subsegment description	Impaired designated use ^a	Suspected sources of impairment
070601	Mississippi River Basin	Coastal Bays and Gulf Waters to State three-mile limit	OYS	Municipal point source discharges, sources outside state jurisdiction or borders

^a PCR = primary contact recreation; OYS = oyster propagation

^b In 2007 and included in the 2008 Integrated Report, subsegments 070401, 070402, 070403, and 070404 have been combined into subsegment 070401.

Source: LDEQ 2006

2 BACKGROUND INFORMATION

2.1 General Description

The nine subsegments addressed in this TMDL report are in the Mississippi River Basin in southeastern Louisiana in portions of U.S. Geological Survey (USGS) hydrologic unit codes (HUCs) 08070100, 08070201, 08070202, and 08090100. The subsegments are in portions of East Baton Rouge, Plaquemines, West Feliciana, and East Feliciana parishes. Table 2-1 lists the parishes in which the subsegments are located and the drainage area of each subsegment.

Table 2-1. Parish and drainage area for each impaired subsegment

Subsegment number	Subsegment name	Parish	Drainage area (acres)
070203	Devil's Swamp Lake and Bayou Baton Rouge	East Baton Rouge	4,598
070401	Mississippi River	Plaquemines	96,042
070403	Octave Pass and Main Pass	Plaquemines	56,983
070404	Tiger Pass, Red Pass, Grand Pass, Tante Phine Pass	Plaquemines	67,280
070501	Bayou Sara	West Feliciana	89,253
070502	Thompson Creek	West Feliciana, East Baton Rouge, East Feliciana	188,999
070503	Capitol Lake	East Baton Rouge	1,731
070505	Tunica Bayou	West Feliciana	35,932
070601	Mississippi River Basin - Coastal Bays and Gulf Waters	Plaquemines	260,980

The Mississippi River originates in Minnesota and flows through portions of Wisconsin, Iowa, Illinois, Missouri, Kentucky, Tennessee, Arkansas, and Mississippi before crossing the Louisiana state border. The upper portion of the Mississippi River in Louisiana forms the boundary between Louisiana and Mississippi, and the lower Mississippi River flows through the southeastern portion of Louisiana in a southeasterly direction (LDEQ 2000). The river flows through Baton Rouge and New Orleans and eventually into the Gulf of Mexico. The stretch of the river between the Old River Control Structure and Baton Rouge receives flows from Thompson's Creek, Bayou Sara, Tunica Bayou, and Monte Sano Bayou (LDEQ 2000). Levees on the east and west banks contain the river from Baton Rouge below Monte Sano Bayou to Venice. This portion of the river is also heavily industrialized and receives numerous industrial discharges. The river delta consists of fresh and intermediate marshes where it flows into the Gulf of Mexico.

This report addresses only portions of the Mississippi River below the Mississippi state line. The Atchafalaya and the Terrebonne basins are to the west of the upper Mississippi River Basin addressed in this report, and the lower portion of the Mississippi River Basin is to the southeast of the Barataria and Pontchartrain basins at the mouth of the Mississippi River where it flows into the Gulf of Mexico. Figures 2-1 and 2-2 show the locations of the listed subsegments in the upper and lower portions of the Mississippi River Basin, respectively.

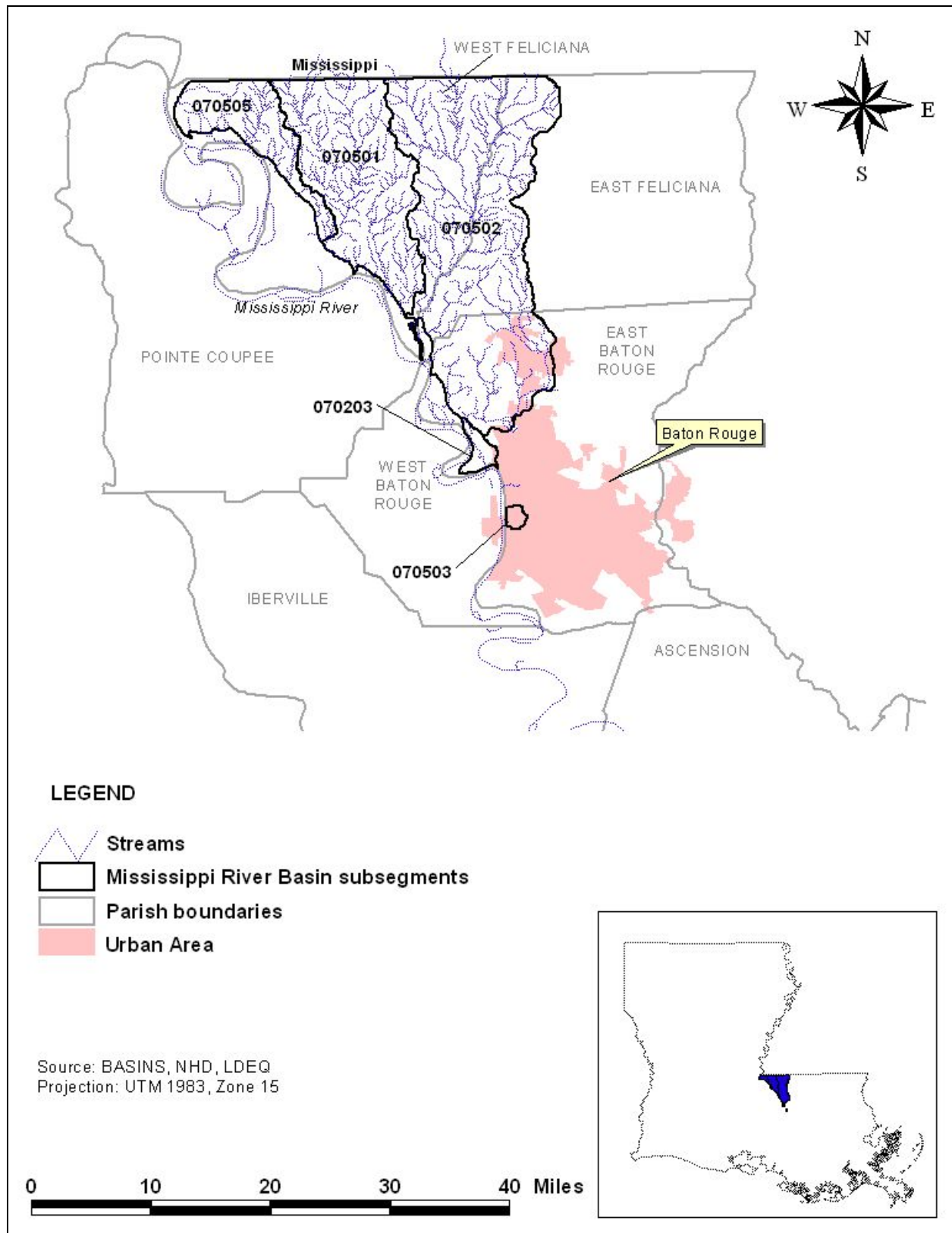


Figure 2-1. Location of the upper Mississippi River Basin subsegments.

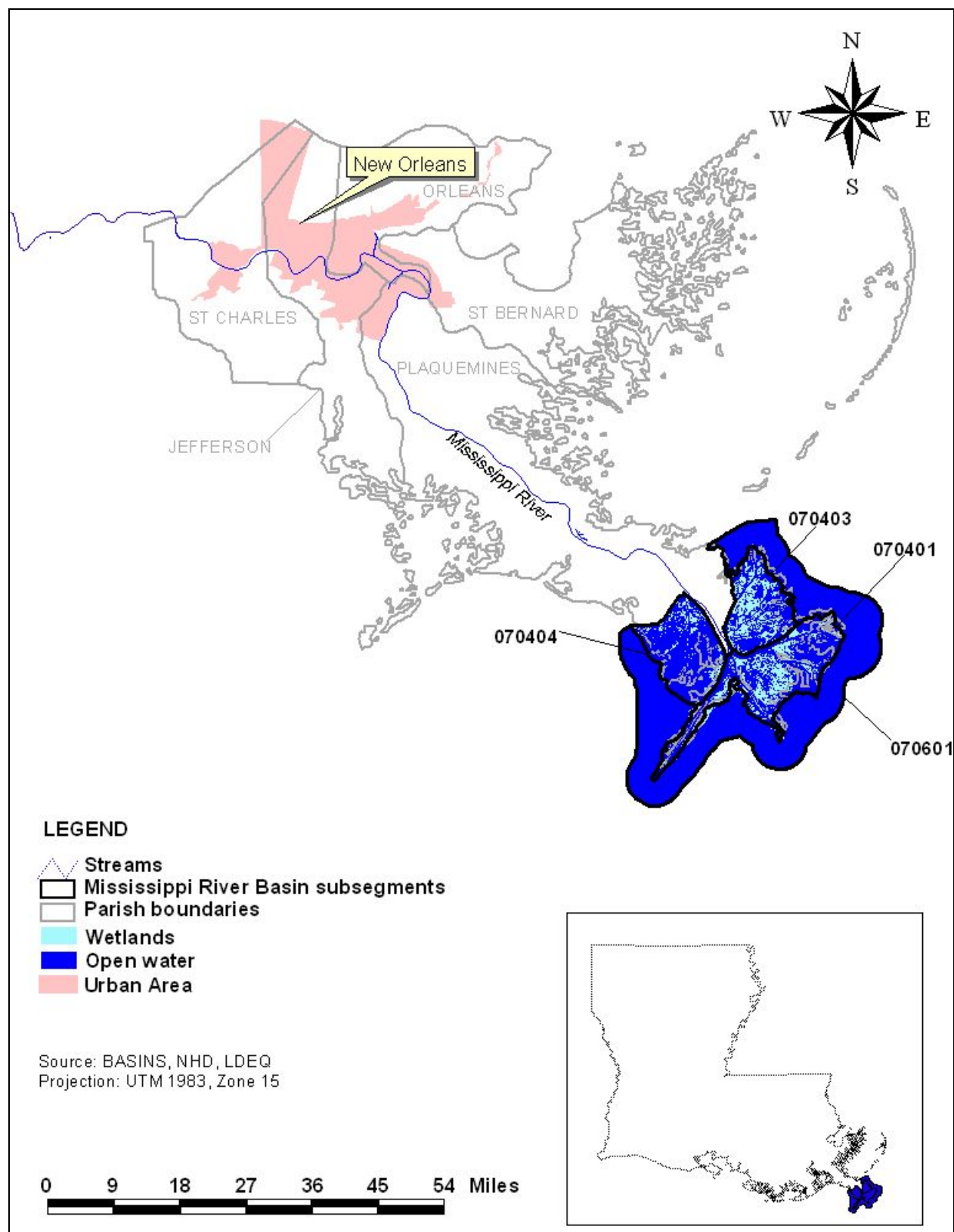


Figure 2-2. Location of the lower Mississippi River Basin subsegments.

2.2 Land Use

Land use data were obtained from the USGS 2001 National Land Cover Data set (NLCD). Table 2-2 lists the percentage of each land use by subsegment, and Figures 2-3 and 2-4 show the land use coverage for the upper and lower Mississippi River Basin, respectively. Note that the original land use coverage does not entirely cover the most downstream portion of subsegment 070601; therefore, the land use was extended by assuming that the missing land use area is all open water (Figure 2-4).

The subsegments in the northern portion of the Mississippi River Basin (subsegments 070203, 070501, 070502, 070503, and 070505) are mostly dominated by forest with some large areas of woody wetlands in some of the subsegments. There is also a large area of cropland in subsegment 070505 and a large urban area in subsegment 070503 that is part of the city of Baton Rouge.

The lower portion of the Mississippi River Basin (subsegments 070401, 070403, 070404, and 070601) is dominated by open water and wetlands. The percentage of open water in these subsegments ranges from 50 percent in subsegment 070403 to 98 percent in subsegment 070601. The percentage of wetlands in these subsegments ranges from 1.3 percent in subsegment 070601 to 49 percent in subsegment 070403. There are not many other land uses in the subsegments in the lower Mississippi River Basin except for some small areas of developed land (< 1 percent) and barren land (< 17 percent).

Table 2-2. Percent land use per subsegment

Land use	Percent coverage by subsegment number								
	070203	070501	070502	070503	070505	070401	070403	070404	070601
Open water	7.61	1.39	0.97	2.90	2.10	55.25	50.34	65.48	97.96
Developed	1.86	4.47	6.04	96.76	3.97	0.01	0.00	0.78	0.00
Barren land	0.11	0.91	0.89	0.00	0.09	2.75	0.93	12.46	0.75
Forest	0.49	49.88	30.85	0.00	58.55	0.00	0.00	0.00	0.00
Grass/shrub	0.40	12.23	11.92	0.08	4.17	0.00	0.00	0.00	0.00
Pasture/hay	2.29	11.19	17.89	0.00	1.74	0.00	0.00	0.00	0.00
Cultivated crops	0.00	4.02	8.11	0.00	22.39	0.00	0.00	0.00	0.00
Woody wetlands	83.69	15.68	22.89	0.06	5.51	1.50	1.81	3.06	0.01
Emergent herbaceous wetlands	3.56	0.22	0.45	0.19	1.48	40.49	46.92	18.22	1.28
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

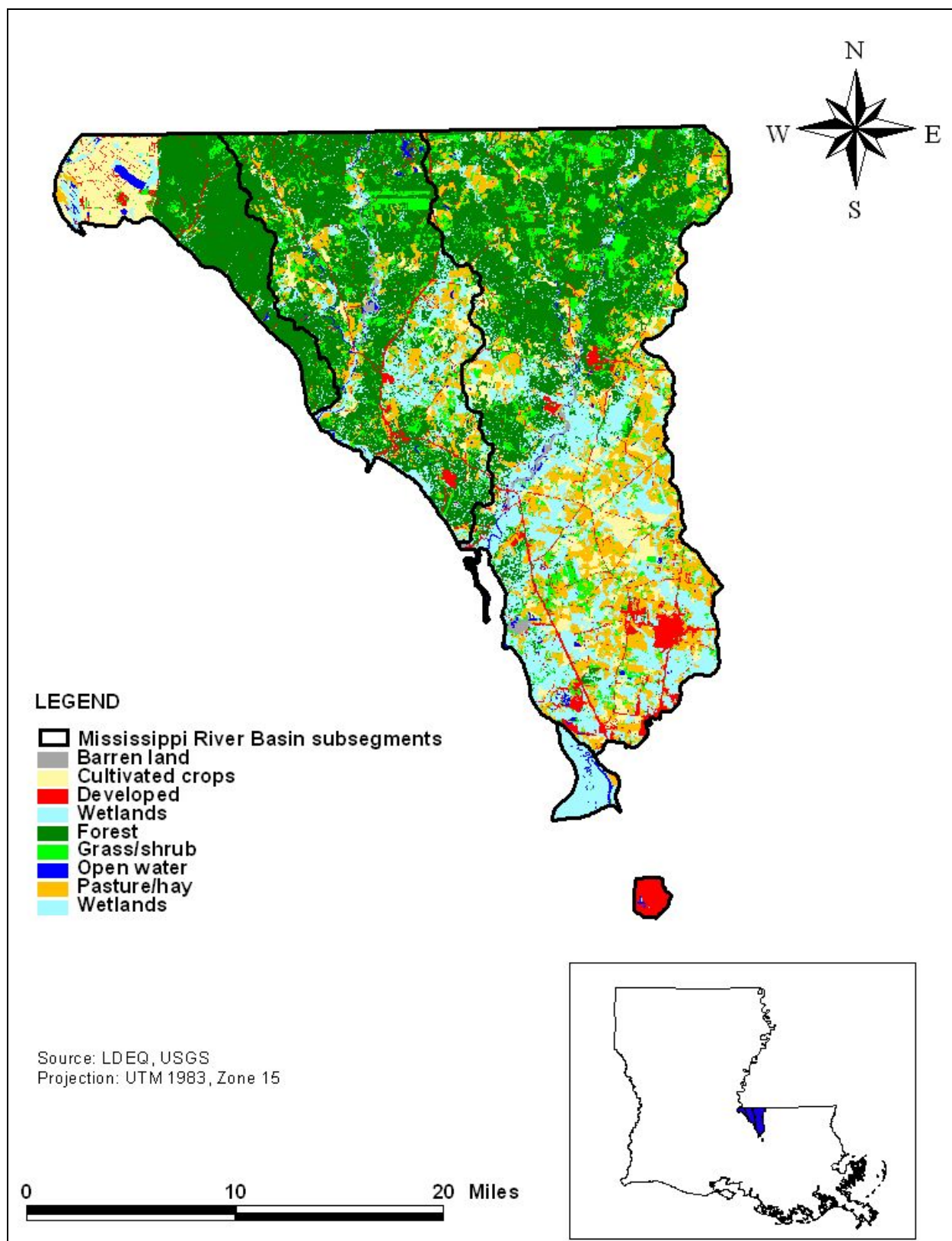


Figure 2-3. Land use in the upper Mississippi River Basin subsegments.

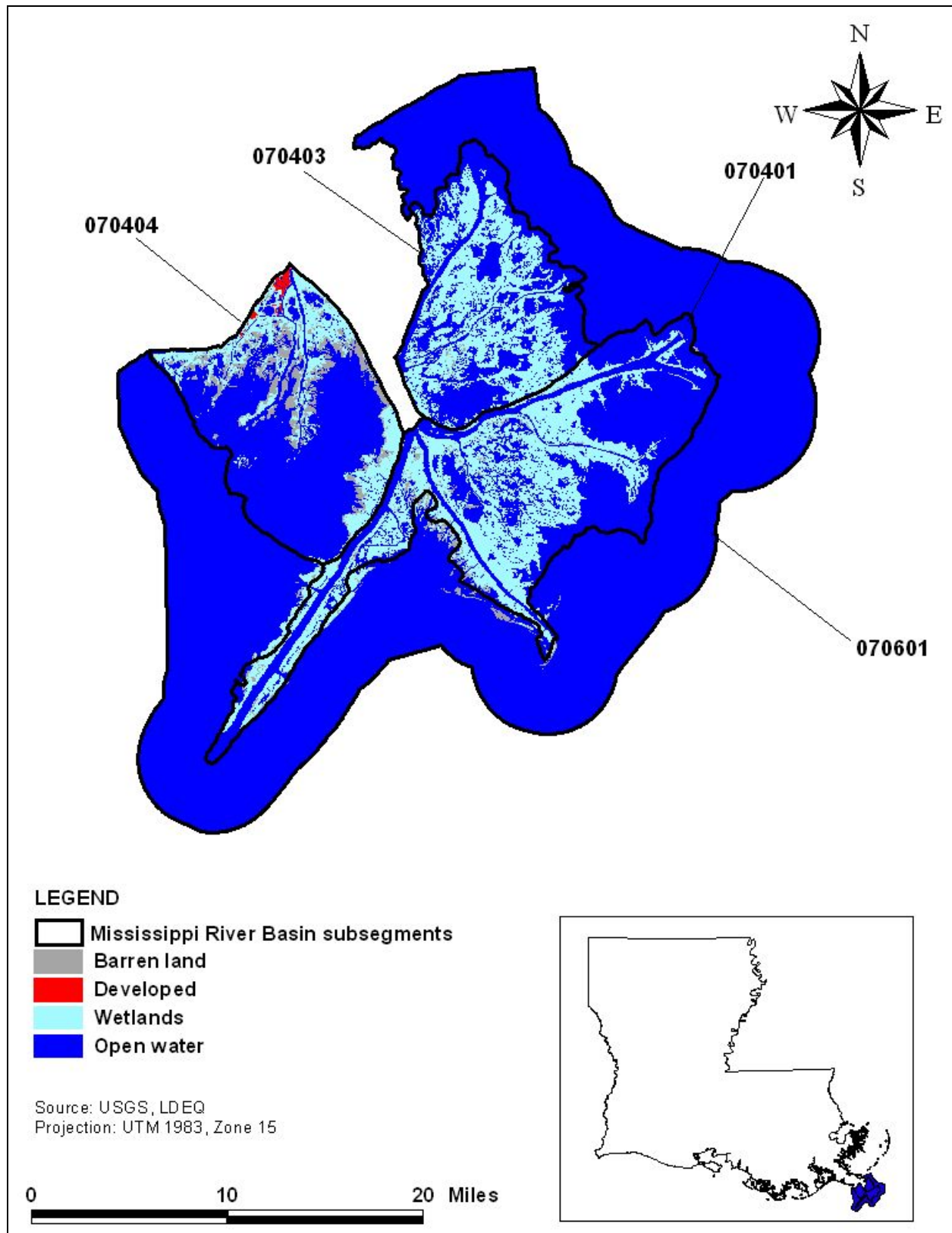


Figure 2-4. Land use in the lower Mississippi River Basin subsegments.

2.3 Flow Characteristics

Because there are not active USGS flow-monitoring gages in each of the listed subsegments, data from selected USGS gages from the region were reviewed. The gage list was reduced on the basis of size (gages with drainage areas greater than 1,000 square miles were not considered), type of data (only gages with daily discharge data were considered), and the period of data (only gages with recent data were considered). Table 2-3 presents information for the nearby flow gages.

Table 2-3. Nearby USGS flow gages

Station number	Station name	Drainage area (sq. mi.)	Average flow (cfs)
07373500	West Fork Thompson Cr Nr Wakefield, LA	35.3	42.
07377000	Amite River Near Darlington, LA	580.0	940
07377240	Little Sandy Cr. Nr. Greenwell Springs, LA	28.2	56
07377500	Comite River Near Olive Branch, LA	145.0	237
07377650	Little Redwood Cr Trib at Jh Pd, Wilson LA	0.73	1
07377700	Redwood Ck Nr Slaughter, LA	41.1	42
07377782	White Bayou SE of Zachary, LA	45.0	73
07378000	Comite River Near Comite, LA	284.0	486
07379000	Ward Creek at Government Street, at Baton Rouge,	4.04	11
07379960	Dawson Cr. at Bluebonnet Blvd Near Baton Rouge, LA	15.11	36
07383500	Bayou Des Glaisses Diversion Ch. at Moreauville, LA	270.0	423

The seasonal distribution of flow at a representative gaging station is shown in Figure 2-5. The gaging station, USGS gage 07377500, is on the Comite River and is approximately 6 miles east of subsegment 070502. Low flow occurs in the summer and early fall, and high flow tends to occur in late winter and early spring.

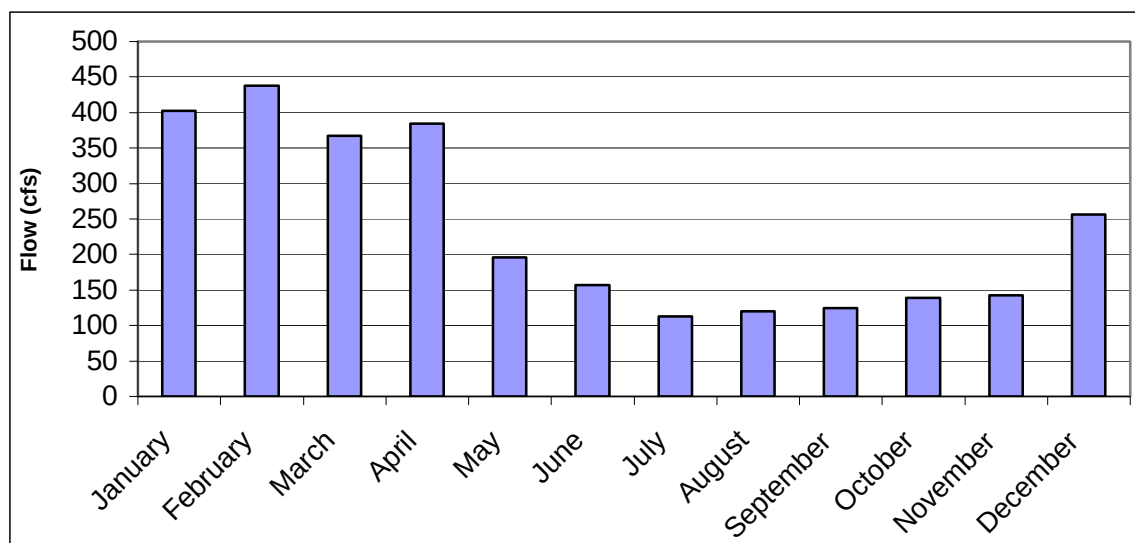


Figure 2-5. Average monthly flow at Comite River near Olive Branch, Louisiana (USGS 07377500) for 1942 through 2009.

2.4 Designated Uses and Water Quality Criteria

Louisiana's 2006 section 303(d) list indicates that the nine listed subsegments have varied use designations, which include primary contact recreation, secondary contact recreation, fish and wildlife propagation, and shellfish/oyster propagation (LDEQ 2006). Water quality criteria for these subsegments are presented in Table 2-5; the designated uses were presented in Table 1-1.

Primary contact recreation involves any recreational or other water contact use involving full-body exposure with water and considerable probability of the ingestion of water. Examples are swimming and water skiing, whereas secondary contact recreation involves activities such as fishing, wading, or boating where water contact is accidental or incidental and there is a minimal chance of ingesting appreciable amounts of water.

The designated use of fish and wildlife propagation includes the use of water for aquatic habitat, food, resting, reproduction, cover, or travel corridors for any indigenous wildlife and aquatic life species associated with the aquatic environment. The fish and wildlife propagation use also includes maintaining water quality at a level that prevents damage to native wildlife and aquatic species associated with the aquatic environment and contamination of aquatic life consumed by humans.

The designated use of shellfish/oyster propagation is the use of a waterbody to maintain biological systems that support economically important species of oysters, clams, mussels, or other mollusks so that their productivity is preserved and the health of human shellfish consumers is protected.

Table 2-4 presents the relevant numeric criteria for each subsegment of concern. These numeric criteria were used in conjunction with the assessment methodology presented in LDEQ's 305(b) report (LDEQ 2005) to list impaired subsegments. The LDEQ assessment methodology specifies that the primary contact recreation and secondary contact recreation uses must be fully supported with up to 25 percent of the values exceeding the criteria for fecal coliform bacteria, and the oyster propagation use must be fully supported with up to 10 percent of the values exceeding the criteria.

Table 2-4. Numeric criteria for the subsegments of concern in the Mississippi River Basin

Subsegment number	Subsegment name	Bacteria ^a (colonies/100 mL)
070203	Devil's Swamp Lake and Bayou Baton Rouge	400 (5/01–10/31) 2,000 (11/01–4/30)
070401	Mississippi River	14 (median) 43 (10%)
070403	Octave Pass and Main Pass	None ^b
070404	Tiger Pass, Red Pass, Grand Pass, Tante Phine Pass	None ^b
070501	Bayou Sara	400 (5/01–10/31) 2,000 (11/01–4/30)
070502	Thompson Creek	400 (5/01–10/31) 2,000 (11/01–4/30)
070503	Capitol Lake	400 (5/01–10/31) 2,000 (11/01–4/30)
070505	Tunica Bayou	400 (5/01–10/31) 2,000 (11/01–4/30)
070601	Mississippi River Basin - Coastal Bays and Gulf Waters	14 (median) 43 (10%)

Source: LDEQ 2007

^a Criteria for primary and secondary contact recreation: Primary contact recreation: No more than 25 percent of the total samples collected on a monthly basis shall exceed a fecal coliform bacteria density of 400 colonies/100 mL. This shall apply only during the defined recreational period of 05/01 through 10/31. For all other periods a fecal coliform bacteria density of 2,000 colonies/100 mL for secondary contact recreation applies. Criteria for oyster propagation: The fecal coliform bacteria median most probable number (MPN) shall not exceed 14 colonies/100 mL, and not more than 10 percent of the samples shall exceed an MPN of 43 colonies/100 mL for a five tube decimal dilution test in those portions of the area most probably exposed to fecal contamination during the most unfavorable hydrographic and pollution conditions.

^b This subsegment is not listed in the current version of the Louisiana water quality standards (LDEQ 2007). On the basis of communication with LDEQ on June 26, 2007 subsegments 070403 and 070404 were consolidated into 070401 for purposes of standards. However, because subsegments 070403 and 070404 are currently on the 303(d) list they require TMDLs to be developed. For the purpose of this TMDL, water quality criteria listed for the consolidated subsegment 070401 will be used for 070403 and 070404.

Two sets of fecal coliform bacteria criteria are applied to the Mississippi River Basin in Louisiana. Several of the subsegments in the basin have primary contact recreation as a designated use; however, some subsegments have shellfish/oyster propagation as a designated use. The criterion for primary contact recreation specifies that fecal coliform bacteria density must not exceed 400 colonies/100 mL (2,000 colonies/100 mL in winter months) in 25 percent of samples on a monthly basis, whereas the criterion for shellfish/oyster propagation is a more stringent 43 colonies/100 mL in no more than 10 percent of samples and a median not to exceed 14 colonies/100 mL.

Antidegradation Policy

The Louisiana water quality standards also include an antidegradation policy (*Louisiana Administrative Code* [LAC] Title 33, Part IX, Section 1109.A), which states that state waters exhibiting high water quality should be maintained at that high level of water quality. If this is not possible, water quality of a level that supports the designated uses of the waterbody should be maintained. The designated uses of a waterbody may be changed to allow a lower level of water quality only through a use attainability study.

2.5 Identification of Sources

2.5.1 Point Sources

During the TMDL development process, information on point source dischargers in the impaired subsegments was obtained from LDEQ internal databases. Because of the large number of permits, information on permits and discharges included in this TMDL is presented in Appendix A. The suspected sources of impairment identified in Table 1-1 were based on information included in Louisiana's 2006 section 303(d) list. Subsegment 070203 is included on these tables as having discharges from municipal separate storm systems (MS4s) and sanitary sewer overflows (collection system failures), and subsegment 070501 contains discharges from sanitary sewer overflows (collection system failures). Subsegments are 070401, 070403, 070404, and 070601 are listed as having municipal point source dischargers as the suspected source of impairment. Specific point sources were not identified for the other impaired subsegments. These TMDLs contain a Future Growth (FG) component that can be used for any point sources not identified or that are in the planning state.

Overflows in sanitary sewer lines or major upsets at wastewater treatment plants can be related to poor maintenance in collection system interceptor lines (infiltration and inflow or line clogging), equipment failures at lift stations, or to inadequate pretreatment programs (LDEQ 2005). Municipal point sources include pollution introduced from end-of-pipe discharges from publicly owned treatment works.

Phase I stormwater systems are a possible point source contributor in the Mississippi River Basin. Stormwater discharges are generated by runoff from urban land and impervious areas such as paved streets, parking lots, and rooftops during precipitation events. These discharges often contain high concentrations of pollutants that can eventually enter nearby waterbodies. Most stormwater discharges are considered point sources and require coverage by a National Pollutant Discharge Elimination System (NPDES) permit.

Under the NPDES stormwater program, operators of large, medium, and regulated small MS4s must obtain authorization to discharge pollutants. The Stormwater Phase I Rule (55 *Federal Register* 47990, November 16, 1990) requires all operators of medium and large MS4s to obtain an NPDES permit and develop a stormwater management program. Medium and large MS4s are defined by the size of the population within the MS4 area, not including the population served by combined sewer systems. A medium MS4 has a population between 100,000 and 249,999. A large MS4 has a population of 250,000 or more.

In the Mississippi River Basin, the city of Baton Rouge is a regulated large MS4. Table 2-5 presents MS4 information by subsegment for MS4 discharges to impaired subsegments in the Mississippi River Basin.

Table 2-5. MS4 information for the Mississippi River Basin

NPDES permit number	Authority	Discharge subsegment	Subsegment name	Subsegment area (acres)	Urban area (acres)
LAS000101	Baton Rouge, LA	070203	Devil's Swamp Lake and Bayou Baton Rouge	4,598	7.87
LAS000101	Baton Rouge, LA	070502	Thompson Creek	188,999	2,835.08
LAS000101	Baton Rouge, LA	070503	Capitol Lake	1,731	1,674.90

2.5.2 Nonpoint Sources

Louisiana's 2006 section 303(d) list identifies on-site treatment systems (septic systems and similar decentralized systems) and unknown sources as the suspected nonpoint sources of the fecal coliform bacteria impairment in the Mississippi River Basin subsegments (LDEQ 2006).

On-site treatment systems are specifically mentioned as nonpoint sources in subsegments 070502 and 070505. Unknown sources are mentioned for subsegments 070203 and 070503. Problems from on-site treatment systems (septic systems and similar decentralized systems) include poor installation or maintenance (LDEQ 2005). A suspected source of *unknown sources* indicates that various sources might be present, but not enough data are available to identify them.

3 CHARACTERIZATION OF EXISTING WATER QUALITY

Water quality data were obtained from LDEQ. There are nine water quality stations with fecal coliform bacteria data relevant to the subsegments addressed in this report. Five of those stations are in the upper Mississippi River Basin, and the remaining four are in the lower basin. Each subsegment has one water quality station in it. Figures 3-1 and 3-2 show the locations of the water quality stations in the upper and lower Mississippi River Basin, respectively. Summaries of the fecal coliform bacteria data are included in Tables B-1 and B-2 in Appendix B. Appendix C contains the raw water quality data.

3.1 Comparison of Observed Data to Criteria

Nine subsegments are listed for fecal coliform bacteria impairments on Louisiana's 2006 section 303(d) list (LDEQ 2006) and are addressed in this TMDL study. Each subsegment has only one data set. Tables B-1 (primary contact recreation) and B-2 (shellfish/oyster propagation) in Appendix B present a summary of the observations at each water quality station by subsegment, including the number of observations; the minimum, maximum, average, and median observations; the number of exceedances of the criterion; and the percentage of observations exceeding the criterion at each station.

The subsegment with the most fecal coliform bacteria observations is subsegment 070502 with 118 observations collected between 1991 and 2009. The lowest number of observations at a station is two in subsegment 070403.

Exceedances of the summer primary contact recreation criterion (400/100 mL) from May 1 through October 31 were observed in all five subsegments, with the highest percentage of exceedances (64 percent) in subsegment 070505 (Table B-1). Three subsegments (070203, 070502, 070503) also have exceedances of the winter criterion (2,000/100 mL), which is applied from November 1 through April 30. The highest percentage of winter exceedances (20 percent) is in subsegment 070502 (Table B-1).

All four subsegments designated for shellfish/oyster propagation exceed the median criterion of 14/100 mL. All four subsegments also exceed the 43/100 mL criterion with exceedances ranging from 50 percent (subsegment 070403) to 82 percent (subsegment 070601) (Table B-2).

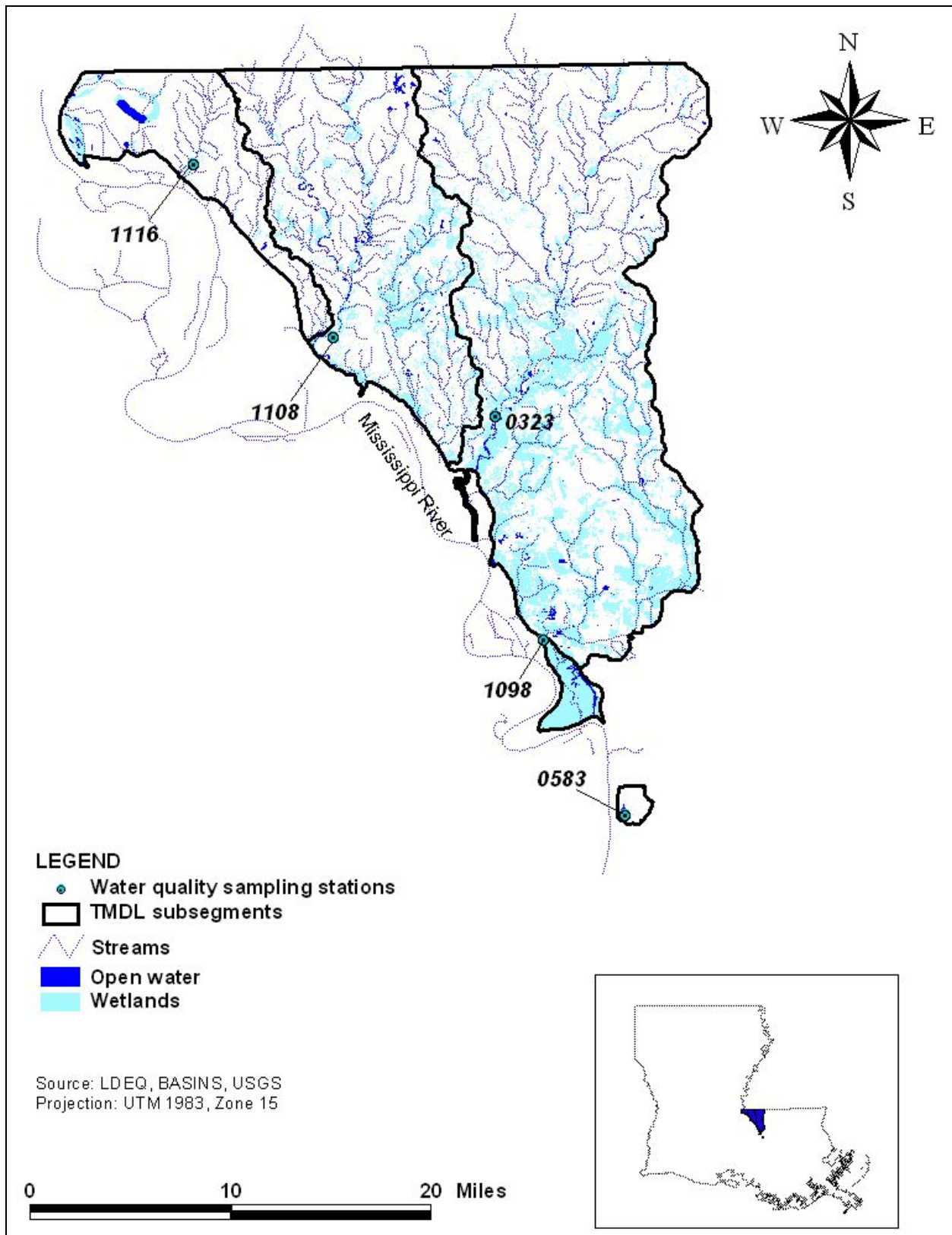


Figure 3-1. Location of water quality sampling stations in the upper Mississippi River Basin.

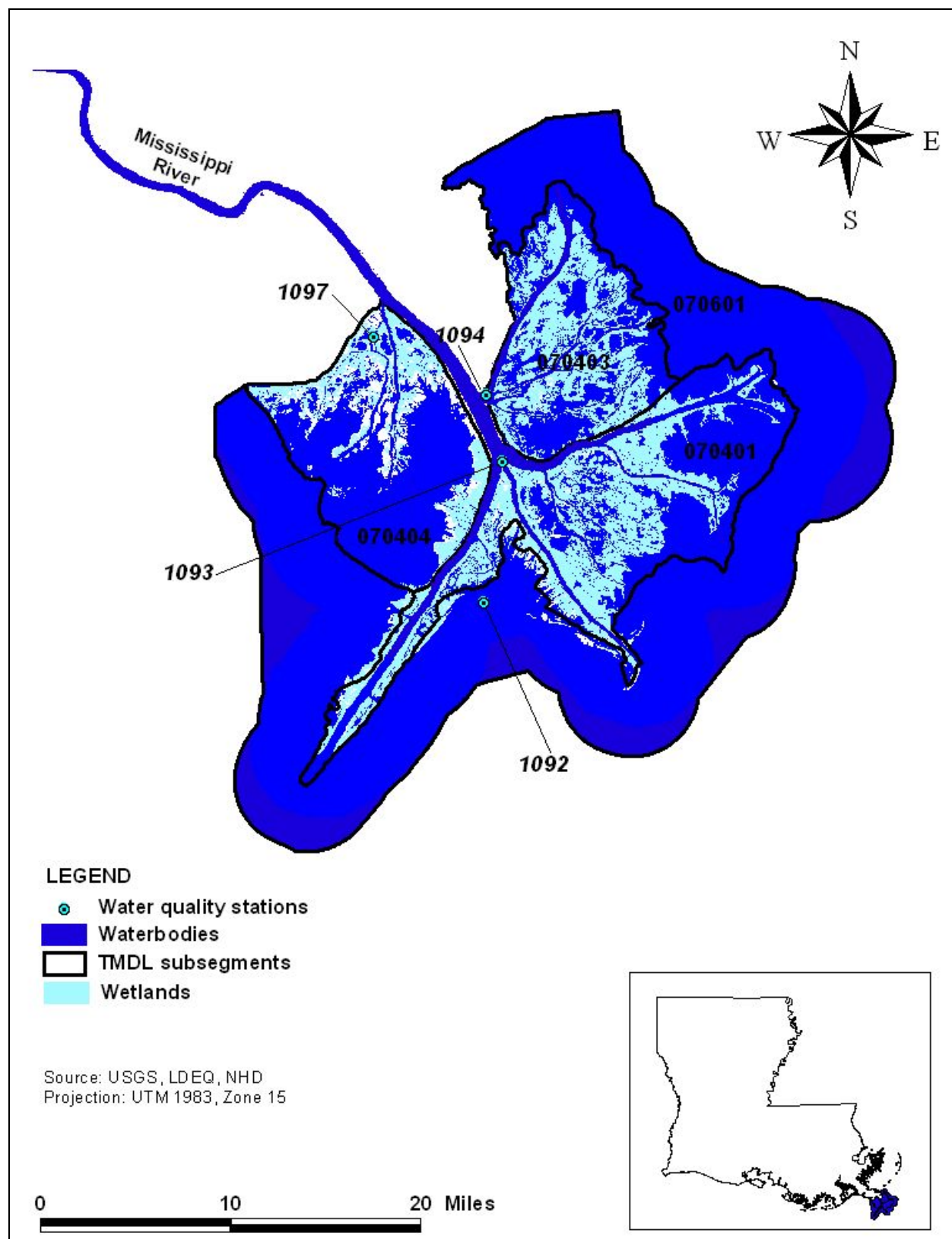


Figure 3-2. Location of water quality sampling stations in the lower Mississippi River Basin.

3.2 Trends and Patterns in Observed Data

The fecal coliform bacteria data were plotted over time for each of the impaired subsegments (see Appendix D). No distinct seasonal trends or patterns are seen in the water quality data. Fecal coliform bacteria data versus flow were also plotted for subsegments 070501, 070502, and 070505 (see Appendix D). Fecal coliform bacteria data in subsegments 070203, 070401, 070403, 070404, 070503, and 070601 were not compared to flow data because these subsegments either are lakes or are in tidal areas where no representative flow data are available. Because subsegments 070501, 070502, and 070505 do not have a flow gage, area-weighted flow data from USGS gage 07377500 were used to represent flow conditions in each subsegment. There is no distinct correlation between fecal coliform bacteria and flow in the impaired subsegments. High bacteria concentrations were observed during both high and low flows. Note that there were not many observations available during high flows to compare with low-flow fecal coliform bacteria concentrations.

4 TMDL DEVELOPMENT

A TMDL is the total amount of a pollutant that can be assimilated by the receiving waterbody while still achieving water quality standards. In TMDL development, allowable loadings from all pollutant sources that cumulatively amount to no more than the TMDL must be established and thereby provide the basis for establishing water quality-based controls.

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. This TMDL also includes an FG component to account for loadings from the continued growth in the TMDL area. The TMDL components are illustrated using the following equation:

$$TMDL = \sum WLAs + \sum LAs + MOS + FG$$

TMDLs are typically expressed on a mass loading basis (e.g., kilograms per day); however, for bacteria, TMDLs can be expressed in terms of organism counts per day, in accordance with 40 CFR 130.2(l).

4.1 TMDL Analytical Approach

The TMDLs in the Mississippi River Basin were calculated using both a load reduction approach and load duration curve approach. The load reduction approach was applied to the subsegments in the lower portion of the Mississippi Basin (subsegments 070401, 070403, 070404, and 070601) and subsegments 070203 (Bayou Baton Rouge) and 070503 (Capitol Lake) in the upper portion of the basin. The load duration curve approach was applied to the remaining subsegments in the upper portion of the Mississippi River Basin (subsegments 070501, 070502, and 070505). Each approach is described below.

4.1.1 Load Reduction Approach

Using the load reduction approach, the percent reduction for each LDEQ monitoring station was calculated on the basis of observed pollutant concentrations. The minimum percent reduction was calculated so that the monitoring data would meet water quality standards at that station. The percent reduction was applied to the entire subsegment. The reduced average load was used to determine the TMDL loading. TMDL calculation results are included in Appendix E, along with the original water quality data.

Because of flow dynamics in the lower Mississippi River Basin delta area and in subsegments 070203 and 070503, where stream flow could not be used, the monthly water yield was used to obtain TMDL loadings. Monthly water yields for the Southeast and East Central Climate Divisions were obtained from the Louisiana Office of State Climatology and used to characterize conditions in the lower basin and subsegments 070203 and 070503. The monthly water yield was divided by the number of days in the month to obtain runoff intensity. Data from 1980 to 2003 were averaged to obtain the yearly average for the lower basin subsegments and the summer and winter averages for subsegments 070203 and 070503 (Table 4-1). These averages were assigned to each subsegment accordingly. Because the water yield does not include water input from point

sources, the point source flows are added to flow from the water yield. Using this method produces loadings on the basis of local conditions and does not include upstream loadings.

Table 4-1. Average water yields for climate divisions in the Mississippi River Basin

Climate division	Period	Average monthly water yield (millimeters)	Subsegments represented
Southeast	Annual	2.402	070401, 070403, 070404
East Central	Summer	2.040	070203, 070503
East Central	Winter	2.980	070203, 070503

Impaired subsegments in the lower Mississippi River basin have oyster propagation as their designated use and, therefore, had fecal coliform bacteria TMDLs developed to apply year-round. Subsegments 070203 and 070503 have a designate use of primary contact recreation and, therefore, seasonal (summer and winter) fecal coliform bacteria TMDLs were developed.

4.1.2 Load Duration Curve Approach

The second methodology used to determine the TMDL for the impaired subsegments in the remaining upper Mississippi River Basin subsegments is the load duration curve. These TMDLs represent a continuum of desired loads over all flow conditions, rather than a fixed, single value, because loading capacity varies as a function of the flow present in the stream. The basic elements of this procedure are documented on the Kansas Department of Health and Environment Web site (KDHE 2003). This method was used to illustrate allowable loading for a wide range of flows. The steps for how this methodology was applied for the TMDLs in this report can be summarized as follows:

1. Develop a flow duration curve
2. Convert the flow duration curve to load duration curves for each impairment
3. Plot observed loads with load duration curves
4. Calculate TMDL, WLA, LA, MOS, and FG (see Section 4.2)
5. Calculate percent reductions required to meet water quality standards

Load duration curves describe contributions of pollutants from surface runoff, subsurface inflow and point sources, not just surface runoff (overland flow). Load duration curves are valid whether the pollutant tends to have higher concentrations at low flows or high flows. When the curve shows higher concentrations at lower flows, this suggests that point sources are the main contributions as opposed to nonpoint sources which appear as high concentrations in high flows. An advantage of the load duration approach is the ability to show allowable loads for a wide range of flow conditions. The load duration curves identify the flow conditions for which the greatest exceedances of water quality criteria are occurring.

Flow Duration Curve

A flow duration curve was developed for subsegment. Daily streamflow measurements were sorted in increasing order, and the percentile ranking of each flow was calculated. The daily streamflow measurements were separated into summer (May through October) and winter (November through April) data sets to accommodate the state's seasonal fecal coliform bacteria criteria. The load duration methodology requires that the same flow period be used for both developing the flow duration and calculating observed loads from sampling data. For each

season, the flows were then plotted against the corresponding percent flow that exceeds a specific flow to create the flow duration curves.

Figure 4-1 is an example of a flow duration curve. The plot shows the flow (e.g., cubic feet per second) on the Y-axis. The X-axis shows the percentage of days on which the plotted flow is exceeded. Points at the lower end of the plot (0 through 10 percent) represent high-flow conditions where only 0 through 10 percent of the flow exceeds the plotted point. Conversely, points on the high end of the plot (90 to 100 percent) represent low-flow conditions.

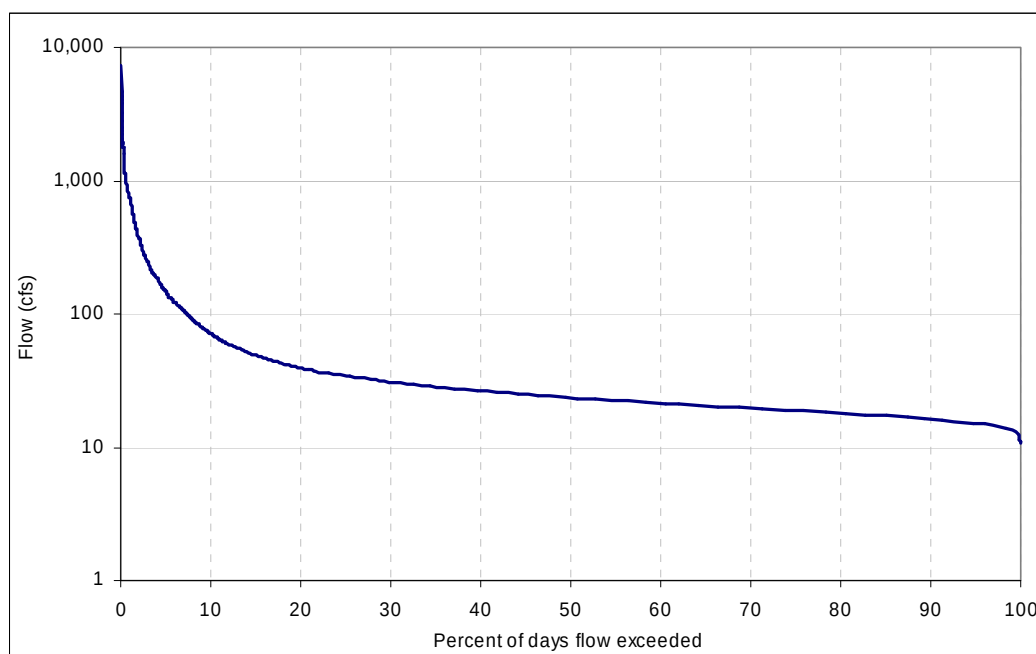
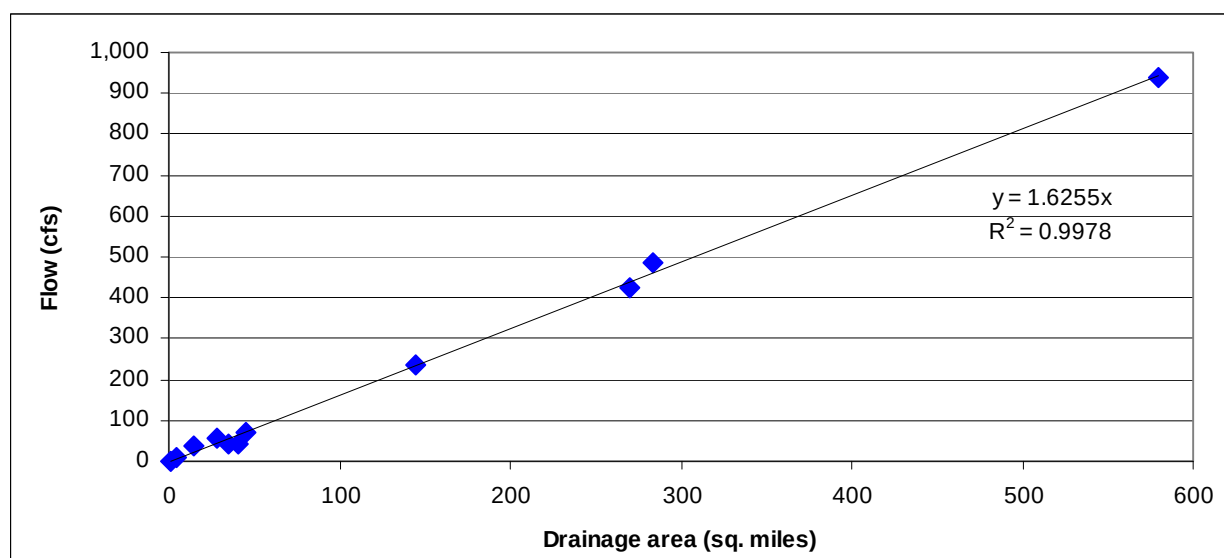


Figure 4-1. Example of a flow duration curve.

Detailed flow information for the TMDL subsegments were not available for the listed subsegments or nearby subsegments in the Mississippi River basin. In order to determine flow, data from selected USGS gages from the region were reviewed. The gages were selected on size (gages with drainage areas greater than 1,000 square miles were not considered), type of data (only gages with daily discharge data were considered), and the period of data (only gages with recent data were considered). Data from the selected gages were used to compare the drainage area to average flow for each gage. Table 4-2 presents the USGS gages that were selected. Figure 4-3 shows the result of that comparison. The results showed a very good relationship between drainage area and average flow with an R^2 of almost 1.0. For the purposes of this TMDL, USGS gage (07377500) in a similar watershed was chosen to represent flow. Flow from this gage was area weighted to represent the flow from the TMDL subsegment.

Table 4-2. USGS flow gages used in drainage area and average flow analysis

Station number	Station name	Drainage area (sq. mi.)	Average flow (cfs)
07373500	West Fork Thompson Cr Nr Wakefield, LA	35.30	42.18
07377000	Amite River Near Darlington, LA	580.00	939.59
07377240	Little Sandy Cr. Nr. Greenwell Springs, LA	28.20	56.34
07377500	Comite River Near Olive Branch, LA	145.00	237.49
07377650	Little Redwood Cr Trib at Jh Pd, Wilson LA	0.73	0.91
07377700	Redwood Ck Nr Slaughter, LA	41.10	42.47
07377782	White Bayou SE of Zachary, LA	45.00	72.95
07378000	Comite River Near Comite, LA	284.00	485.75
07379000	Ward Creek at Government Street, at Baton Rouge,	4.04	10.67
07379960	Dawson Cr. at Bluebonnet Blvd Near Baton Rouge, LA	15.11	35.59
07383500	Bayou Des Glaisses Diversion Ch. at Moreauville, LA	270.00	423.30

**Figure 4-2. Result of USGS station drainage area and average flow analysis.**

Load Duration Curve

The flows from the flow duration curves were multiplied by the appropriate target concentration (Table 2-4) for each season to compute an allowable load duration curve. Each load duration curve is a plot of organism count per day versus the percent flow exceedance from the flow duration curves.

The load duration curve is beneficial when analyzing monitoring data with their corresponding flow information plotted as a load. This approach allows the monitoring data to be placed in relation to their place in the flow continuum. Assumptions of the probable source or sources of the impairment can then be made from the plotted data. The load duration curve shows the calculation of the TMDL at any flow rather than at a single critical flow. The official TMDL number is reported as a single number, but the curve is provided to demonstrate the value of the acceptable load at any flow. This will allow analysis of load cases in the future for different flow regimes.

Observed Loads

For each sampling station and season, observed loads were calculated by multiplying the observed concentration of fecal coliform bacteria by the flow on the sampling day. These observed loads were then plotted versus the percent flow exceedance of the flow on the sampling day and placed on the same plot as the load duration curve. Reductions were applied to the observed loads for each parameter until its water quality criteria and allowable percent exceedance were met to obtain an overall percent reduction for each subsegment. These plots are shown in the appendices of this report as follows:

Appendix F: Load Duration Calculations for TMDLs (CD-ROM)

Appendix G: Load Duration Curve Summaries and Plots for Fecal Coliform Bacteria

These plots provide visual comparisons between observed and allowable loads under different flow conditions. Observed loads that are plotted above the load duration curve represent conditions where observed water quality concentrations exceed the target concentrations. Observed loads plotted below the load duration curve represent conditions where observed water quality concentrations were less than target concentrations (i.e., not exceeding water quality standards).

4.2 TMDL, WLA, and LA

The TMDLs for the lower Mississippi River Basin subsegments and the upper basin subsegments 070203 and 070503 were calculated using the load reduction approach and represent local contributions to the subsegment. The reduced average concentration and the average water yield were multiplied by the calculated drainage area of each subsegment to estimate the total allowable load. The drainage areas of the lower Mississippi River Basin subsegments were estimated as the subsegment area.

The TMDLs for the remaining upper Mississippi River Basin subsegments were calculated as the area under the load duration curve. The reductions for fecal coliform bacteria at the monitoring stations in the Mississippi River Basin during the summer months range from 16 to 84 percent. Winter reductions range from 0 to 89 percent, and annual reductions for the shellfish/oyster propagation areas range from 72 to 83 percent. Table 4-3 presents the TMDLs and allocations for the subsegments in this report using the load reduction and load duration curve approaches.

Table 4-3. Summary of fecal coliform bacteria TMDLs, WLAs, LAs, MOS, and FG for the Mississippi River Basin

Subsegment	Designated use	Season	TMDL (#/day)	WLA (#/day)	LA (#/day)	MOS (#/day)	FG (#/day)	Percent reduction
070203	PCR	Winter	1.96E+11	4.77E+10	1.09E+11	1.96E+10	1.96E+10	17%
		Summer	2.02E+11	4.77E+10	1.14E+11	2.02E+10	2.02E+10	59%
070401	SFP	Annual	1.82E+11	1.20E+07	1.46E+11	1.82E+10	1.82E+10	80%
070403	SFP	Annual	7.75E+10	0.00E+00	6.20E+10	7.75E+09	7.75E+09	83%
070404	SFP	Annual	1.28E+11	9.93E+07	1.03E+11	1.28E+10	1.28E+10	72%
070501	PCR	Winter	1.46E+13	4.11E+09	1.17E+13	1.46E+12	1.46E+12	0%
		Summer	1.28E+12	4.11E+09	1.02E+12	1.28E+11	1.28E+11	16%
070502	PCR	Winter	3.31E+13	4.17E+11	2.60E+13	3.31E+12	3.31E+12	89%
		Summer	2.91E+12	4.94E+10	2.28E+12	2.91E+11	2.91E+11	84%

Subsegment	Designated use	Season	TMDL (#/day)	WLA (#/day)	LA (#/day)	MOS (#/day)	FG (#/day)	Percent reduction
070503	PCR	Winter	8.61E+10	6.89E+10	0.00E+00	8.61E+09	8.61E+09	76%
		Summer	3.89E+10	3.11E+10	0.00E+00	3.89E+09	3.89E+09	84%
070505	PCR	Winter	6.30E+12	5.23E+07	5.04E+12	6.30E+11	6.30E+11	0%
		Summer	5.53E+11	5.23E+07	4.42E+11	5.53E+10	5.53E+10	72%
070601	SFP	Annual	4.09E+11	3.11E+08	3.27E+11	4.09E+10	4.09E+10	80%

Wasteload Allocation

The WLA portion of the TMDL equation is the total loading of a pollutant that is assigned to point sources. The point sources in the Mississippi River Basin include wastewater facilities and MS4s. WLAs are based on the current permit limits and discharge flow levels. Because of the large number of permits, the individual WLAs for each point source included in these Mississippi River Basin TMDLs are presented in tables H-1 through H-9 in Appendix H.

WLAs for fecal coliform bacteria were calculated using monthly average permit limits, when applicable. If a permit does not have a monthly average permit limit, the weekly average permit limit was used. The permitted or average (expected or observed) flows were used to calculate the WLAs. The permit maximum flow was used if the permitted or average flow was not unavailable. The permit maximum flow was usually the maximum flow covered by the specific type of general permit. For example, the Louisiana Pollution Discharge Elimination System (LPDES) Class II Sanitary General Permit covers facilities with flow up to 25,000 gallons per day. The permit maximum flow sometimes was significantly greater than the expected flow, and therefore the permit maximum was used only when other flows were not available.

As long as point source discharges of treated wastewater contain parameter levels at or below these permit limits, they should not be a cause of exceedances of the fecal coliform bacteria water quality criteria. WLAs have been assigned at water quality targets and no point source has been given a reduction from that level. The decision to provide a WLA to these sources does not reflect any determination by EPA that an effluent limit is needed or required in a NPDES permit. As part of the permitting process LDEQ will review the WLAs and permit application to determine if a permit limit is appropriate on a case-by-case basis. In addition EPA recommends that a minimum monitoring frequency of 1/month be established for all individual permits that have a wasteload allocation when their permit is renewed or a new permit is issued to them.

In recent permits, LDEQ has provided limits for total residue chlorine (TRC) as a surrogate parameter for fecal coliform for certain sanitary waste discharges covered by general permits. In addition, LDEQ considers these facilities in compliance for TRC limits if they properly operate and maintain a marine sanitation device (MSD) that complies with pollution control standards and regulations under Section 312 of the Clean Water Act. LDEQ requires that the MSD be tested yearly as part of the permit. Although the derived WLAs are for fecal coliform bacteria, meeting these the WLAs might not be necessary if alternative remediation and future monitoring prove that fecal coliform bacteria concentrations are being controlled without reducing these parameters.

EPA's stormwater permitting regulations require municipalities to obtain permit coverage for all stormwater discharges from MS4s. For the MS4 in the basin, a gross MS4 load was computed by

multiplying the LA by the ratio of the MS4 urban area in each subsegment to the subsegment area in the Mississippi River Basin. Note that these values are estimates that can be refined in the future as more information about the MS4s and land use-specific loadings information becomes available. Note also that the MS4 loads presented reflect only that portion of the MS4 in the subsegment. The computed MS4 load was subtracted from the LA and included as a WLA component of the TMDL because MS4s are permitted dischargers but function similarly to nonpoint sources through storm-driven processes. Due to the large percentage MS4 urban area in subsegment 070503, the entire allocation was assigned to the WLA. Table 4-4 lists the individual WLAs for the MS4 identified in Section 2.6 (Table 2-5). EPA expects that the MS4 WLAs will be achieved through best management practices (BMPs) and adaptive management.

Table 4-4. Fecal coliform bacteria WLAs for the MS4s in the Mississippi River Basin

Subsegment	Urban area (UA)	NPDES number	MS4 area (acres)	Designated use	Season	MS4 WLA (#/day)
070203	Baton Rouge, LA	LAS000101	7.87	PCR	Winter	1.88E+08
					Summer	1.95E+08
070502	Baton Rouge, LA	LAS000101	2,835	PCR	Winter	4.03E+11
					Summer	3.52E+10
070503	Baton Rouge, LA	LAS000101	1,731	PCR	Winter	6.89E+10
					Summer	3.11E+10

Load Allocation

The LA is the portion of the TMDL assigned to natural background loadings as well as nonpoint sources such as septic tank leakage, wildlife, and agricultural practices. For this TMDL, the LA was calculated by subtracting the WLA, MOS, and FG from the total TMDL. LAs were not allocated to separate nonpoint sources because there was a lack of available source characterization data. The LAs are presented in Table 4-3.

4.3 Seasonality and Critical Conditions

The federal regulations at 40 CFR 130.7 require that TMDLs include seasonal variations and take into account critical conditions for streamflow, loading, and water quality parameters. For this TMDL, fecal coliform bacteria loadings for subsegments with primary contact recreation as the designated use were determined for winter and summer on the basis of seasonal water quality criteria, thus accounting for seasonality. In addition, the sampling results for all pollutants were plotted over time and reviewed for any seasonal patterns (see Section 3.2). The water quality criteria for fecal coliform bacteria in subsegments designated for shellfish/oyster propagation are applied all year, and the TMDLs were developed over a several-year period, therefore, accounting for seasonal variations.

The water quality criteria for fecal coliform bacteria include values that must not be exceeded more than 25 percent of the time (primary and secondary contact recreation) and 10 percent of the time (shellfish/oyster propagation) on the basis of the data sampled throughout the year, including during critical and noncritical conditions.

4.4 Margin of Safety

Both section 303(d) of the Clean Water Act and the regulations at 40 CFR 130.7 require that TMDLs include an MOS to account for uncertainty in available data or in the actual effect that

controls will have on the loading reductions and receiving water quality. There are two ways to incorporate the MOS (USEPA 1991). One way is to implicitly incorporate it by using conservative model assumptions to develop allocations. The other way is to explicitly specify a portion of the TMDL as the MOS and use the remainder for allocations. For this analysis, the MOS is explicit: 10 percent of each targeted TMDL was reserved as the MOS to account for any uncertainty in the TMDL. Using 10 percent of the TMDL load provides an additional level of protection to the designated uses of the subsegments of concern.

4.5 Future Growth

While the MOS is an allocation for scientific uncertainty, FG is an allocation for growth. Ten percent of the load was allocated for FG in the area that is covered by the TMDL. This includes future urban development, point sources, MS4 areas, agricultural areas, and other typical nonpoint source contributing areas. The FG could also be used for unaccounted or unknown sources not included in the TMDL.

5 FUTURE WATERSHED ACTIVITIES

5.1 TMDL Implementation Strategies

LDEQ will work with other agencies to address LAs through the LDEQ Nonpoint Source Management Program. Louisiana's *Nonpoint Source Management Plan* (LDEQ 2000) states that TMDLs are being developed through a close relationship between LDEQ and EPA Region 6. It further states that "[m]anagement strategies outlined within this document (both statewide and watershed) will be implemented in each of the watersheds where water quality problems have been attributed to nonpoint sources of pollution." On page ii, Objective 3 of the watershed management strategies is to, "utilize pollutant load reductions of the TMDL to develop nonpoint source pollution reduction strategies for each of the watersheds...that have water quality problems identified." In addition, Objective 7 provides a tracking process for evaluating progress in reducing loadings of fecal coliform bacteria.

The plan includes a discussion of a number of nonpoint source activities and provides BMPs that agencies can use to achieve the nonpoint source load reductions for fecal coliform bacteria established in the TMDLs. The plan broadly discusses programs including agriculture, forestry, home sewerage systems, hydromodification, urban runoff, construction, and resource extraction. Provided with each BMP is an evaluation of the effectiveness of that BMP, given as a high, medium, or low ranking. Additional evaluations should be conducted to determine the most likely source of impairment in this watershed and to identify localized hot spots to be targeted for effective BMP implementation. These and other BMPs can be implemented at a scale adequate to achieve the load reductions established in the TMDL.

LDEQ will implement WLAs through the Louisiana Pollutant Discharge Elimination System (LPDES) permit procedures. As part of the permitting process LDEQ will review the WLAs and permit application to determine if a permit limit is appropriate on a case-by-case basis. The process for EPA Region 6 permit review of state issued permits may be found in 40 C.F.R. section 123.44. The Memorandum of Agreement between LDEQ and EPA Region 6 also describes the agencies' agreement regarding administration of LPDES.

5.2 Water Quality Monitoring Activities

LDEQ uses funds provided under section 106 of the Clean Water Act and under the authority of the Louisiana Environmental Quality Act to run a program for monitoring the quality of the state's surface waters. The LDEQ Surveillance Section collects surface water samples at various locations using appropriate sampling methods and procedures to ensure the quality of the data collected. The objectives of the surface water monitoring program are to determine the quality of the state's surface waters, develop a long-term database for water quality trend analysis, and monitor the effectiveness of pollution controls. The state uses the data obtained through the surface water monitoring program to develop its biennial section 305(b) report (*Water Quality Inventory*) and the section 303(d) list of impaired waters.

LDEQ has implemented a watershed approach to surface water quality monitoring. Through this approach, the entire state is sampled on a 4-year cycle. LDEQ samples long-term trend monitoring sites at various locations on the larger rivers and Lake Pontchartrain throughout the 4-year cycle. It samples monthly to yield approximately 12 samples per site during each year the site is monitored. LDEQ locates sampling sites where it considers them representative of the

waterbody. Under the current monitoring schedule, approximately one-half of the state's waters are newly assessed for section 305(b) and section 303(d) listing purposes for each biennial cycle, with sampling occurring statewide each year. The 4-year cycle follows an initial 5-year rotation that covered all basins in the state according to the TMDL priorities. Monitoring allows LDEQ to determine whether there has been any improvement in water quality following implementation of the TMDLs. As the monitoring results are evaluated at the end of each year, the state may add or remove waterbodies from the section 303(d) list of impaired waterbodies.

5.3 Stormwater Permitting Requirements and Presumptive Best Management Practices Approach

5.3.1. Background

The NPDES permitting program for stormwater discharges was established under the Clean Water Act as the result of a 1987 amendment. The Act specifies the level of control to be incorporated into the NPDES stormwater permitting program depending on the source (industrial versus municipal stormwater). These programs contain specific requirements for the regulated communities/facilities to establish a comprehensive stormwater management program (SWMP) or stormwater pollution prevention plan (SWPPP) to control pollutants in storm water discharges. The SWMP or SWPPP can also be a mechanism to implement any requirements of the TMDL allocation (See 40 CFR Part130).

Stormwater discharges are highly variable both in terms of flow and pollutant concentration, and the relationships between discharges and water quality can be complex. For municipal stormwater discharges in particular, the use of system-wide permits and a variety of jurisdiction-wide best management practices (BMPs), including educational and programmatic BMPs, does not easily lend itself to the existing methodologies for deriving numeric water quality-based effluent limitations. These methodologies were designed primarily for process wastewater discharges, which occur at predictable rates with predictable pollutant loadings under low-flow conditions in receiving waters. EPA has recognized such problems and developed permitting guidance for stormwater permits (USEPA 1996, USEPA 2010).

Due to the nature of stormwater discharges, and the typical lack of information on which to base numeric water quality-based effluent limitations (expressed as concentration and mass), EPA had initially recommended an interim permitting approach for NPDES stormwater permits that is based on BMPs, but recognizes there may be situations where development of numeric limits are at least targets is practicable. "The interim permitting approach uses BMPs in first-round storm water permits, and expanded or better-tailored BMPs in subsequent permits, where necessary, to provide for the attainment of water quality standards." (USEPA 1996). The interim permitting approach has been supplemented by more specific guidance on TMDLs and storm water discharges (USEPA 2002, USEPA 2010) "If the State or EPA has established a TMDL for an impaired water that includes WLAs for stormwater discharges, permits for either industrial storm water discharges or MS4 discharges must contain effluent limits and conditions consistent with the requirements and assumptions of the WLAs in the TMDL. ... Where WQBELs in permits for stormwater discharges from MS4s, small construction sites or industrial sites are expressed in the form of BMPs, the permit should contain objective and measurable elements (e.g., schedule for BMP installation or level of BMP performance). The objective and measureable elements should be included in permits as enforceable provisions. Permitting authorities should consider

including numeric benchmarks for BMPs and associated monitoring protocols or specific protocols for estimating BMP effectiveness in stormwater permits. These benchmarks could be used as thresholds that would require the permittee to take additional action specified in the permit, such as evaluating the effectiveness of the BMPs, implementing and or modifying BMPs, or providing additional measures to protect water quality.” (USEPA 2010)

A monitoring component is also included in the recommended BMP approach. “Each storm water permit should include a coordinated and cost-effective monitoring program to gather necessary information to determine the extent to which the permit provides for attainment of applicable water quality standards and to determine the appropriate conditions or limitations for subsequent permits.” (USEPA 1996). This approach was further elaborated in a guidance memo issued in 2002. “The policy outlined in this memorandum affirms the appropriateness of an iterative, adaptive management BMP approach, whereby permits include effluent limits (e.g., a combination of structural and nonstructural BMPs) that address storm water discharges, implement mechanisms to evaluate the performance of such controls, and make adjustments (i.e., more stringent controls or specific BMPs) as necessary to protect water quality. ... If it is determined that a BMP approach (including an iterative BMP approach) is appropriate to meet the storm water component of the TMDL, EPA recommends that the TMDL reflect this.” (Wayland and Hanlon 2002). In the 2010 update to the 2002 memo, EPA states “[l]astly, NPDES permits must specify monitoring requirements necessary to determine compliance with effluent limitations.” (USEPA 2010) This BMP-based approach to stormwater sources in TMDLs is also recognized and described in the most recent EPA guidance (USEPA 2008). This TMDL adopts a BMP based approach and relies on appropriate BMPs for implementation. No numeric effluent limitations are required or anticipated for municipal stormwater discharge permits.

5.3.2 Specific SWMP/SWPPP Requirements

As discussed in the Louisiana Small MS4 NPDES permit, if a TMDL assigns an individual WLA specifically to a MS4’s stormwater discharge, LDEQ’s permit specifies that the WLA must be included as a measurable goal for the stormwater management program (SWMP). This same approach would be appropriate for reissuance of any individual MS4 permits, such as that for the City and Parish of East Baton Rouge (LAS000101).

Examples of activities that the MS4 may conduct to be consistent with the WLA include:

- Monitoring to evaluate program compliance, the appropriateness of identified best management practices, and progress toward achieving identified measurable goals.
- Development of a schedule for implementation of additional controls and/or BMPs, if necessary, on the basis of monitoring results, to ensure compliance with applicable TMDLs and measurable goals adopted in response to WLAs for the MS4 discharges..

6 PUBLIC PARTICIPATION

Federal regulations require EPA to notify the public and seek comment concerning TMDLs it prepares. This TMDL was developed under contract to EPA, and EPA will hold a public review period seeking comments, information, and data from the public and any other interested party. The notice for the public review period was published in the *Federal Register* on February 25, 2010, and the review period closed on March 29, 2010.

Comments were only received from LDEQ and were used to inform or revise this TMDL document. The comments and responses are included in Appendix I of this document.

EPA will submit the final TMDL to LDEQ for implementation and incorporation into LDEQ's current water quality management plan.

7 REFERENCES

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Appendix A

Point Source Discharges in the Mississippi River Basin

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Table A-1. Point source discharge information for fecal coliform bacteria in the Mississippi River Basin (subsegment 070203)

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
29884	LA0000183	101	Oxbow Calcining LLC - Baton Rouge Calcined Coke Plant	Treated sanitary wastewater	08/31/12	Flow (Ave)	0.0025	400
3387	LA0004057	002	Novolyte Technologies (Ferro Corp) Baton Rouge Site	Low contamination potential stormwater runoff	05/31/14	Flow (DMR)	0.072	
3387	LA0004057	003	Novolyte Technologies (Ferro Corp) Baton Rouge Site	Low contamination potential stormwater runoff	06/01/14	Flow (DMR)	0.021	
1396	LA0004464	001	Exide Technologies - Baton Rouge Recycling Center	Noncontact cooling water, stormwater	08/01/11	Flow	0.335	
1396	LA0004464	003	Exide Technologies - Baton Rouge Recycling Center	Non-process stormwater	08/01/11	Flow (DMR)	0.043667	
285	LA0005355	001	ExxonMobil Chemical Co - Baton Rouge Plastics Plant	Process wastewater	08/01/14	Flow (Ave)	1.91	
285	LA0005355	004	ExxonMobil Chemical Co - Baton Rouge Plastics Plant	Non process stormwater	08/01/14	Flow (Est)	0.456	
285	LA0005355	005	ExxonMobil Chemical Co - Baton Rouge Plastics Plant	Non process stormwater	08/01/14	Flow (Est)	0.1489	
285	LA0005355	006	ExxonMobil Chemical Co - Baton Rouge Plastics Plant	Non process stormwater	08/01/14	Flow (Est)	0.2547	
3519	LA0005479	001	ExxonMobil Chemical Co - Baton Rouge Polyolefins Plant	treated process, utility, and sanitary wastewater	05/01/09	Flow	2.36762	
3999	LA0049620	001	LA Department of Corrections - Louis Jetson Correctional Center for Youth	Treated sanitary wastewater	07/31/11	Flow (Design)	0.115	200
2469	LA0066214	001	Petro-Processors Brooklawn - NPC Services Inc	Treated sanitary wastewater	01/31/10	Flow (Ave)	0.0039	200
2469	LA0066214	006	Petro-Processors Brooklawn - NPC Services Inc	Contact stormwater	01/31/10	Flow (DMR)	0.3916	
2469	LA0066214	013	Petro-Processors Brooklawn - NPC Services Inc	Contact stormwater	01/31/10	Flow (DMR)	0.038322	
11566	LA0068225	001	Carmeuse Lime & Stone Inc - Pelican Operation	Stormwater runoff	06/30/10	Not reported		
11566	LA0068225	002	Carmeuse Lime & Stone Inc - Pelican Operation	Stormwater runoff	06/30/10	Not reported		
31128	LA0086169	002	East Baton Rouge Parish Landfill (BFI North)	Non-contact stormwater	04/30/09 ^a		0.051	
31128	LA0086169	003	East Baton Rouge Parish Landfill (BFI North)	Non-contact stormwater	04/30/09 ^a		0.031	
31128	LA0086169	004	East Baton Rouge Parish Landfill (BFI North)	Non-contact stormwater	04/30/09 ^a		0.022	

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
31128	LA0086169	009	East Baton Rouge Parish Landfill (BFI North)	Non-contact stormwater, emergency only	04/30/09 ^a		0	
42044	LA0102946	002	Kinder Morgan Bulk Terminal Inc - Barge Canal Dock	Sanitary wastewater	06/30/09	Flow (Design)	0.0005	400
145903	LAG532470	001	Made To Go Truck Stop	Sanitary	11/30/12	Flow (Exp)	0.002825	200

^a Permit is in the process of renewal at the time of this document.

Table A-2. Point source discharge information for fecal coliform bacteria in the Mississippi River Basin (subsegment 070401)

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
18735	LAG33A030	04B	West Delta Area Block 83 Field E5	Treated sanitary wastewater	11/30/10			43
85168	LAG33A032	04B	Burrwood W8 Facility	Treated sanitary wastewater	11/30/10			43
85167	LAG33A038	04B	West Delta Block 83 W5 Production Facility	Treated sanitary wastewater	11/30/10			43
85169	LAG33A041	04B	Burrwood E8 Facility	Treated sanitary wastewater	11/30/10			43
133264	LAG33A091	04B	Burrwood Field Facility	Treated sanitary wastewater	11/30/10			43
33875	LAG33A130	002A	West Bay Field Facility #3	Deck Drainage	09/27/10	Flow (DMR Ave)	5.19E-05	43
134616	LAG33A159	04B	South Pass 11 Central Facility - South Pass Block 11 State Lease 998 "Q" Facility	Treated sanitary wastewater	11/30/10			43
134614	LAG33A166	04B	South Pass 11 Central Facility - South Pass Block 11 State Lease 998 "P" Facility	Treated sanitary wastewater	11/30/10			43
134617	LAG33A167	04B	South Pass 11 Central Facility - South Pass Block 11 State Lease 998 "H" Facility	Treated sanitary wastewater	11/30/10			43
134615	LAG33A168	04B	South Pass 11 Central Facility - South Pass Block 11 State Lease 998 "I" Facility	Treated sanitary wastewater	11/30/10			43
32583	LAG33A275	001, 002, 003, 005, 006, 007	Garden Island Bay Tank Battery #12 - S Flank Booster	Various	12/01/10			
32583	LAG33A275	004B	Garden Island Bay Tank Battery #12 - S Flank Booster	Treated sanitary wastewater	12/01/10			43
32609	LAG33A424	04B	South Pass Block 24 Field W2	Treated sanitary wastewater	11/30/10			43

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
			Production Facility					
32570	LAG33A430	04B	Garden Island Bay Production Facility	Treated sanitary wastewater	11/30/10			43
32610	LAG33A431	005	South Pass Block 24 Field W1 Production Facility	Domestic wastewater	12/01/10	Flow (DMR Ave)	0.000866	
32610	LAG33A431	002A	South Pass Block 24 Field W1 Production Facility	Deck Drainage	12/01/10	Flow (DMR Ave)	0.001486	
32610	LAG33A431	004B	South Pass Block 24 Field W1 Production Facility	Treated Sanitary Wastewater	12/01/10	Flow (DMR Ave)	0.000206	43
32682	LAG33A480	04B	Southeast Pass Common Facility #1	Treated sanitary wastewater	11/30/10			43
32681	LAG33A481	04B	Southeast Pass Common Facility No 2	Treated sanitary wastewater	11/30/10			43
32680	LAG33A482	04B	Southeast Pass Common Facility No 3	Treated sanitary wastewater	11/30/10			43
32581	LAG33A483	04B	Southeast Pass Common Facility #4	Treated sanitary wastewater	11/30/10			43
32601	LAG33A516	04B	Tank Battery No 160	Treated sanitary wastewater	11/30/10			43
32650	LAG33A523	04B	South Flank Production Facility	Treated sanitary wastewater	11/30/10			43
32630	LAG33A524	04B	West Tank Battery	Treated sanitary wastewater	11/30/10			43
32578	LAG33A525	04B	Main Pass Block 69 Central Facility	Treated sanitary wastewater	11/30/10			43
136161	LAG33A538	04B	205 Platform - Garden Island Field	Treated sanitary wastewater	11/30/10			43
139943	LAG33A609		6A-13 RA SU A - SL 195 QQ Well No 2		12/01/09			43
23741	LAG33A641	04B	East Bay Central Facility	Treated sanitary wastewater	11/30/10	Flow (DMR)	0.002635	43
94687	LAG531581	001	Associated Branch Pilots - Pilot's Station Southwest Pass	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.0025	14
2522	LAG532487	002	Dowell - Division of Schlumberger Technology Corp	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.0025	14
153091	LAG532549	001	L&L Oil and Gas Services - Venice	Sanitary	12/01/12	Flow (exp.)	0.0005	43

Table A-3. Point source discharge information for fecal coliform bacteria in the Mississippi River Basin (subsegment 070403)

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
93835	LAG33A066	04B	Romere Pass Terminal - Romere Pass Field	Treated sanitary wastewater	11/30/10			43
32629	LAG33A343	04B	Delta Duck Club CF #5 Tank Battery #3 Facility - Delta Duck Club Field	Treated sanitary wastewater	11/30/10			14

Table A-4. Point source discharge information for fecal coliform bacteria in the Mississippi River Basin (subsegment 070404)

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
17897	LA0003867	006	Targa Midstream Services LP - Venice Stabilizing Plant	Treated sanitary wastewater	01/31/08 ^a	Flow (Ave)	0.0003	43

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
17897	LA0003867	102	Targa Midstream Services LP - Venice Stabilizing Plant	Treated sanitary wastewater	01/31/08 ^a	Flow (Ave)	0.0015	43
32615	LA0106356	003	Targa Midstream Services Limited Partnership - Delta Gathering Station	Treated sanitary wastewater	12/31/11	Flow (Ave)	0.001388	43
32622	LAG33A026	04B	South Pass Block 24 Field Facility No 2	Treated sanitary wastewater	11/30/10			43
90251	LAG33A346	04B	West Bay Facility #9	Treated sanitary wastewater	11/30/10			43
90908	LAG33A347	04B	West Bay Compressor Station	Treated sanitary wastewater	11/30/10			43
135113	LAG33A349	04B	West Bay Facility #2	Treated sanitary wastewater	11/30/10			43
135111	LAG33A350	04B	West Bay Facility #13	Treated sanitary wastewater	11/30/10			43
135112	LAG33A351	04B	West Bay Facility #1	Treated sanitary wastewater	11/30/10			43
8491	LAG33A526	002, 005, 006, 007	Venice Compressor Station - Venice Plant	Deck drainage, wastewater, misc.	12/01/10			
8491	LAG33A526	004B	Venice Compressor Station - Venice Plant	Sanitary	12/01/10			43
32605	LAG33A626	04B	West Bay Oil & Gas Field Facility	Treated sanitary wastewater	11/30/10			43
141493	LAG33A643	04B	South Pass Central Facility - West Bay Field	Treated sanitary wastewater	11/30/10			43
32699	LAG480097	001	Halliburton Energy Services Inc Baroid Yard #2	Treated sanitary wastewater	07/31/06	Flow (Ave)	0.0006	43
8910	LAG480098	001	Halliburton Energy Services Inc Venice Yard 1	Treated sanitary wastewater	07/31/06	Flow (Ave)	0.0008	43
4685	LAG480140	002	Premier Industries Inc Venice Facility	Treated sanitary wastewater	07/31/06	Flow (Exp)	0.0025	43
19079	LAG480232	001A	John W Stone Oil Distributor LLC - Venice Fuel Dock	Treated sanitary wastewater	07/31/06	Flow (DMR)	0.003198	43
86527	LAG480325	001	Martin Operating Partnership LP - Venice Terminal	Treated sanitary wastewater	07/31/06	Flow (Max - Permit)	0.005	43
30204	LAG480358	001	Liberty Services Inc - Venice Shorebase	Treated sanitary wastewater	07/31/06 ^b	Flow (Ave)	0.001	43
42493	LAG480440	001	MiSWACO Venice II Shorebase	Treated sanitary wastewater	8/10/09	Flow (Ave)	0.003	43

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
132829	LAG480537	001	Devon Energy Production Co LP - Venice Operations Base	Treated sanitary wastewater	11/23/09	Flow (Ave)	0.00065	43
52450	LAG480561	001	Chevron USA Inc - Venice Shore Base	Treated sanitary wastewater	06/05/13	Flow (Ave)	0.01	14
42642	LAG530963	001	Newpark Environmental Service	Treated sanitary wastewater	11/30/12	Flow (Max - Permit)	0.005	43
41702	LAG530984	001	Haliburton Energy Service Inc - HES Bulk Plant	Treated sanitary wastewater	11/30/12	Flow (Design)	0.003	14
52451	LAG531086	001	Newpark Drilling Fluids Venice	Treated sanitary wastewater	11/30/12	Flow (Design)	0.003	43
9023	LAG531145	001	USCG - Venice Station	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.0025	43
40547	LAG531199	001	Ambar Drilling Fluids LP LLP - Venice	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.00051	43
93007	LAG531208	001	Production Management Industries LLG	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.00252	43
41399	LAG531225	001	Environmental Treatment Team - Venice Shorebase Facility	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.0015	43
952	LAG531353	001	BJ Services Co USA - Venice Bulk Plant	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.00005	43
20979	LAG531468	001	USFWS - Delta National Wildlife Refuge	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.00006	43
149797	LAG532242	001	US Liquids of LA - Venice Transfer Station	Treated sanitary wastewater	11/30/12	Flow (Max - Permit)	0.0025	43
100326	LAG540258	001	Cypress Cove Lodge	Treated sanitary wastewater	06/30/13	Flow (Max - Permit)	0.025	14
41200	LAG541115	001	Cypress Cove Peninsula Townhomes LLC	Treated sanitary wastewater	06/30/13	Flow (Ave)	0.024	14
52450	LAG541401		Chevron USA Inc - Venice Shore Base		06/30/13	Flow (Exp)	0.01	14

^a Permit is in the process of renewal at the time of this document.

^b No updated permit found. Permit modification in 2009 suggest, permit still active.

Table A-5. Point source discharge information for fecal coliform bacteria in the Mississippi River Basin (subsegment 070501)

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
19237	LA0032999	001	St Francisville Town of - STP	Treated sanitary wastewater	09/30/13	Flow (Design)	0.3	200
41363	LAG530722	001	Elm Park Baptist Church	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.00171	400
84164	LAG531066	001	Ralph's Tavern	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.00005	200
84504	LAG531110	001	Chris & Dad's Restaurant	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.00006	200
87549	LAG531117	001	Elm Park Enterprises Inc	Treated sanitary wastewater	11/30/12	Flow (Exp)	0.00171	200
69386	LAG531817	001	Guyon's - M&J's Grocery	Treated sanitary wastewater	11/30/12	Flow (Exp)	0.00006	400
148654	LAG532204	001	Heirloom Cuisine - WWTP	Treated sanitary wastewater	11/30/12	Flow (Exp)	0.0005	200
149569	LAG532234	001	LADCRT - Office of State Parks - Rosedown Plantation	Treated sanitary wastewater	11/30/12	Flow (Exp)	0.003	400
149569	LAG532234	002	LADCRT - Office of State Parks - Rosedown Plantation	Treated sanitary wastewater	11/30/12	Flow (Exp)	0.0005	400
149569	LAG532234	003	LADCRT - Office of State Parks - Rosedown Plantation	Treated sanitary wastewater	11/30/12	Flow (Exp)	0.0005	400
154911	LAG532529	001	US Postal Service - Wakefield Post Office	Sanitary	12/01/12	Flow	0.00004	400
156371	LAG532779	001	Audubon State Historic Site - WWTP	Sanitary	12/01/12	Flow (exp.)	0.00042	400
156371	LAG532779	002	Audubon State Historic Site - WWTP	Sanitary	12/01/12	Flow (exp.)	0.00022	400
162920	LAG533063	001	Prem & Vimla Menon Family LLC - The Victorian of the Felicianas	Sanitary	12/01/12	Flow (exp.)	0.00262	400
38516	LAG540327	001	Givens Mobile Home Park	Treated sanitary wastewater	06/30/13	Flow (Ave)	0.005901	200
98918	LAG541099	001	Stateline Truck Stop	Treated sanitary wastewater	06/30/13	Flow (Design)	0.012	200
119230	LAG541173	001	West Feliciana Parish Law Enforcement District Work Release Center	Treated sanitary wastewater	06/30/13	Flow (Exp)	0.0175	200
96190	LAG541229	001	Ricks Trailer Park	Treated sanitary wastewater	06/30/13	Flow (Exp)	0.006	200
135397	LAG541414	001	Legacy Park Estates Mobile Home Park - STP	Treated sanitary wastewater	06/30/13	Flow (Design)	0.01	200

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
43933	LAG560150	001	West Feliciana Parish Police Jury - Hardwood Subdivision STP	Treated sanitary wastewater	07/31/08	Flow (Design)	0.045	200
43932	LAG560151	001	West Feliciana Parish Police Jury - Solitude Sewage System	Treated sanitary wastewater	07/31/08	Flow (Max - Permit)	0.05	200
18977	LAG560152	001	West Feliciana Parish Police Jury - Turner Subdivision STP	Treated sanitary wastewater	07/31/08	Flow (Design)	0.035	200
43935	LAG560153	001	West Feliciana Parish School Board	Treated sanitary wastewater	07/31/08	Flow (Ave)	0.04085	200

Table A-6. Point source discharge information for fecal coliform bacteria in the Mississippi River Basin (subsegment 070502)

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
27646	LA0051144	102	Colonial Pipeline Co - Baton Rouge Junction Facility	Sanitary	09/30/08	Flow (Exp)	0.0028	400
39899	LA0078816	001	Jackson Town of - WWTP	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.439	200
31128	LA0086169	001	East Baton Rouge Parish Landfill (BFI North)	Treated leachate, treated sanitary wastewater	04/30/09	Flow (Ave)	0.319	200
96336	LA0121991	001	Amitech USA Ltd - Baton Rouge Plant	Treated sanitary wastewater	06/30/11	Flow (Ave)	0.025	200
18692	LA0122301	001	The Bluffs Country Club & Resort	Treated sanitary wastewater	12/31/11	Flow (Design)	0.3	200
80781	LAG110098	005	Dolese Brothers Co - Zachary Plant	Treated sanitary wastewater	03/14/09	Flow (DMR)	0.00144	400
41364	LAG530188	001	Elm Park Pit Stop Restaurant & Catering	Treated sanitary wastewater	11/30/12	Flow (Max - Permit)	0.005	200
52479	LAG530286	001	LADCRT - Port Hudson State Commemorative Area STP	Treated sanitary wastewater	11/30/12	Flow (Max - Permit)	0.0025	400
42516	LAG530377	001	Miller's Seafood - D'Johns Restaurant	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.001	400
42848	LAG530421	001	Plains Presbyterian Church	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.00144	400
14409	LAG530455	001	Red Stick Armature Works Inc	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.0036	400
43049	LAG530464	001	Ridge Crest Mobile Home Park	Treated sanitary wastewater	11/30/12	Flow (Max - Permit)	0.005	400
32061	LAG530772	001	Transcontinental Gas Pipeline Company Compressor Station #60	Treated sanitary wastewater	11/30/12	Flow (Max - Permit)	0.0025	400
42120	LAG530783	001	La Office of Tourism - Tourist Information Center	Treated sanitary wastewater	11/30/12	Flow (Max - Permit)	0.005	400
83283	LAG531367	001	Asphodel Plantation Village LLC Asphodel Plantation Village	Treated sanitary wastewater	11/30/12	Flow (Design)	0.01	400
41145	LAG540004	001	Country Aire Mobile Home Park	Treated sanitary wastewater	06/30/13	Flow (Max - Permit)	0.025	200

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
41659	LAG540100	001	Green Acres Campground	Treated sanitary wastewater	06/30/13	Flow (Design)	0.025	200
19728	LAG540279	001	EBR City Parish - Lake Jolie Vue Subdivision #306	Treated sanitary wastewater	06/30/13	Flow (Ave)	0.003	200
41488	LAG540303	001	Farmers Market of Baton Rouge Inc - Bakers Mobil Home Park	Treated sanitary wastewater	06/30/13	Flow (Max - Permit)	0.025	200
42013	LAG540870	001	Judson Baptist Assoc	Treated sanitary wastewater	06/30/13	Flow (Ave)	0.0137	200
89437	LAG541037	001	Rosbottom Interests - Southern Belle Casino	Treated sanitary wastewater	06/30/13	Flow (Exp)	0.00729	200
107949	LAG541114	001	St Francisville Country Manor	Treated sanitary wastewater	06/30/13	Flow (Exp)	0.01264	200
121658	LAG541215	001	Merrydale Place/Weydert Hill - STP	Treated sanitary wastewater	06/30/13	Flow (Exp)	0.018	200
125411	LAG541314	001	Wayne & Sharon Zuccarello - Ridgeline Park Trailer Court	Treated sanitary wastewater	06/30/13	Flow (Exp)	0.008	200
40739	LAG560035		Bayou Waters Ltd Partnership - Sweetbriar Mobile Home Estates	Treated sanitary wastewater	08/27/02	Flow (Ave)	0.0535	400
19480	LAG560111	001	LADOVA - LA War Veterans Home	Treated sanitary wastewater	07/31/08	Flow (Exp)	0.049999	200
51280	LAG560116	001	Norwood Village of	Treated sanitary wastewater	07/31/08	Flow (Exp)	0.04	200
44011	LAG560188	001	Mo-Dad Utilities - Lake Pointe Subdivision	Treated sanitary wastewater	07/31/08	Flow (Exp)	0.0268	200
91166	LAG570219	001	Joint Emergency Services Training Center	Treated sanitary wastewater	03/14/09	Flow (Exp)	0.06	200
119550	LAG570241	001	DKE Development LLC - Pecan Hills & High Plains Subdivisions	Treated sanitary wastewater	03/14/09	Flow (Exp)	0.098	200
26494	LAG570330	001	Dixon Correctional Institute	Treated sanitary wastewater	03/14/09	Flow (Exp)	0.05	200
130817	LAG570343	001	Shaw Environmental & Infrastructure Inc / Shaw Environmental Inc / RVTP West	Treated sanitary wastewater	03/14/09	Flow (Exp)	0.028	200
130818	LAG570344	001	Shaw Environmental & Infrastructure Inc / Shaw Environmental Inc / RVTP East	Treated sanitary wastewater	03/14/09	Flow (Exp)	0.068125	200
100619	LAG570353	001	Wastewater Treatment Utilities Inc - Beaver Creek Subdivision STP	Treated sanitary wastewater	03/14/09	Flow (Exp)	0.06	200

Table A-7. Point source discharge information for fecal coliform bacteria in the Mississippi River Basin (subsegment 070503)

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
289	LA0000329	004	Honeywell International Inc. - Baton Rouge South Works	Noncontact stormwater	02/28/09	Flow (DMR)	0.045475	
1410	LAG110107	001	Dolese Brothers Co - Choctaw Plant	Nonprocess stormwater	03/15/14	Flow (Ave)	0.004183	
19526	LAG480023	001	Kansas City Southern Railway Co KCSR North Baton Rouge Yard	Stormwater runoff	08/01/06			

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
19526	LAG480023	002	Kansas City Southern Railway Co KCSR North Baton Rouge Yard	Stormwater runoff	08/01/06			
19526	LAG480023	003	Kansas City Southern Railway Co KCSR North Baton Rouge Yard	Stormwater runoff	08/01/06	Flow (DMR)	0.000606	

Table A-8. Point source discharge information for fecal coliform bacteria in the Mississippi River Basin (subsegment 070505)

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
43934	LAG530828	001	Tunica Elementary School	Treated sanitary wastewater	11/30/12	Flow (Ave)	0.003415	400
154909	LAG532528	001	US Postal Service - Tunica Post Office	Sanitary	12/01/12	Flow	0.00004	400

Table A-9. Point source discharge information for fecal coliform bacteria in the Mississippi River Basin (subsegment 070601)

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
116035	LA0118192	007	Main Pass 68 Well #1 (Platform A)	Deck drainage	01/01/15	Flow (DMR)	0.000104667	
116698	LA0119253	001	West Delta Block 54 - State Lease 17379 Well #2	Treated sanitary wastewater	04/30/09	Flow (Exp)	0.002	43
128345	LA0121118		SL 18383 Well #1 - West Delta Block 52 Area		05/01/11			
124267	LA0121894		State Lease 17935 Well #001 - West Delta Block 53 Field		05/01/11			
132983	LA0121959		OCS-G-27190 Well #1 - South Pass Block 39		05/01/11			
32619	LA0122157		West Delta Block 25 Facility		08/01/11			43
136734	LA0122548	002	State Lease 18550 Well #1	Deck Drainage	05/01/12	Flow (DMR)	0.000155	
124119	LA0122556		State Lease 17194 Well No 001		06/01/12			
124120	LA0122564		State Lease 17194 Well No 002		06/01/12			
32688	LAG260059	003	West Delta Block 54 - Tank Battery #3		NOI only online	Flow (DMR Ave)	0.18335	
134006	LAG26A002		South Pass 31 State Lease 14846 Facility - South Pass 31 Field		01/01/15	Flow (DMR)	25	
116354	LAG26A011		Main Pass 72-A Platform - SL Wells A1 St & A3 St		01/01/15			
32677	LAG26A021	001	Main Pass Block 75 Platform	Deck drainage	01/01/15	Flow (DMR Ave)	0.001624	
32677	LAG26A021	004	Main Pass Block 75 Platform	Sanitary	01/01/15	Flow (DMR Ave)	0.000075	

AI number	Permit number	Pipe	Facility name	Facility outfall	Expiration date	Discharge	Flow (mgd)	Limit (cfu/100mL)
133524	LAG33A099	04B	Bayou Felice Facility - South Pass Block 24 Field	Treated sanitary wastewater	11/30/10			14
93947	LAG33A100	04B	Main Pass Block #2 Facility	Treated sanitary wastewater	11/30/10			14
32648	LAG33A515	04B	Tank Battery No 414	Treated sanitary wastewater	11/30/10			14
32676	LAG33A522	04B	Tank Battery No 49	Treated sanitary wastewater	11/30/10	Flow (DMR)	0.000424	14
139940	LAG33A608		6A-19 RA SU A - SL 195 QQ Well No 1		12/01/10			
101953	LAG33A639	04B	West Delta Block 54	Treated sanitary wastewater	11/30/10			14
41642	LAG530682	001	Grand Isle Shipyard Inc - Quarter Barge Ella Mae Barge OU-40	Treated sanitary wastewater	11/30/12	Flow (Exp)	0.0036	43
32712	LAG531011	001	Shell Pipeline Co LP - Main Pass 69P Facility	Treated sanitary wastewater	11/30/12	Flow (Exp)	0.00004	43

Appendix B

Summary of Water Quality Data

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Table B-1. Fecal coliform bacteria data summary for the Mississippi River Basin (primary contact recreation)

Station number	Station name	Period of record	Number of observations	Minimum (cfu/100 mL)	Maximum (cfu/100 mL)	Mean (cfu/100 mL)	Median (cfu/100 mL)	Number of observations above criterion ^a	% of observations above criterion ^a
May 1 through October 31									
Subsegment 070203									
1098	Bayou Baton Rouge	5/15/01–8/11/09	17	10	,1,700	382	170	5	29%
Subsegment 070501									
1108	Bayou Sara at Tunica St. Bridge	5/14/01–8/11/09	16	42	4,700	661	225	5	31%
Subsegment 070502									
0323	Thompsons Creek east of Saint Francisville, Louisiana	5/13/91–8/11/09	58	23	16,000	2,477	400	27	47%
Subsegment 070503									
0583	Capitol Lake at Baton Rouge, Louisiana	5/8/01–9/15/09	17	11	15,000	2,528	670	9	53%
Subsegment 070505									
1116	Tunica Bayou near Tunica, Louisiana	5/14/01–8/11/09	11	40	1,700	740	800	7	64%
November 1 through April 30									
Subsegment 070203									
1098	Bayou Baton Rouge	1/16/01–4/14/09	15	3	,4,900	623	156	2	13%
Subsegment 070501									
1108	Bayou Sara at Tunica St. Bridge	1/16/01–4/14/09	14	6	1,300	321	180	0	0%
Subsegment 070502									
0323	Thompsons Creek east of Saint Francisville, Louisiana	1/14/91–4/14/09	60	2	16,000	1,582	300	12	20%
Subsegment 070503									
0583	Capitol Lake at Baton Rouge, Louisiana	1/9/01–4/7/09	15	2	12,200	1,126	130	2	13%
Subsegment 070505									
1116	Tunica Bayou near Tunica, Louisiana	1/16/01–4/14/09	12	80	1,300	355	193	0	0%

^a Criteria for primary and secondary contact recreation: Primary contact recreation: No more than 25 percent of the total samples collected on a monthly basis shall exceed a fecal coliform bacteria density of 400 colonies/100 mL. This shall apply only during the defined recreational period of 05/01 through 10/31. For all other periods a fecal coliform bacteria density of 2,000 colonies/100 mL for secondary contact recreation applies.

Table B-2. Summary of fecal coliform bacteria data for the Mississippi River Basin (oyster propagation)

Station number	Station name	Period of record	Number of observations	Minimum (#/100 mL)	Maximum (#/100 mL)	Mean (#/100 mL)	Median (#/100 mL)	Number of observations above criterion ^a	% of observations above criterion ^a
Subsegment 070401									
1093	South Pass at Head of Passes	3/21/01–8/18/09	17	10	500	100	63	10	59%
Subsegment 070403									
1094	Main Pass at intersection with Mississippi River	3/21/01–12/4/01	2	30	130	80	80	1	50%
Subsegment 070404									
1097	Tiger Pass at Cypress Cove Marina	3/21/01–12/5/01	3	30	130	70	50	2	67%
Subsegment 070601									
1092	East Bay near Joseph Bayou	3/20/01–8/18/09	17	11	240	79	54	14	82%

^a Criteria for oyster propagation: The fecal coliform bacteria median most probable number (MPN) shall not exceed 14 colonies/100 mL, and not more than 10 percent of the samples shall exceed an MPN of 43 colonies/100 mL for a five tube decimal dilution test in those portions of the area most probably exposed to fecal contamination during the most unfavorable hydrographic and pollution conditions.

APPENDIX C

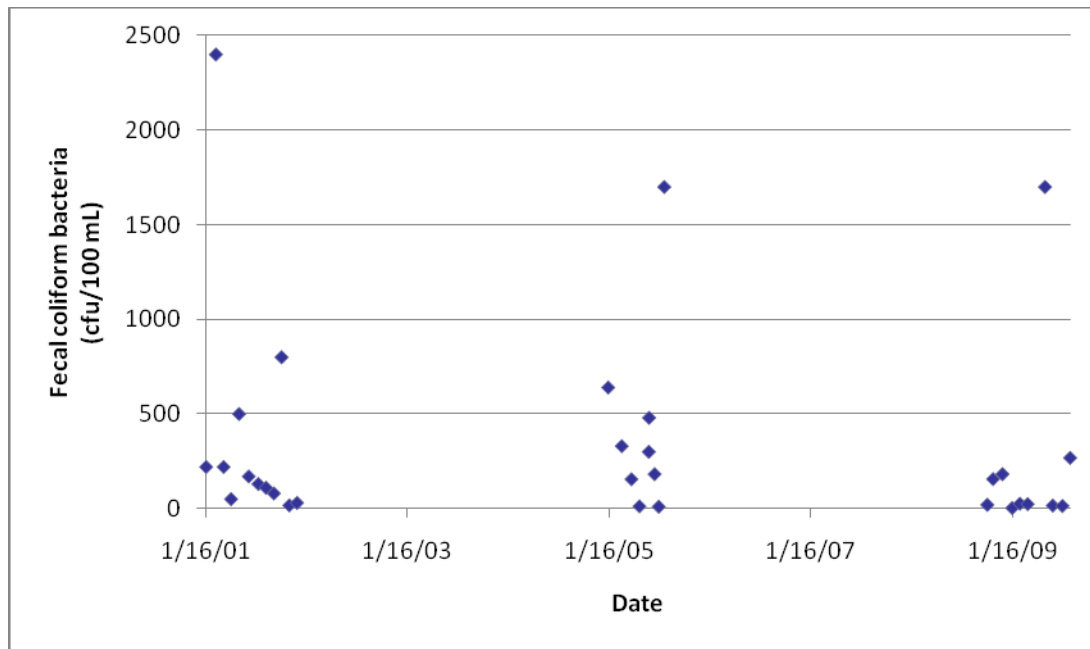
Fecal Coliform Bacteria Water Quality Data (CD-ROM)

This appendix contains large files, which are provided only on a CD-ROM. To obtain a copy of this appendix, please contact EPA.

Appendix D

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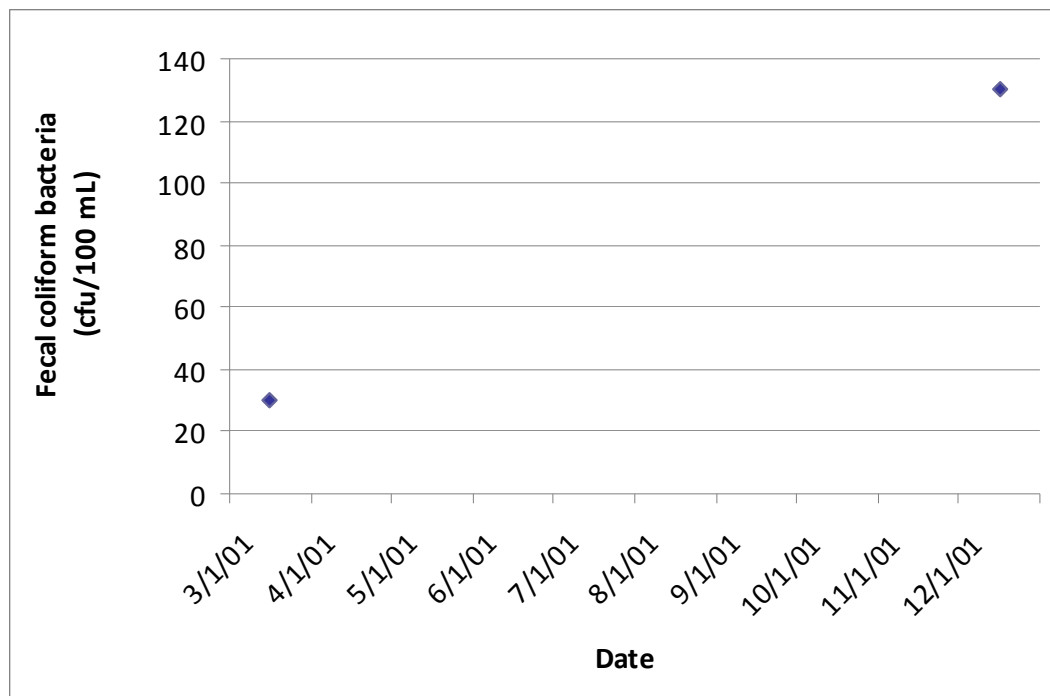


Figure D-3. Fecal coliform bacteria observations at Main Pass (subsegment 070403), Louisiana (station 1094).

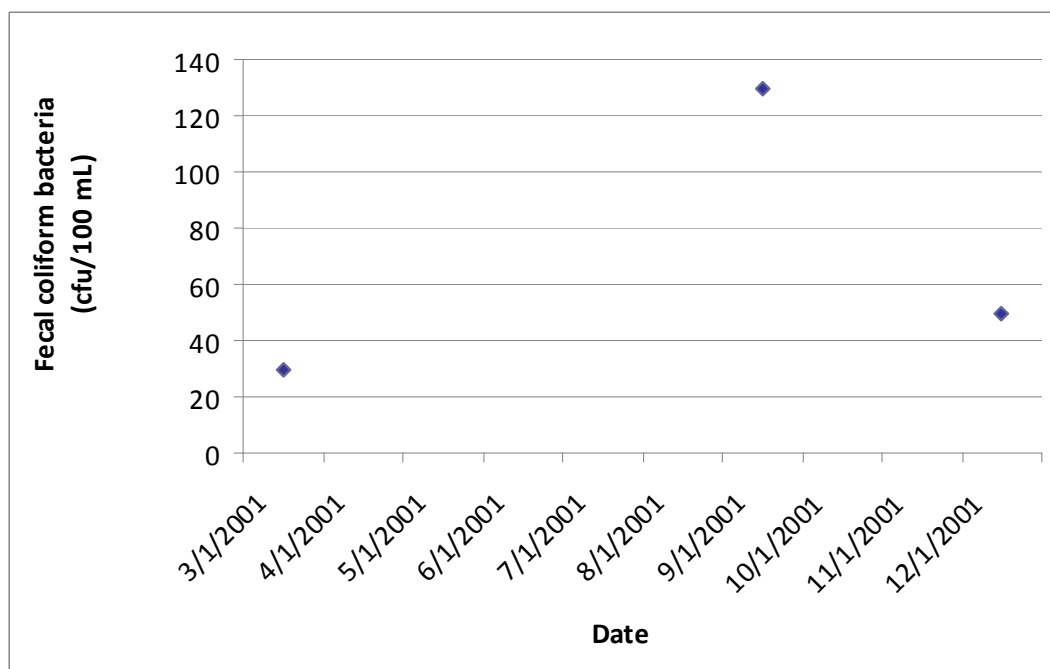


Figure D-4. Fecal coliform bacteria observations at Tiger Pass (subsegment 070404), Louisiana (station 1097).

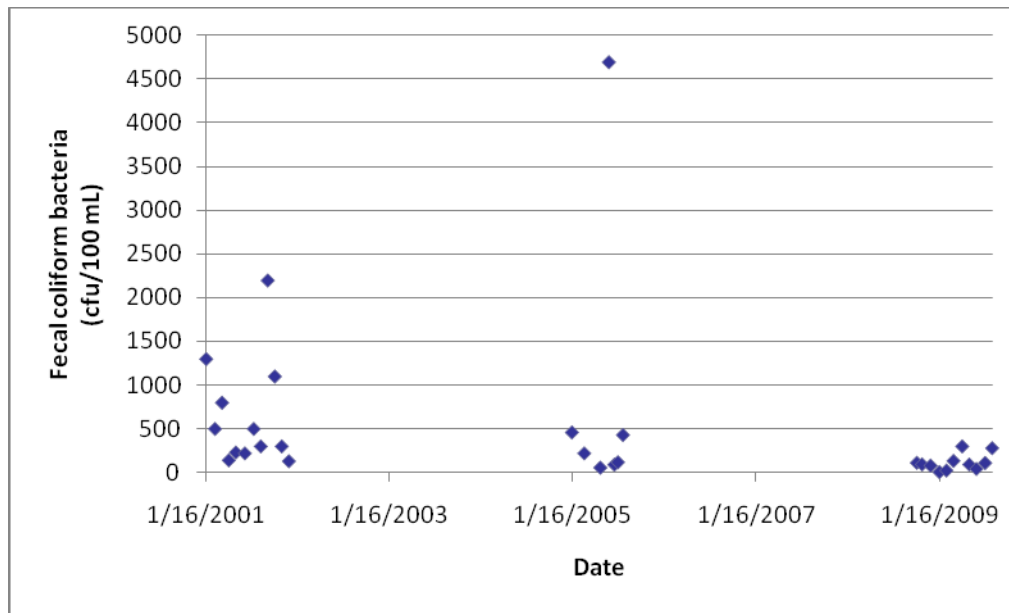


Figure D-5. Fecal coliform bacteria observations at Bayou Sara (subsegment 070501), Louisiana (station 1108).

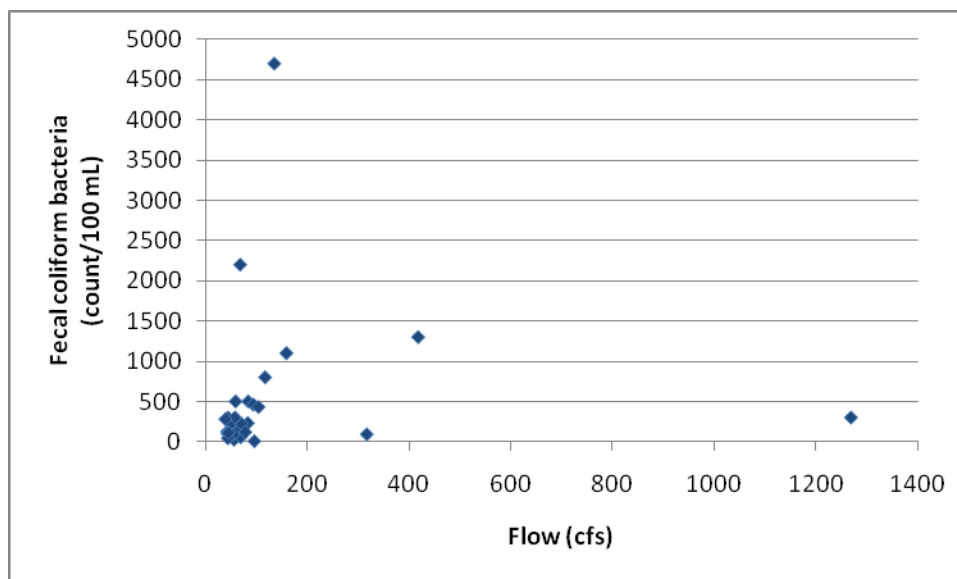


Figure D-6. Fecal coliform bacteria observations at Bayou Sara, Louisiana (subsegment 070501, station 1108) versus flow at USGS gage 07377500.

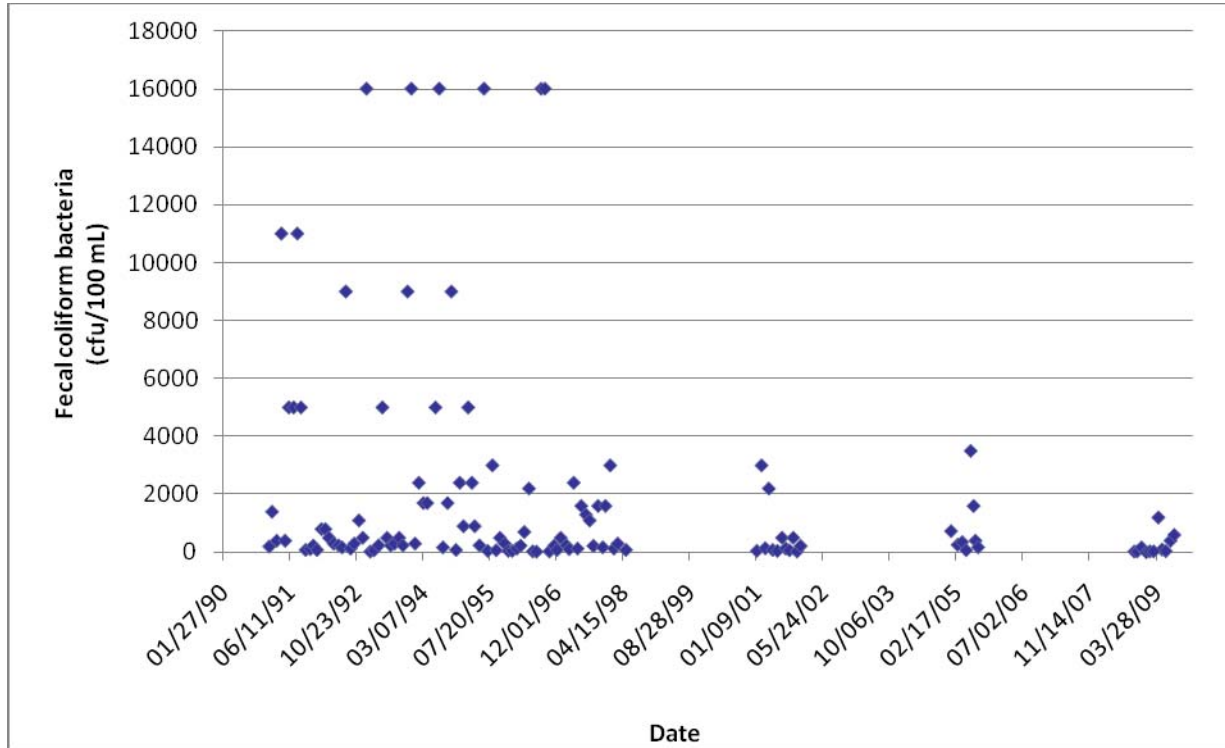


Figure D-7. Fecal coliform bacteria observations at Thompsons Creek (subsegment 070502), Louisiana (station 0323).

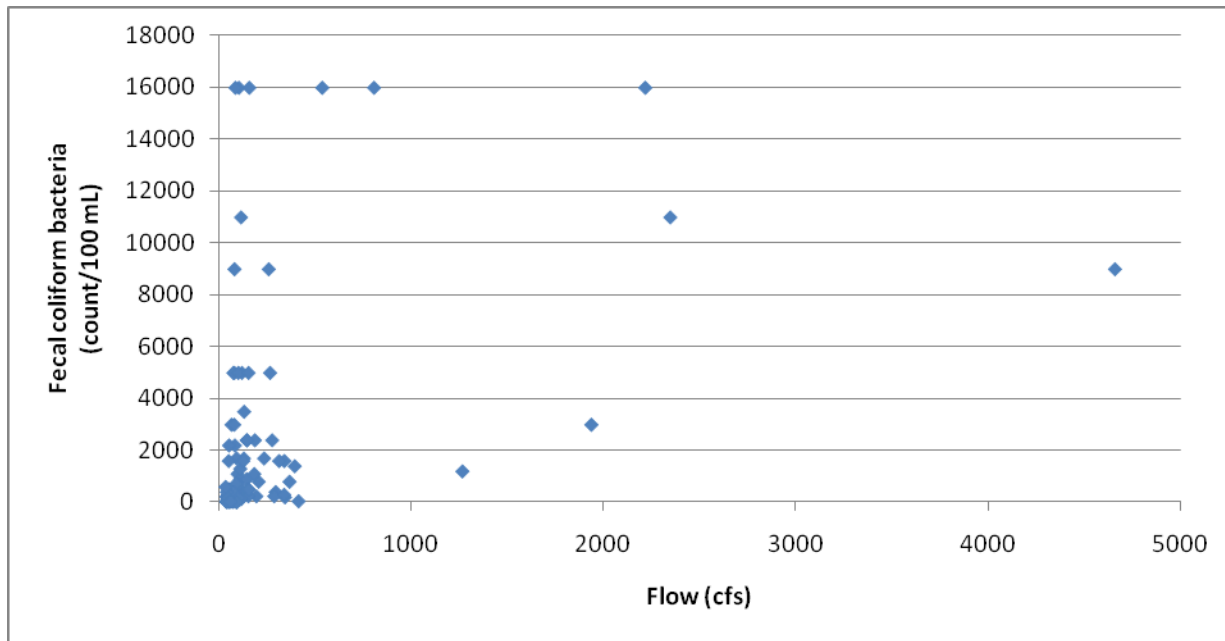


Figure D-8. Fecal coliform bacteria observations at Thompsons Creek, Louisiana (subsegment 070502, station 0323) versus flow at USGS gage 07377500.

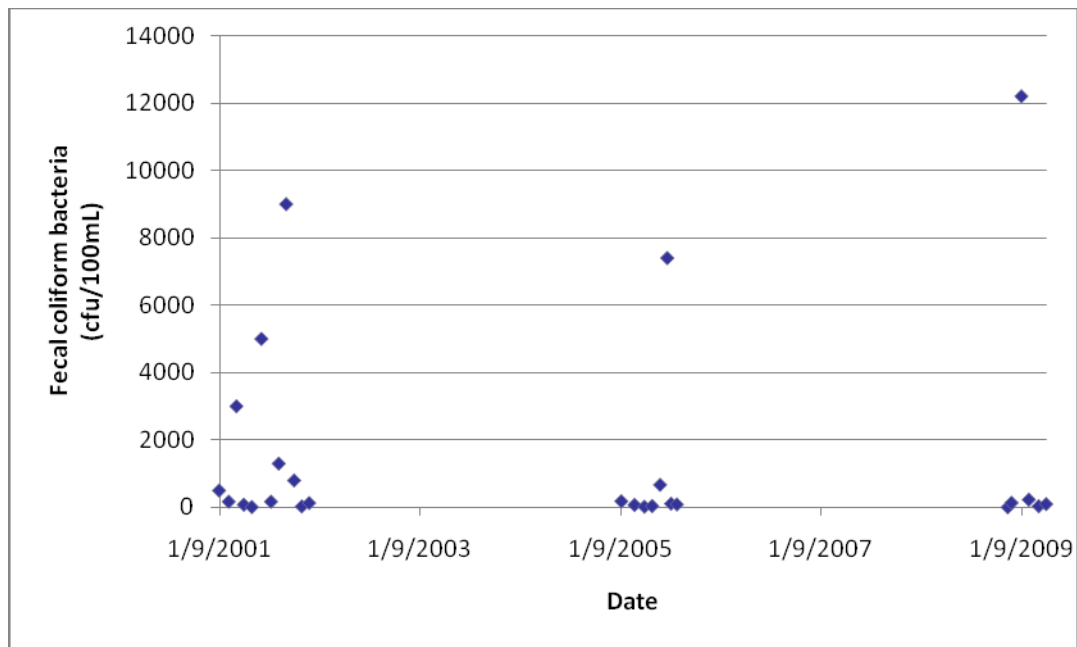


Figure D-9. Fecal coliform bacteria observations at Capitol Lake (subsegment 070503), Louisiana (station 0583).

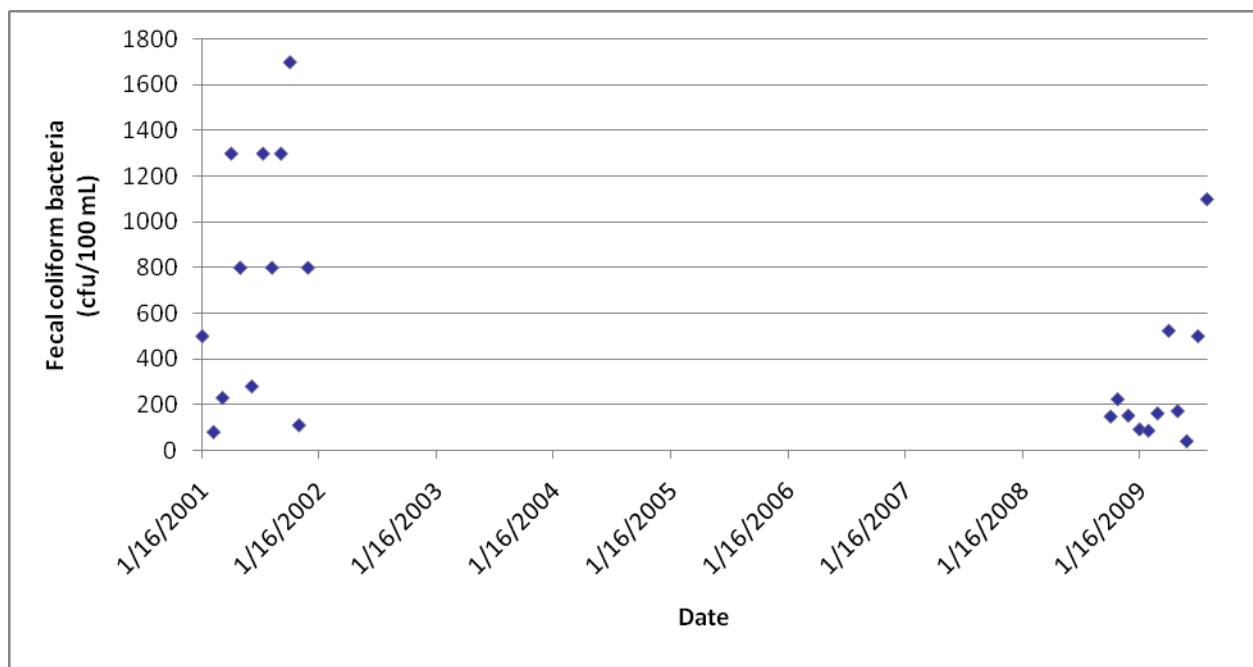


Figure D-10. Fecal coliform bacteria observations at Tunica Bayou (subsegment 070505), Louisiana (station 1116).

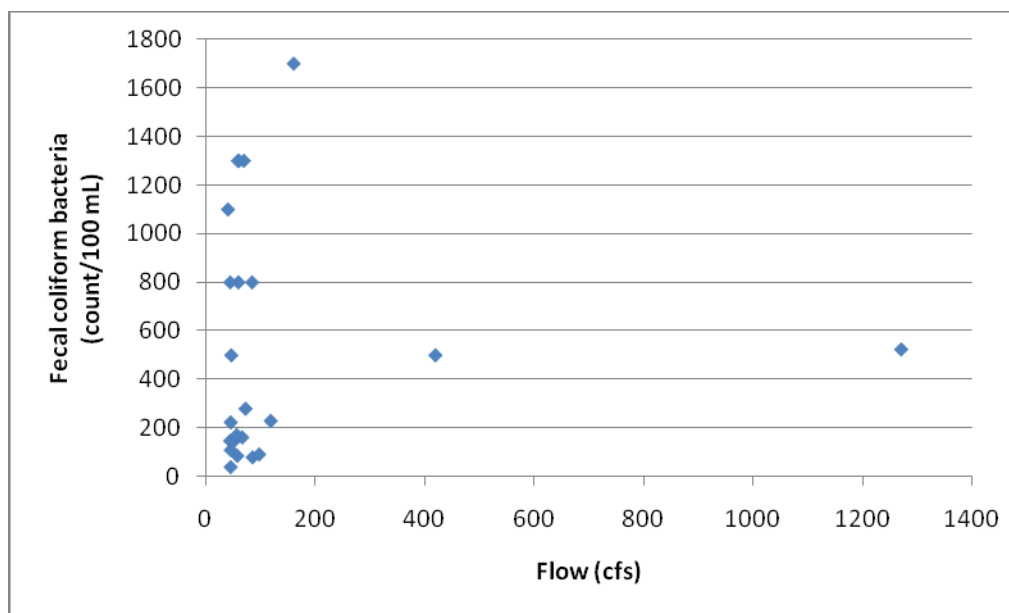


Figure D-11. Fecal coliform bacteria observations at Tunica Bayou, Louisiana (subsegment 070505, station 1116) versus flow at USGS gage 07377500.

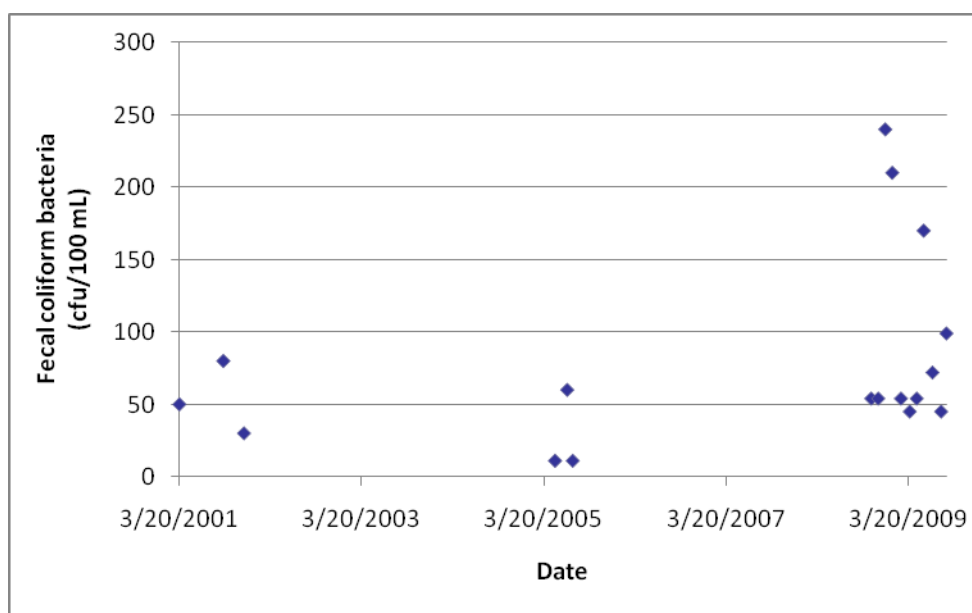
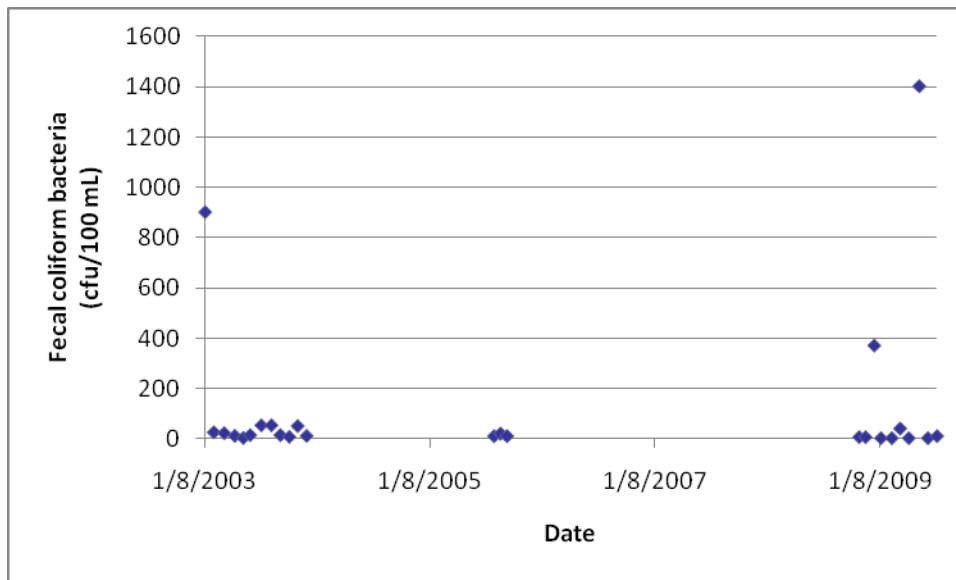


Figure D-12. Fecal coliform bacteria observations at East Bay near Joseph Bayou (subsegment 070601), Louisiana (station 1092).



Appendix E

Fecal Coliform Bacteria TMDL Calculations for the Lower Mississippi River Basin and Subsegment 070503

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Table E-1. Fecal coliform bacteria concentrations before and after reductions for subsegment 070401 station 1093

Station	Date	Concentration before reduction (cfu/100 mL)	Concentration after reduction (cfu/100 mL)	Loading before reduction (cfu/d)	Loading after reduction (cfu/d)
1093	03/20/01	23	4	2.15E+11	4.20E+10
1093	09/12/01	500	98	4.67E+12	9.12E+11
1093	12/04/01	110	21	1.03E+12	2.01E+11
1093	05/03/05	170	33	1.59E+12	3.10E+11
1093	06/21/05	80	16	7.47E+11	1.46E+11
1093	07/13/05	70	14	6.54E+11	1.28E+11
1093	10/21/08	18	4	1.68E+11	3.28E+10
1093	11/18/08	10	2	9.34E+10	1.82E+10
1093	12/16/08	36	7	3.36E+11	6.57E+10
1093	01/13/09	171	33	1.60E+12	3.12E+11
1093	02/17/09	63	12	5.88E+11	1.15E+11
1093	03/24/09	18	4	1.68E+11	3.28E+10
1093	04/21/09	36	7	3.36E+11	6.57E+10
1093	05/19/09	63	12	5.88E+11	1.15E+11
1093	06/23/09	220	43	2.05E+12	4.01E+11
1093	07/28/09	18	4	1.68E+11	3.28E+10
1093	08/18/09	90	18	8.40E+11	1.64E+11

Table E-2. Fecal coliform bacteria TMDL summary table for subsegment 070401

Average water budget (mm/day)		2.402
Subsegment area (acres)		96,042.9
Criterion #1 (< 10% over cfu/100 mL)		43
Criterion #1 as loading (< 10% over cfu/d)		4.01E+11
Criterion #2 (median) (cfu/100 mL)		14
Criterion #2 as loading (median) (cfu/d)		1.31E+11
Wasteload allocation (cfu/d)		1.20E+07
Point source flow (MGD)		0.01
Percent reduction		80.5
	Before reduction	After reduction
Average concentration (cfu/100 mL)	100	19
Average loading (cfu/d)	9.31E+11	1.82E+11
Median concentration (cfu/100 mL)	63	12
Median loading (cfu/d)	5.88E+11	1.15E+11

Table E-3. Fecal coliform bacteria concentrations before and after reductions for subsegment 070403 station 1094

Station	Date	Concentration before reduction (cfu/100 mL)	Concentration after reduction (cfu/100 mL)	Loading before reduction (cfu/d)	Loading after reduction (cfu/d)
1094	12/04/01	130	23	7.20E+11	1.26E+11
1094	03/20/01	30	5	1.66E+11	2.91E+10

Table E-4. Fecal coliform bacteria TMDL summary table for subsegment 070403 station 1094

Average water budget (mm/day)			2.402		
Subsegment area (acres)			56,983.0		
Criterion #1 (< 10% over cfu/100 mL)			43		
Criterion #1 as loading (< 10% over cfu/d)			2.38E+11		
Criterion #2 (median) (cfu/100 mL)			14		
Criterion #2 as loading (median) (cfu/d)			7.75E+10		
Wasteload allocation (cfu/d)			0.00E+00		
Point source flow (MGD)			0.00		
Percent reduction			82.5		
			Before reduction	After reduction	
Average concentration (cfu/100 mL)			80	14	
Average loading (cfu/d)			4.43E+11	7.75E+10	
Median concentration (cfu/100 mL)			80	14	
Median loading (cfu/d)			4.43E+11	7.75E+10	

Table E-5. Fecal coliform bacteria concentrations before and after reductions for subsegment 070404 station 1097

Station	Date	Concentration before reduction (cfu/100 mL)	Concentration after reduction (cfu/100 mL)	Loading before reduction (cfu/d)	Loading after reduction (cfu/d)
1097	12/05/01	50	14	3.27E+11	9.16E+10
1097	09/11/01	130	36	8.50E+11	2.38E+11
1097	03/21/01	30	8	1.96E+11	5.49E+10

Table E-6. Fecal coliform bacteria TMDL summary table for subsegment 070404 station 1097

Average water budget (mm/day)			2.402		
Subsegment area (acres)			67,280.0		
Criterion #1 (< 10% over cfu/100 mL)			43		
Criterion #1 as loading (< 10% over cfu/d)			2.81E+11		
Criterion #2 (median) (cfu/100 mL)			14		
Criterion #2 as loading (median) (cfu/d)			9.16E+10		
Wasteload allocation (cfu/d)			9.93E+07		
Point source flow (MGD)			0.11		
Percent reduction			72.0		
			Before reduction	After reduction	
Average concentration (cfu/100 mL)			70	20	
Average loading (cfu/d)			4.58E+11	1.28E+11	
Median concentration (cfu/100 mL)			50	14	
Median loading (cfu/d)			3.27E+11	9.16E+10	

Table E-7. Fecal coliform bacteria concentrations before and after reductions for subsegment 070601 station 1092

Station	Date	Concentration before reduction (cfu/100 mL)	Concentration after reduction (cfu/100 mL)	Loading before reduction (cfu/d)	Loading after reduction (cfu/d)
1092	03/20/01	50	10	1.27E+12	2.60E+11
1092	09/12/01	80	16	2.03E+12	4.16E+11
1092	12/04/01	30	6	7.61E+11	1.56E+11
1092	05/03/05	11	2	2.79E+11	5.71E+10
1092	06/21/05	60	12	1.52E+12	3.12E+11
1092	07/13/05	11	2	2.79E+11	5.71E+10
1092	10/21/08	54	11	1.37E+12	2.81E+11
1092	11/18/08	54	11	1.37E+12	2.81E+11
1092	12/16/08	240	49	6.09E+12	1.25E+12
1092	01/13/09	210	43	5.33E+12	1.09E+12
1092	02/17/09	54	11	1.37E+12	2.81E+11
1092	03/24/09	45	9	1.14E+12	2.34E+11
1092	04/21/09	54	11	1.37E+12	2.81E+11
1092	05/19/09	170	35	4.31E+12	8.83E+11
1092	06/23/09	72	15	1.83E+12	3.74E+11
1092	07/28/09	45	9	1.14E+12	2.34E+11
1092	08/18/09	99	20	2.51E+12	5.14E+11

Table E-8. Fecal coliform bacteria TMDL summary table for subsegment 070601 station 1092

Average water budget (mm/day)		2.402
Subsegment area (acres)		260,979.8
Criterion #1 (< 10% over cfu/100 mL)		43
Criterion #1 as loading (< 10% over cfu/d)		1.09E+12
Criterion #2 (median) (cfu/100 mL)		14
Criterion #2 as loading (median) (cfu/d)		3.55E+11
Wasteload allocation (cfu/d)		3.11E+08
Point source flow (MGD)		0.19
Percent reduction		79.5
	Before reduction	After reduction
Average concentration (cfu/100 mL)	79	16
Average loading (cfu/d)	2.00E+12	4.09E+11
Median concentration (cfu/100 mL)	54	11
Median loading (cfu/d)	1.37E+12	2.81E+11

Table E-9. Summer fecal coliform bacteria concentrations before and after reductions for subsegment 070203 station 1098

Station	Date	Concentration before reduction (cfu/100 mL)	Concentration after reduction (cfu/100 mL)	Loading before reduction (cfu/d)	Loading after reduction (cfu/d)
1098	05/15/01	500	417	1.90E+11	1.58E+11
1098	06/19/01	170	142	6.45E+10	5.38E+10
1098	07/24/01	130	108	4.93E+10	4.11E+10
1098	08/21/01	110	92	4.18E+10	3.48E+10
1098	09/18/01	80	67	3.04E+10	2.53E+10
1098	10/16/01	800	667	3.04E+11	2.53E+11
1098	05/04/05	12	10	4.56E+09	3.80E+09
1098	06/07/05	300	250	1.14E+11	9.49E+10
1098	06/08/05	480	400	1.82E+11	1.52E+11
1098	06/28/05	182	152	6.91E+10	5.76E+10
1098	07/13/05	10	8	3.80E+09	3.16E+09
1098	08/02/05	1,700	1,417	6.45E+11	5.38E+11
1098	10/15/08	20	17	7.59E+09	6.33E+09
1098	05/12/09	1,700	1,417	6.45E+11	5.38E+11
1098	06/09/09	16	13	6.07E+09	5.06E+09
1098	07/14/09	14	12	5.31E+09	4.43E+09
1098	08/11/09	268	223	1.02E+11	8.48E+10

Table E-10. Summer fecal coliform bacteria TMDL summary table for subsegment 070203 station 1098

Average water budget (mm/day)		2.04
Subsegment area (acres)		4,598.0
Criterion (< 25% over cfu/100 mL)		400
Criterion as loading (< 25% over cfu/d)		1.52E+11
Wasteload allocation (cfu/d)		4.75E+10
Point source flow (MGD)		6.27
Percent reduction		16.7
	Before reduction	After reduction
Average concentration (cfu/100 mL)	382	318
Average loading (cfu/d)	1.45E+11	1.21E+11
Median concentration (cfu/100 mL)	170	142
Median loading (cfu/d)	6.45E+10	5.38E+10

Table E-11. Winter fecal coliform bacteria concentrations before and after reductions for subsegment 070203 station 1098

Station	Date	Concentration before reduction (cfu/100 mL)	Concentration after reduction (cfu/100 mL)	Loading before reduction (cfu/d)	Loading after reduction (cfu/d)
1098	01/16/01	220	90	1.22E+11	4.98E+10
1098	02/20/01	2,400	980	1.33E+12	5.43E+11
1098	03/20/01	220	90	1.22E+11	4.98E+10
1098	04/16/01	50	20	2.77E+10	1.13E+10
1098	11/13/01	17	7	9.43E+09	3.85E+09
1098	12/11/01	30	12	1.66E+10	6.79E+09
1098	01/11/05	640	261	3.55E+11	1.45E+11
1098	03/01/05	330	135	1.83E+11	7.47E+10
1098	04/05/05	155	63	8.59E+10	3.51E+10
1098	11/05/08	156	64	8.65E+10	3.53E+10
1098	12/09/08	182	74	1.01E+11	4.12E+10
1098	01/13/09	3	1	1.66E+09	6.79E+08
1098	02/10/09	26	11	1.44E+10	5.88E+09
1098	03/10/09	24	10	1.33E+10	5.43E+09
1098	04/14/09	4,900	2,000	2.72E+12	1.11E+12

Table E-12. Winter fecal coliform bacteria TMDL summary table for subsegment 070203 station 1098

Average water budget (mm/day)		2.98
Subsegment area (acres)		4,598.0
Criterion (cfu/100 mL)		2000
Criterion as loading (cfu/d)		1.11E+12
Wasteload allocation (cfu/d)		4.75E+10
Point source flow (MGD)		6.27
Percent reduction		59.2
	Before reduction	After reduction
Average concentration (cfu/100 mL)	624	255
Average loading (cfu/d)	3.46E+11	1.41E+11
Median concentration (cfu/100 mL)	156	64
Median loading (cfu/d)	8.65E+10	3.53E+10

Table E-13. Summer fecal coliform bacteria concentrations before and after reductions for subsegment 070503 station 1223

Station	Date	Concentration before reduction (cfu/100 mL)	Concentration after reduction (cfu/100 mL)	Loading before reduction (cfu/d)	Loading after reduction (cfu/d)
583	05/08/01	11	3	1.57E+09	3.70E+08
583	06/12/01	5,000	1,176	7.14E+11	1.68E+11
583	07/17/01	170	40	2.43E+10	5.71E+09
583	08/14/01	1,300	306	1.86E+11	4.37E+10
583	09/10/01	9,000	2,118	1.29E+12	3.03E+11
583	10/09/01	800	188	1.14E+11	2.69E+10
583	05/04/05	39	9	5.57E+09	1.31E+09
583	06/02/05	670	158	9.57E+10	2.25E+10
583	06/28/05	7,400	1,741	1.06E+12	2.49E+11
583	07/12/05	110	26	1.57E+10	3.70E+09
583	08/02/05	87	20	1.24E+10	2.92E+09
583	10/14/08	135	32	1.93E+10	4.54E+09
583	05/05/09	1,700	400	2.43E+11	5.71E+10
583	06/02/09	54	13	7.71E+09	1.82E+09
583	07/08/09	15,000	3,529	2.14E+12	5.04E+11
583	08/04/09	95	22	1.36E+10	3.19E+09
583	09/15/09	1,400	329	2.00E+11	4.71E+10

Table E-14. Summer fecal coliform bacteria TMDL summary table for subsegment 070503 station 1223

Average water budget (mm/day)		2.04
Subsegment area (acres)		1,730.6
Criterion (< 25% over cfu/100 mL)		400
Criterion as loading (< 25% over cfu/d)		5.71E+10
Wasteload allocation (cfu/d)		3.81E+08
Point source flow (MGD)		0.05
Percent reduction		76.5
	Before reduction	After reduction
Average concentration (cfu/100 mL)	2,528	595
Average loading (cfu/d)	3.61E+11	8.50E+10
Median concentration (cfu/100 mL)	670	158
Median loading (cfu/d)	9.57E+10	2.55E+10

Table E-15. Winter fecal coliform bacteria concentrations before and after reductions for subsegment 070503 station 1223

Station	Date	Concentration before reduction (cfu/100 mL)	Concentration after reduction (cfu/100 mL)	Loading before reduction (cfu/d)	Loading after reduction (cfu/d)
583	01/09/01	500	82	1.04E+11	1.71E+10
583	02/13/01	170	28	3.55E+10	5.82E+09
583	03/13/01	3,000	492	6.26E+11	1.03E+11
583	04/09/01	80	13	1.67E+10	2.74E+09
583	11/06/01	30	5	6.26E+09	1.03E+09
583	12/03/01	130	21	2.71E+10	4.45E+09
583	01/12/05	182	30	3.80E+10	6.23E+09
583	03/01/05	74	12	1.54E+10	2.53E+09
583	04/06/05	20	3	4.17E+09	6.84E+08
583	11/18/08	2	0	4.17E+08	6.84E+07
583	12/02/08	136	22	2.84E+10	4.65E+09
583	01/07/09	12,200	2,000	2.55E+12	4.17E+11
583	02/03/09	230	38	4.80E+10	7.87E+09
583	03/11/09	36	6	7.51E+09	1.23E+09
583	04/07/09	98	16	2.05E+10	3.35E+09

Table E-16. Winter fecal coliform bacteria TMDL summary table for subsegment 070503 station 1223

Average water budget (mm/day)		2.98
Subsegment area (acres)		1,730.6
Criterion (cfu/100 mL)		2000
Criterion as loading (cfu/d)		4.17E+11
Wasteload allocation (cfu/d)		3.81E+08
Point source flow (MGD)		0.05
Percent reduction		83.6
	Before reduction	After reduction
Average concentration (cfu/100 mL)	1,126	185
Average loading (cfu/d)	2.35E+11	3.85E+10
Median concentration (cfu/100 mL)	130	21
Median loading (cfu/d)	2.71E+10	4.45E+09

APPENDIX F

Load Duration Calculations for Fecal Coliform Bacteria TMDLs (CD-ROM)

This appendix contains large files, which are provided only on a CD-ROM. To obtain a copy of this appendix, please contact EPA.

Appendix G

Load Duration Curve Summaries and Plots for Fecal Coliform Bacteria

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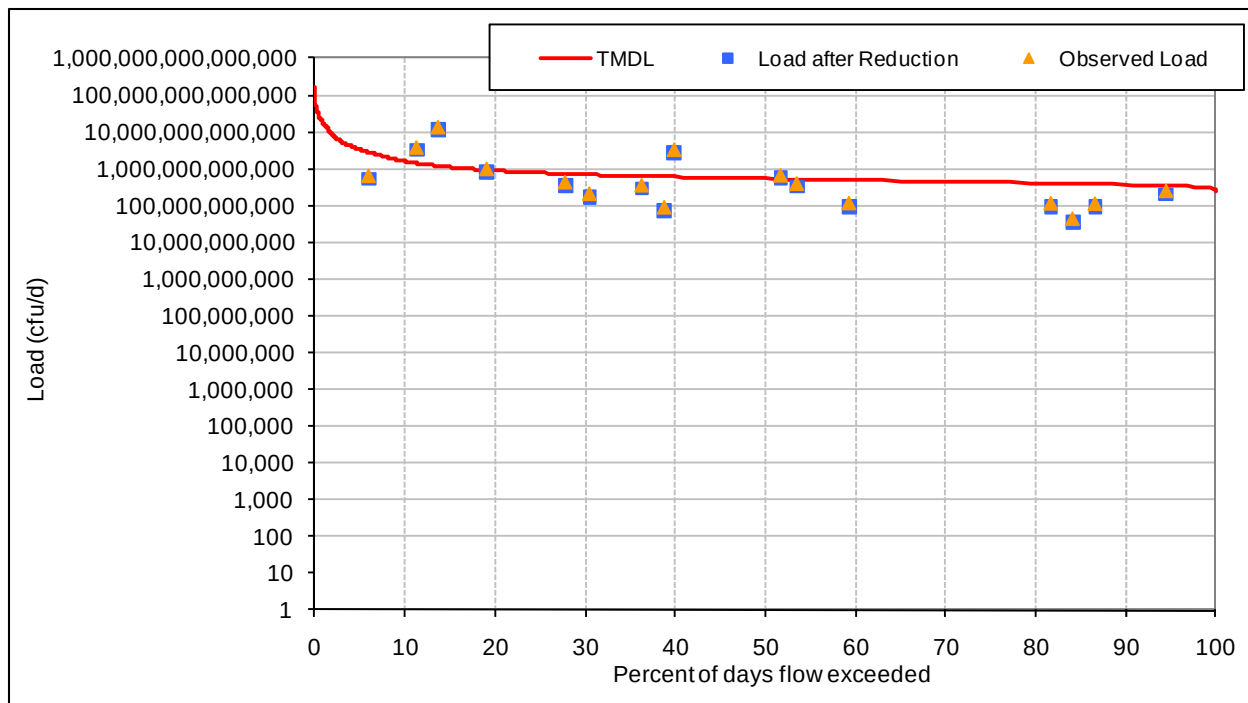


Figure G-1. Fecal coliform bacteria load duration curve for summer in Bayou Sara (subsegment 070501), Louisiana (station 1108).

Table G-1. Allowable summer fecal coliform bacteria load for Bayou Sara (subsegment 070501)

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (cfu/day)	Area under TMDL curve (cfu/day)
						1,283,613,207,034
10/31/00	28	100.000	24.822	0	2.43E+11	0.00E+00
10/16/72	29	100.000	25.708	0	2.52E+11	0.00E+00
10/24/00	29	100.000	25.708	0	2.52E+11	0.00E+00
10/25/00	29	100.000	25.708	0	2.52E+11	0.00E+00
10/26/00	29	100.000	25.708	0	2.52E+11	0.00E+00
10/27/00	29	100.000	25.708	0	2.52E+11	0.00E+00
10/28/00	29	100.000	25.708	0	2.52E+11	0.00E+00
10/29/00	29	100.000	25.708	0	2.52E+11	0.00E+00
10/30/00	29	100.000	25.708	0	2.52E+11	0.00E+00
10/15/72	30	100.000	26.595	0	2.60E+11	0.00E+00
10/22/00	30	100.000	26.595	0	2.60E+11	0.00E+00
10/23/00	30	100.000	26.595	0.1	2.60E+11	2.60E+08
Most of the cells in this spreadsheet have been hidden for brevity.						
9/2/08	5740	0.200	5088.490	0	4.98E+13	0.00E+00
6/9/75	5860	0.200	5194.870	0.1	5.08E+13	5.08E+10
6/18/97	6200	0.100	5496.279	0	5.38E+13	0.00E+00
10/30/85	6650	0.100	5895.202	0	5.77E+13	0.00E+00
10/27/06	7410	0.100	6568.939	0	6.43E+13	0.00E+00
10/28/06	8420	0.100	7464.301	0	7.30E+13	0.00E+00
8/7/02	10000	0.100	8864.966	0	8.68E+13	0.00E+00
10/5/64	10500	0.100	9308.214	0	9.11E+13	0.00E+00
5/15/04	11300	0.100	10017.411	0	9.80E+13	0.00E+00
6/7/01	12300	0.100	10903.908	0	1.07E+14	0.00E+00
9/3/08	15300	0.100	13563.397	0.1	1.33E+14	1.33E+11
6/8/01	19400	0.000	17198.033	0	1.68E+14	0.00E+00

Table G-2. Existing summer fecal coliform bacteria load and percent reduction for Bayou Sara (subsegment 070501)

Date	Observed Concentration (cfu/100 mL)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (cfu/day)	Reduced load (cfu/day)	Allowable load with MOS incorporated (cfu/day)	Reduced load less than or equal to allow load?
6/7/2005	4700	120.563531	13.7	1.39E+13	1.16E+13	1.06E+12	No
9/18/2001	2200	61.16826207	39.9	3.29E+12	2.76E+12	5.39E+11	No
10/16/2001	1100	141.8394483	11.3	3.82E+12	3.20E+12	1.25E+12	No
7/24/2001	500	53.1897931	51.7	6.51E+11	5.45E+11	4.68E+11	No
8/2/2005	430	93.08213793	19.1	9.79E+11	8.20E+11	8.20E+11	Yes
8/21/2001	300	52.30329655	53.5	3.84E+11	3.21E+11	4.61E+11	Yes
8/11/2009	280	35.45986207	94.5	2.43E+11	2.03E+11	3.12E+11	Yes
5/14/2001	230	74.46571034	27.8	4.19E+11	3.51E+11	6.56E+11	Yes
6/19/2001	220	63.82775172	36.3	3.44E+11	2.88E+11	5.62E+11	Yes
7/13/2005	118	70.03322759	30.5	2.02E+11	1.69E+11	6.17E+11	Yes
10/15/2008	112	39.00584828	86.6	1.07E+11	8.95E+10	3.44E+11	Yes
7/14/2009	110	40.77884138	81.7	1.10E+11	9.19E+10	3.59E+11	Yes
5/12/2009	92	49.6438069	59.3	1.12E+11	9.36E+10	4.37E+11	Yes
6/29/2005	91	281.9059034	6	6.28E+11	5.25E+11	2.48E+12	Yes
5/4/2005	56	62.05475862	38.8	8.50E+10	7.12E+10	5.47E+11	Yes
6/9/2009	42	39.89234483	84.1	4.10E+10	3.43E+10	3.51E+11	Yes

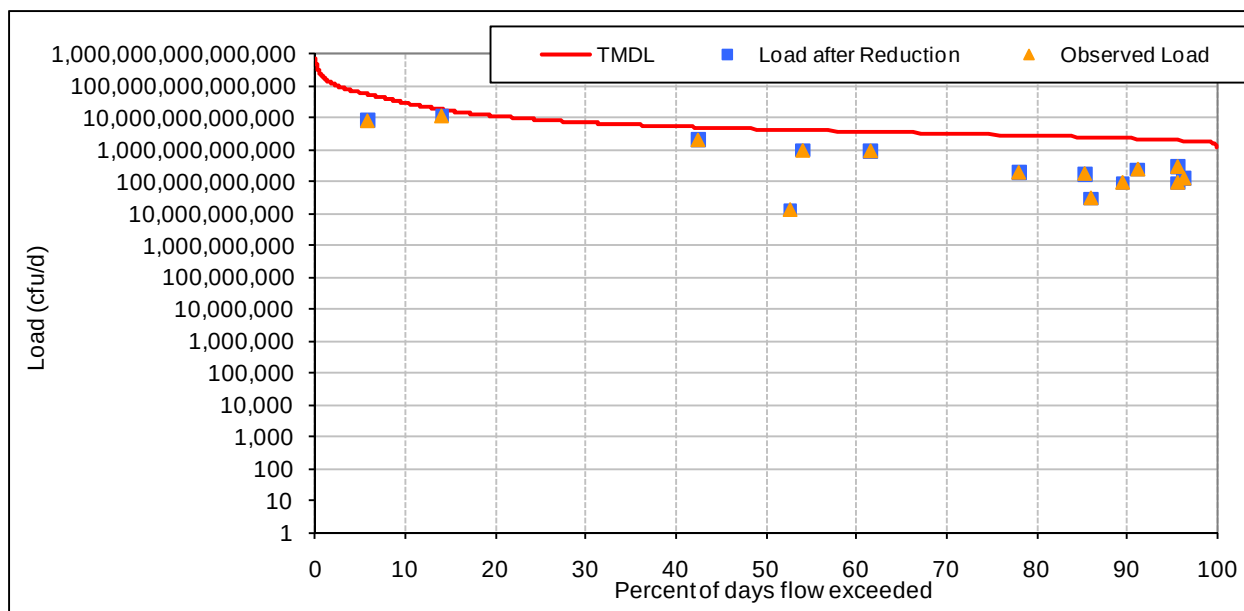


Figure G-2. Fecal coliform bacteria load duration curve for winter in Bayou Sara (subsegment 070501), Louisiana (station 1108).

Table G-3. Allowable winter fecal coliform bacteria load for Bayou Sara (subsegment 070501)

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (cfu/day)	Area under TMDL curve (cfu/day)
						14,612,662,534,863
11/1/00	28	100.000	24.822	0	1.21E+12	0.00E+00
11/2/00	28	100.000	24.822	0	1.21E+12	0.00E+00
11/3/00	28	100.000	24.822	0	1.21E+12	0.00E+00
11/4/00	28	100.000	24.822	0	1.21E+12	0.00E+00
11/5/00	29	100.000	25.708	0	1.26E+12	0.00E+00
11/4/68	31	100.000	27.481	0	1.34E+12	0.00E+00
11/5/68	31	100.000	27.481	0	1.34E+12	0.00E+00
11/1/68	32	100.000	28.368	0	1.39E+12	0.00E+00
11/2/68	32	100.000	28.368	0	1.39E+12	0.00E+00
11/3/68	32	100.000	28.368	0	1.39E+12	0.00E+00
11/6/82	32	100.000	28.368	0	1.39E+12	0.00E+00
11/7/82	32	100.000	28.368	0.1	1.39E+12	1.39E+09
Most of the cells in this spreadsheet have been hidden for brevity.						
12/4/82	11300	0.200	10017.411	0	4.90E+14	0.00E+00
1/21/93	11500	0.200	10194.710	0.1	4.99E+14	4.99E+11
3/18/61	11600	0.100	10283.360	0	5.03E+14	0.00E+00
3/28/80	11600	0.100	10283.360	0	5.03E+14	0.00E+00
12/7/71	11900	0.100	10549.309	0	5.16E+14	0.00E+00
4/12/95	12500	0.100	11081.207	0	5.42E+14	0.00E+00
3/6/92	12600	0.100	11169.857	0	5.47E+14	0.00E+00
1/25/90	14200	0.100	12588.251	0	6.16E+14	0.00E+00
4/28/97	14300	0.100	12676.901	0	6.20E+14	0.00E+00
4/22/77	14700	0.100	13031.499	0	6.38E+14	0.00E+00
4/22/79	15100	0.100	13386.098	0.1	6.55E+14	6.55E+11
4/6/83	16200	0.000	14361.244	0	7.03E+14	0.00E+00

Table G-4. Existing winter fecal coliform bacteria load and percent reduction for Bayou Sara (subsegment 070501)

Date	Observed Concentration (cfu/100 mL)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (cfu/day)	Reduced load (cfu/day)	Allowable load with MOS incorporated (cfu/day)	Reduced load less than or equal to allow load?
1/16/2001	1300	371.4421	14.1	1.18E+13	1.18E+13	1.64E+13	Yes
3/20/2001	800	104.6066	42.5	2.05E+12	2.05E+12	4.61E+12	Yes
2/20/2001	500	75.3522	61.6	9.22E+11	9.22E+11	3.32E+12	Yes
1/11/2005	460	84.2172	54.1	9.48E+11	9.48E+11	3.71E+12	Yes
11/13/2001	300	39.8923	95.6	2.93E+11	2.93E+11	1.76E+12	Yes
4/14/2009	300	1125.8506	5.9	8.26E+12	8.26E+12	4.96E+13	Yes
3/1/2005	220	45.2113	91.2	2.43E+11	2.43E+11	1.99E+12	Yes
4/16/2001	140	51.4168	85.3	1.76E+11	1.76E+11	2.26E+12	Yes
3/10/2009	134	58.5088	78	1.92E+11	1.92E+11	2.58E+12	Yes
12/11/2001	130	39.0058	96.3	1.24E+11	1.24E+11	1.72E+12	Yes
11/5/2008	94	39.8923	95.6	9.17E+10	9.17E+10	1.76E+12	Yes
12/9/2008	80	46.9843	89.5	9.20E+10	9.20E+10	2.07E+12	Yes

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2/10/20 09	24	50.5303	86	2.97E+10	2.97E+10	2.23E+12	Yes
1/13/20 09	6	85.9902	52.7	1.26E+10	1.26E+10	3.79E+12	Yes

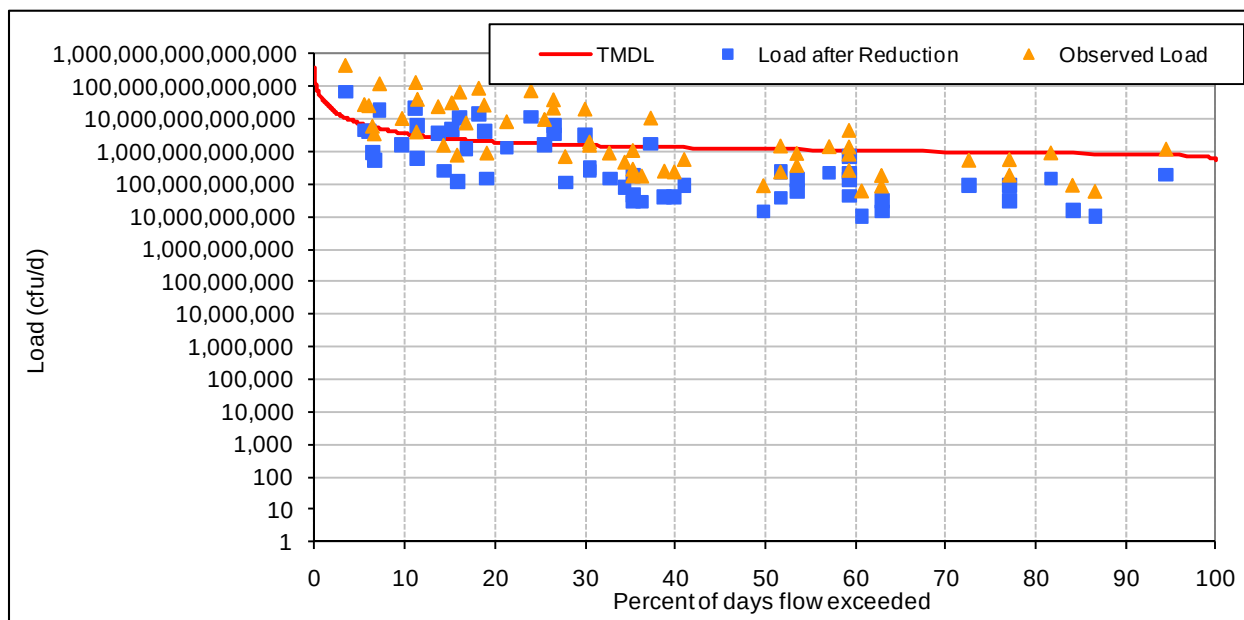


Figure G-3. Fecal coliform bacteria load duration curve for summer in Thompson Creek (subsegment 070502), Louisiana (station 0323).

Table G-5. Allowable summer fecal coliform bacteria load for Thompson Creek (subsegment 070502)

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (cfu/day)	Area under TMDL curve (cfu/day) 2.91E+12
10/31/00	28	100.000	56.18634483	0.00	5.50E+11	0.00E+00
10/16/72	29	100.000	58.193	0.00	5.69E+11	0.00E+00
10/24/00	29	100.000	58.193	0.00	5.69E+11	0.00E+00
10/25/00	29	100.000	58.193	0.00	5.69E+11	0.00E+00
10/26/00	29	100.000	58.193	0.00	5.69E+11	0.00E+00
10/27/00	29	100.000	58.193	0.00	5.69E+11	0.00E+00
10/28/00	29	100.000	58.193	0.00	5.69E+11	0.00E+00
10/29/00	29	100.000	58.193	0.00	5.69E+11	0.00E+00
10/30/00	29	100.000	58.193	0.00	5.69E+11	0.00E+00
10/15/72	30	100.000	60.19965517	0.00	5.89E+11	0.00E+00
10/22/00	30	100.000	60.19965517	0.00	5.89E+11	0.00E+00
10/23/00	30	100.000	60.19965517	0.10	5.89E+11	5.89E+08
Most of the cells in this spreadsheet have been hidden for brevity.						
9/2/08	5740	0.200	11518.20069	0.00	1.13E+14	0.00E+00
6/9/75	5860	0.200	11758.99931	0.10	1.15E+14	1.15E+11
6/18/97	6200	0.100	12441.26207	0.00	1.22E+14	0.00E+00
10/30/85	6650	0.100	13344.2569	0.00	1.31E+14	0.00E+00
10/27/06	7410	0.100	14869.31483	0.00	1.46E+14	0.00E+00
10/28/06	8420	0.100	16896.03655	0.00	1.65E+14	0.00E+00
8/7/02	10000	0.100	20066.55172	0.00	1.96E+14	0.00E+00
10/5/64	10500	0.100	21069.87931	0.00	2.06E+14	0.00E+00
5/15/04	11300	0.100	22675.20345	0.00	2.22E+14	0.00E+00
6/7/01	12300	0.100	24681.85862	0.00	2.42E+14	0.00E+00
9/3/08	15300	0.100	30701.82414	0.10	3.00E+14	3.00E+11
6/8/01	19400	0.000	38929.11034	0.00	3.81E+14	0.00E+00

Table G-6. Existing summer fecal coliform bacteria load and percent reduction for Thompson Creek (subsegment 070502)

Date	Observed Concentration (cfu/100 mL)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (cfu/day)	Reduced load (cfu/day)	Allowable load with MOS incorporated (cfu/day)	Reduced load less than or equal to allow load?
7/11/1994	16000	1087.6071	3.4	4.26E+14	6.97E+13	9.58E+12	No
6/12/1995	16000	218.7254	18.2	8.56E+13	1.40E+13	1.93E+12	No
8/13/1996	16000	182.6056	24	7.15E+13	1.17E+13	1.61E+12	No
9/10/1996	16000	327.0848	11.2	1.28E+14	2.10E+13	2.88E+12	No
8/12/1991	11000	240.7986	16.1	6.48E+13	1.06E+13	2.12E+12	No
8/10/1992	9000	172.5723	26.5	3.80E+13	6.22E+12	1.52E+12	No
10/10/1994	9000	529.7570	7.2	1.17E+14	1.91E+13	4.67E+12	No
6/10/1991	5000	250.8319	15.2	3.07E+13	5.02E+12	2.21E+12	No
7/16/1991	5000	172.5723	26.5	2.11E+13	3.45E+12	1.52E+12	No
9/9/1991	5000	160.5324	30	1.96E+13	3.21E+12	1.41E+12	No
5/11/1993	5000	212.7054	18.8	2.60E+13	4.26E+12	1.87E+12	No
6/13/1994	5000	319.0582	11.4	3.90E+13	6.39E+12	2.81E+12	No
6/7/2005	3500	272.9051	13.7	2.34E+13	3.82E+12	2.40E+12	No
8/14/1995	3000	142.4725	37.3	1.05E+13	1.71E+12	1.25E+12	No
5/14/1996	2200	176.5857	25.5	9.50E+12	1.56E+12	1.56E+12	Yes
9/12/1994	1700	194.6456	21.3	8.10E+12	1.32E+12	1.71E+12	Yes
6/10/1997	1600	692.2960	5.5	2.71E+13	4.43E+12	6.10E+12	Yes
10/14/1997	1600	112.3727	59.3	4.40E+12	7.20E+11	9.90E+11	Yes
6/29/2005	1600	638.1163	6	2.50E+13	4.09E+12	5.62E+12	Yes
7/15/1997	1300	232.7720	16.8	7.40E+12	1.21E+12	2.05E+12	Yes
8/12/1997	1100	379.2578	9.7	1.02E+13	1.67E+12	3.34E+12	Yes
8/11/2009	600	80.2662	94.5	1.18E+12	1.93E+11	7.07E+11	Yes
6/15/1993	500	158.5258	30.5	1.94E+12	3.17E+11	1.40E+12	Yes
9/14/1993	500	112.3727	59.3	1.37E+12	2.25E+11	9.90E+11	Yes
10/9/1995	500	114.3793	57.1	1.40E+12	2.29E+11	1.01E+12	Yes
7/24/2001	500	120.3993	51.7	1.47E+12	2.41E+11	1.06E+12	Yes
10/16/2001	500	321.0648	11.3	3.93E+12	6.43E+11	2.83E+12	Yes
5/13/1991	400	601.9966	6.4	5.89E+12	9.64E+11	5.30E+12	Yes
7/13/2005	400	158.5258	30.5	1.55E+12	2.54E+11	1.40E+12	Yes
7/14/2009	400	92.3061	81.7	9.03E+11	1.48E+11	8.13E+11	Yes
5/11/1992	300	146.4858	35.3	1.08E+12	1.76E+11	1.29E+12	Yes
10/12/1992	300	112.3727	59.3	8.25E+11	1.35E+11	9.90E+11	Yes
8/10/1993	300	118.3927	53.5	8.69E+11	1.42E+11	1.04E+12	Yes
6/16/1992	240	262.8718	14.3	1.54E+12	2.53E+11	2.32E+12	Yes
7/13/1993	240	152.5058	32.7	8.95E+11	1.47E+11	1.34E+12	Yes
10/12/1993	240	96.3194	77.1	5.66E+11	9.25E+10	8.48E+11	Yes
5/8/1995	240	585.9433	6.6	3.44E+12	5.63E+11	5.16E+12	Yes
9/9/1997	220	100.3328	72.6	5.40E+11	8.84E+10	8.84E+11	Yes
8/2/2005	173	210.6988	19.1	8.92E+11	1.46E+11	1.86E+12	Yes
7/13/1992	170	136.4526	41	5.68E+11	9.29E+10	1.20E+12	Yes
8/8/1994	170	168.5590	27.8	7.01E+11	1.15E+11	1.48E+12	Yes
9/15/1992	130	148.4925	34.4	4.72E+11	7.73E+10	1.31E+12	Yes
5/13/1997	130	242.8053	15.8	7.72E+11	1.26E+11	2.14E+12	Yes
8/21/2001	130	118.3927	53.5	3.77E+11	6.16E+10	1.04E+12	Yes
5/12/2009	96	112.3727	59.3	2.64E+11	4.32E+10	9.90E+11	Yes
10/14/1991	80	120.3993	51.7	2.36E+11	3.86E+10	1.06E+12	Yes
5/11/1998	80	146.4858	35.3	2.87E+11	4.69E+10	1.29E+12	Yes
5/15/2001	80	96.3194	77.1	1.89E+11	3.08E+10	8.48E+11	Yes

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Date	Observed Concentration (cfu/100 mL)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (cfu/day)	Reduced load (cfu/day)	Allowable load with MOS incorporated (cfu/day)	Reduced load less than or equal to allow load?
5/4/2005	73	140.4659	38.8	2.51E+11	4.11E+10	1.24E+12	Yes
9/11/1995	70	108.3594	62.9	1.86E+11	3.04E+10	9.54E+11	Yes
9/18/2001	70	138.4592	39.9	2.37E+11	3.88E+10	1.22E+12	Yes
7/10/1995	50	146.4858	35.3	1.79E+11	2.93E+10	1.29E+12	Yes
6/19/2001	50	144.4792	36.3	1.77E+11	2.89E+10	1.27E+12	Yes
6/9/2009	42	90.2995	84.1	9.28E+10	1.52E+10	7.95E+11	Yes
10/14/1996	33	108.3594	62.9	8.75E+10	1.43E+10	9.54E+11	Yes
6/11/1996	30	122.4060	49.8	8.98E+10	1.47E+10	1.08E+12	Yes
10/15/2008	28	88.2928	86.6	6.05E+10	9.90E+09	7.78E+11	Yes
7/9/1996	23	110.3660	60.7	6.21E+10	1.02E+10	9.72E+11	Yes

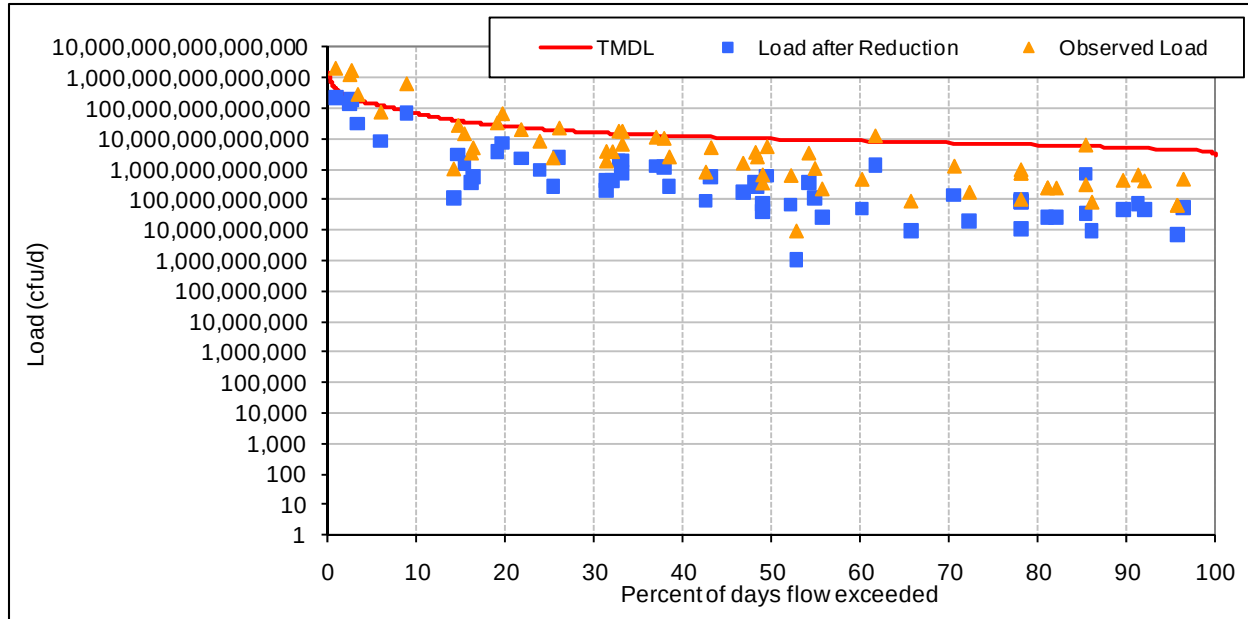


Figure G-4. Fecal coliform bacteria load duration curve for winter in Thompson Creek (subsegment 070502), Louisiana (station 0323).

Table G-7. Allowable winter fecal coliform bacteria load for Thompson Creek (subsegment 070502)

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (cfu/day)	Area under TMDL curve (cfu/day)
						3.31E+13
11/1/00	28	100	56.18634483	0	2.75E+12	0.00E+00
11/2/00	28	100	56.18634483	0	2.75E+12	0.00E+00
11/3/00	28	100	56.18634483	0	2.75E+12	0.00E+00
11/4/00	28	100	56.18634483	0	2.75E+12	0.00E+00
11/5/00	29	100	58.193	0	2.85E+12	0.00E+00
11/4/68	31	100	62.20631034	0	3.04E+12	0.00E+00
11/5/68	31	100	62.20631034	0	3.04E+12	0.00E+00
11/1/68	32	100	64.21296552	0	3.14E+12	0.00E+00
11/2/68	32	100	64.21296552	0	3.14E+12	0.00E+00
11/3/68	32	100	64.21296552	0	3.14E+12	0.00E+00
11/6/82	32	100	64.21296552	0	3.14E+12	0.00E+00
11/7/82	32	100	64.21296552	0.1	3.14E+12	3.14E+09
Most of the cells in this spreadsheet have been hidden for brevity.						
12/4/82	11300	0.2	22675.20345	0	1.11E+15	0.00E+00
1/21/93	11500	0.2	23076.53448	0.1	1.13E+15	1.13E+12
3/18/61	11600	0.1	23277.2	0	1.14E+15	0.00E+00
3/28/80	11600	0.1	23277.2	0	1.14E+15	0.00E+00
12/7/71	11900	0.1	23879.19655	0	1.17E+15	0.00E+00
4/12/95	12500	0.1	25083.18966	0	1.23E+15	0.00E+00
3/6/92	12600	0.1	25283.85517	0	1.24E+15	0.00E+00
1/25/90	14200	0.1	28494.50345	0	1.39E+15	0.00E+00
4/28/97	14300	0.1	28695.16897	0	1.40E+15	0.00E+00
4/22/77	14700	0.1	29497.83103	0	1.44E+15	0.00E+00
4/22/79	15100	0.1	30300.4931	0.1	1.48E+15	1.48E+12
4/6/83	16200	0	32507.81379	0	1.59E+15	0.00E+00

Table G-8. Existing winter fecal coliform bacteria load and percent reduction for Thompsons Creek (subsegment 070502)

Date	Observed Concentration (cfu/100 mL)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (cfu/day)	Reduced load (cfu/day)	Allowable load with MOS incorporated (cfu/day)	Reduced load less than or equal to allow load?
1/12/1993	16000	4,454.774	2.6	1.74E+15	1.96E+14	1.96E+14	Yes
12/14/1993	16000	1,627.397	8.8	6.37E+14	7.17E+13	7.17E+13	Yes
4/15/1991	11000	4,715.640	2.4	1.27E+15	1.43E+14	2.08E+14	Yes
11/16/1993	9000	9,351.013	0.8	2.06E+15	2.32E+14	4.12E+14	Yes
2/13/1995	5000	543.804	19.6	6.65E+13	7.48E+12	2.39E+13	Yes
1/13/1998	3000	3,892.911	3.3	2.86E+14	3.21E+13	1.71E+14	Yes
2/20/2001	3000	170.566	61.6	1.25E+13	1.41E+12	7.51E+12	Yes
2/8/1994	2400	565.877	19	3.32E+13	3.74E+12	2.49E+13	Yes
12/12/1994	2400	385.278	26	2.26E+13	2.55E+12	1.70E+13	Yes
3/13/1995	2400	300.998	33.1	1.77E+13	1.99E+12	1.33E+13	Yes
4/14/1997	2400	303.005	32.7	1.78E+13	2.00E+12	1.33E+13	Yes
4/16/2001	2200	116.386	85.3	6.26E+12	7.05E+11	5.13E+12	Yes
3/14/1994	1700	270.898	36.9	1.13E+13	1.27E+12	1.19E+13	Yes
4/12/1994	1700	481.597	21.7	2.00E+13	2.25E+12	2.12E+13	Yes
12/8/1997	1600	264.878	37.8	1.04E+13	1.17E+12	1.17E+13	Yes
2/4/1991	1400	800.655	14.6	2.74E+13	3.09E+12	3.53E+13	Yes
4/14/2009	1200	2,548.452	5.9	7.48E+13	8.42E+12	1.12E+14	Yes
11/16/1992	1100	204.679	49.4	5.51E+12	6.20E+11	9.01E+12	Yes
1/9/1995	900	232.772	43.1	5.13E+12	5.77E+11	1.03E+13	Yes
4/3/1995	900	300.998	33.1	6.63E+12	7.46E+11	1.33E+13	Yes
2/10/1992	800	425.411	23.8	8.33E+12	9.37E+11	1.87E+13	Yes
3/9/1992	800	746.476	15.3	1.46E+13	1.64E+12	3.29E+13	Yes
1/11/2005	730	190.632	54.1	3.40E+12	3.83E+11	8.40E+12	Yes
4/9/1996	700	210.699	48.1	3.61E+12	4.06E+11	9.28E+12	Yes
4/6/1992	500	208.692	48.3	2.55E+12	2.87E+11	9.19E+12	Yes
12/15/1992	500	317.052	31.3	3.88E+12	4.36E+11	1.40E+13	Yes
1/7/1997	500	309.025	32	3.78E+12	4.25E+11	1.36E+13	Yes
3/11/1991	400	260.865	38.4	2.55E+12	2.87E+11	1.15E+13	Yes
4/5/2005	350	148.492	70.5	1.27E+12	1.43E+11	6.54E+12	Yes
1/11/1994	300	216.719	46.7	1.59E+12	1.79E+11	9.54E+12	Yes
11/14/1995	300	132.439	78	9.72E+11	1.09E+11	5.83E+12	Yes
3/10/1998	300	690.289	16.3	5.07E+12	5.70E+11	3.04E+13	Yes
3/1/2005	260	102.339	91.2	6.51E+11	7.32E+10	4.51E+12	Yes
4/13/1993	240	401.331	25.3	2.36E+12	2.65E+11	1.77E+13	Yes
2/18/1997	240	317.052	31.3	1.86E+12	2.09E+11	1.40E+13	Yes
12/10/1991	230	132.439	78	7.45E+11	8.38E+10	5.83E+12	Yes
3/12/1996	230	188.626	54.8	1.06E+12	1.19E+11	8.31E+12	Yes
11/19/1996	230	132.439	78	7.45E+11	8.38E+10	5.83E+12	Yes
12/11/2001	220	88.293	96.3	4.75E+11	5.35E+10	3.89E+12	Yes
1/14/1991	200	698.316	16.1	3.42E+12	3.84E+11	3.08E+13	Yes
11/18/1997	170	100.333	91.9	4.17E+11	4.69E+10	4.42E+12	Yes
12/9/2008	168	106.353	89.5	4.37E+11	4.92E+10	4.68E+12	Yes
3/20/2001	140	236.785	42.5	8.11E+11	9.12E+10	1.04E+13	Yes
2/13/1996	130	196.652	52.1	6.25E+11	7.04E+10	8.66E+12	Yes
2/10/1998	130	206.685	48.9	6.57E+11	7.40E+10	9.10E+12	Yes
11/18/1991	110	116.386	85.3	3.13E+11	3.52E+10	5.13E+12	Yes
3/11/1997	110	174.579	60.1	4.70E+11	5.29E+10	7.69E+12	Yes
1/7/1992	80	124.413	82	2.44E+11	2.74E+10	5.48E+12	Yes
11/14/1994	80	126.419	81	2.47E+11	2.78E+10	5.57E+12	Yes

Date	Observed Concentration (cfu/100 mL)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (cfu/day)	Reduced load (cfu/day)	Allowable load with MOS incorporated (cfu/day)	Reduced load less than or equal to allow load?
12/10/1996	80	126.419	81	2.47E+11	2.78E+10	5.57E+12	Yes
3/9/1993	70	206.685	48.9	3.54E+11	3.98E+10	9.10E+12	Yes
12/11/1995	50	144.479	72.2	1.77E+11	1.99E+10	6.36E+12	Yes
1/9/1996	50	186.619	55.6	2.28E+11	2.57E+10	8.22E+12	Yes
1/16/2001	50	840.789	14.1	1.03E+12	1.16E+11	3.70E+13	Yes
3/10/2009	32	132.439	78	1.04E+11	1.17E+10	5.83E+12	Yes
11/13/2001	30	90.299	95.6	6.63E+10	7.46E+09	3.98E+12	Yes
11/6/2008	30	90.299	95.6	6.63E+10	7.46E+09	3.98E+12	Yes
2/10/2009	30	114.379	86	8.40E+10	9.44E+09	5.04E+12	Yes
2/9/1993	23	160.532	65.6	9.03E+10	1.02E+10	7.07E+12	Yes
1/13/2009	2	194.646	52.7	9.52E+09	1.07E+09	8.57E+12	Yes

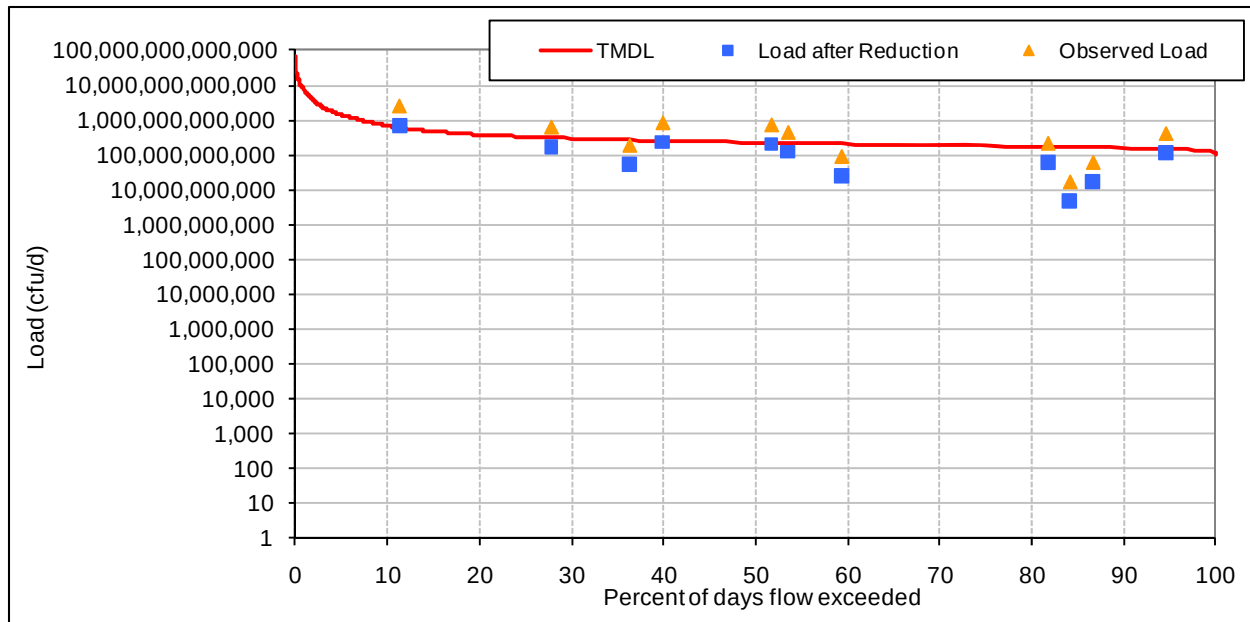


Figure G-5. Fecal coliform bacteria load duration curve for summer in Tunica Bayou (subsegment 070505), Louisiana (station 1116).

Table G-9. Allowable summer fecal coliform bacteria load for Tunica Bayou (subsegment 070505)

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (cfu/day)	Area under TMDL curve (cfu/day)
						5.53E+11
10/31/00	28	100.000	10.693	0.00	1.05E+11	0.00E+00
10/16/72	29	100.000	11.075	0.00	1.08E+11	0.00E+00
10/24/00	29	100.000	11.075	0.00	1.08E+11	0.00E+00
10/25/00	29	100.000	11.075	0.00	1.08E+11	0.00E+00
10/26/00	29	100.000	11.075	0.00	1.08E+11	0.00E+00
10/27/00	29	100.000	11.075	0.00	1.08E+11	0.00E+00
10/28/00	29	100.000	11.075	0.00	1.08E+11	0.00E+00
10/29/00	29	100.000	11.075	0.00	1.08E+11	0.00E+00
10/30/00	29	100.000	11.075	0.00	1.08E+11	0.00E+00
10/15/72	30	100.000	11.457	0.00	1.12E+11	0.00E+00
10/22/00	30	100.000	11.457	0.00	1.12E+11	0.00E+00
Most of the cells in this spreadsheet have been hidden for brevity.						
10/4/64	5390	0.200	2058.497	0.00	2.01E+13	0.00E+00
9/2/08	5740	0.200	2192.165	0.00	2.15E+13	0.00E+00
6/9/75	5860	0.200	2237.995	0.10	2.19E+13	2.19E+10
6/18/97	6200	0.100	2367.844	0.00	2.32E+13	0.00E+00
10/30/85	6650	0.100	2539.704	0.00	2.49E+13	0.00E+00
10/27/06	7410	0.100	2829.956	0.00	2.77E+13	0.00E+00
10/28/06	8420	0.100	3215.685	0.00	3.15E+13	0.00E+00
8/7/02	10000	0.100	3819.103	0.00	3.74E+13	0.00E+00
10/5/64	10500	0.100	4010.059	0.00	3.92E+13	0.00E+00
5/15/04	11300	0.100	4315.587	0.00	4.22E+13	0.00E+00
6/7/01	12300	0.100	4697.497	0.00	4.60E+13	0.00E+00
9/3/08	15300	0.100	5843.228	0.10	5.72E+13	5.72E+10
6/8/01	19400	0.000	7409.061	0.00	7.25E+13	0.00E+00

Table G-10. Existing summer fecal coliform bacteria load and percent reduction for Tunica Bayou (subsegment 070505)

Date	Observed Concentration (cfu/100 mL)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (cfu/day)	Reduced load (cfu/day)	Allowable load with MOS incorporated (cfu/day)	Reduced load less than or equal to allow load?
10/16/2001	1700	61.106	11.3	2.54E+12	7.04E+11	5.38E+11	No
7/24/2001	1300	22.915	51.7	7.29E+11	2.02E+11	2.02E+11	Yes
9/18/2001	1300	26.352	39.9	8.38E+11	2.32E+11	2.32E+11	Yes
8/11/2009	1100	15.276	94.5	4.11E+11	1.14E+11	1.35E+11	Yes
5/14/2001	800	32.080	27.8	6.28E+11	1.74E+11	2.83E+11	Yes
8/21/2001	800	22.533	53.5	4.41E+11	1.22E+11	1.98E+11	Yes
7/14/2009	500	17.568	81.7	2.15E+11	5.95E+10	1.55E+11	Yes
6/19/2001	280	27.498	36.3	1.88E+11	5.22E+10	2.42E+11	Yes
5/12/2009	172	21.387	59.3	9.00E+10	2.49E+10	1.88E+11	Yes
10/15/2008	148	16.804	86.6	6.08E+10	1.68E+10	1.48E+11	Yes
6/9/2009	40	17.186	84.1	1.68E+10	4.66E+09	1.51E+11	Yes

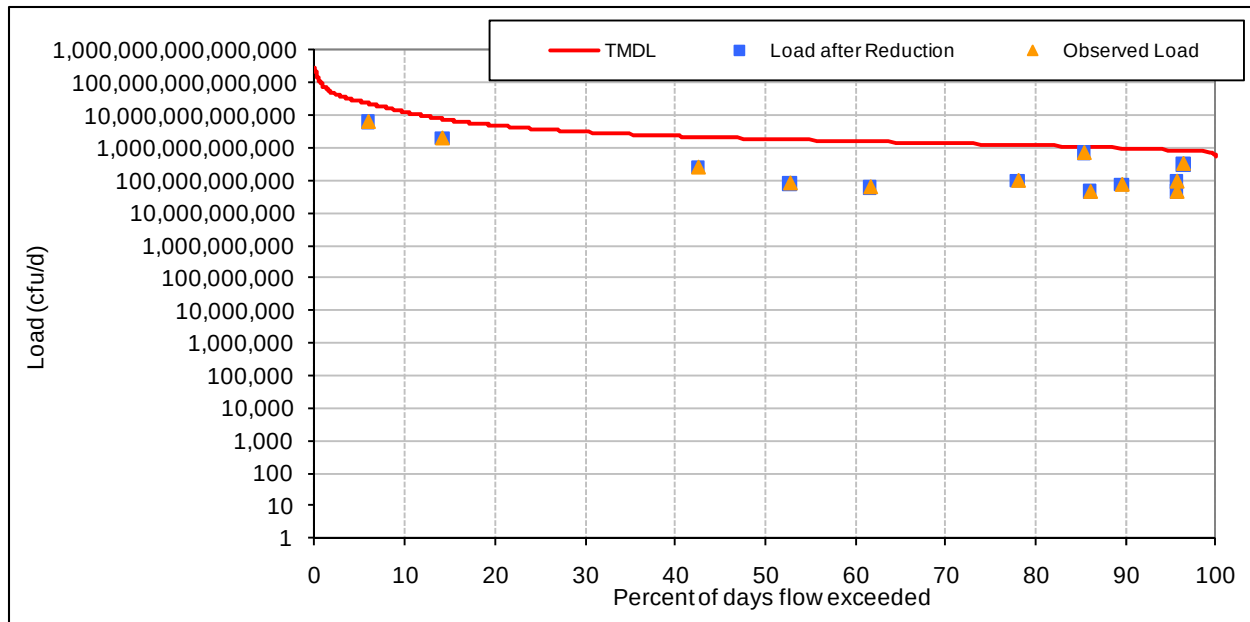


Figure G-6. Fecal coliform bacteria load duration curve for winter in Tunica Bayou (subsegment 070505), Louisiana (station 1116).

Table G-11. Allowable winter fecal coliform bacteria load for Tunica Bayou (subsegment 070505)

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (cfu/day)	Area under TMDL curve (cfu/day)
						6.30E+12
11/1/00	28	100.000	10.693	0.00	5.23E+11	0.00E+00
11/2/00	28	100.000	10.693	0.00	5.23E+11	0.00E+00
11/3/00	28	100.000	10.693	0.00	5.23E+11	0.00E+00
11/4/00	28	100.000	10.693	0.00	5.23E+11	0.00E+00
11/5/00	29	100.000	11.075	0.00	5.42E+11	0.00E+00
11/4/68	31	100.000	11.839	0.00	5.79E+11	0.00E+00
11/5/68	31	100.000	11.839	0.00	5.79E+11	0.00E+00
11/1/68	32	100.000	12.221	0.00	5.98E+11	0.00E+00
11/2/68	32	100.000	12.221	0.00	5.98E+11	0.00E+00
11/3/68	32	100.000	12.221	0.00	5.98E+11	0.00E+00
11/6/82	32	100.000	12.221	0.00	5.98E+11	0.00E+00
11/7/82	32	100.000	12.221	0.10	5.98E+11	5.98E+08
Most of the cells in this spreadsheet have been hidden for brevity.						
12/4/82	11300	0.200	4315.587	0.00	2.11E+14	0.00E+00
1/21/93	11500	0.200	4391.969	0.10	2.15E+14	2.15E+11
3/18/61	11600	0.100	4430.160	0.00	2.17E+14	0.00E+00
3/28/80	11600	0.100	4430.160	0.00	2.17E+14	0.00E+00
12/7/71	11900	0.100	4544.733	0.00	2.22E+14	0.00E+00
4/12/95	12500	0.100	4773.879	0.00	2.34E+14	0.00E+00
3/6/92	12600	0.100	4812.070	0.00	2.35E+14	0.00E+00
1/25/90	14200	0.100	5423.127	0.00	2.65E+14	0.00E+00
4/28/97	14300	0.100	5461.318	0.00	2.67E+14	0.00E+00
4/22/77	14700	0.100	5614.082	0.00	2.75E+14	0.00E+00
4/22/79	15100	0.100	5766.846	0.10	2.82E+14	2.82E+11
4/6/83	16200	0.000	6186.948	0.00	3.03E+14	0.00E+00

Table G-12. Existing winter fecal coliform bacteria load and percent reduction for Tunica Bayou (subsegment 070505)

Date	Observed Concentration (cfu/100 mL)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (cfu/day)	Reduced load (cfu/day)	Allowable load with MOS incorporated (cfu/day)	Reduced load less than or equal to allow load?
4/16/2001	1300	22.151	85.3	7.05E+11	7.05E+11	9.75E+11	Yes
12/11/2001	800	16.804	96.3	3.29E+11	3.29E+11	7.40E+11	Yes
4/14/2009	524	485.026	5.9	6.22E+12	6.22E+12	2.14E+13	Yes
1/16/2001	500	160.020	14.1	1.96E+12	1.96E+12	7.05E+12	Yes
3/20/2001	230	45.065	42.5	2.54E+11	2.54E+11	1.98E+12	Yes
11/6/2008	224	17.186	95.6	9.42E+10	9.42E+10	7.57E+11	Yes
3/10/2009	162	25.206	78	9.99E+10	9.99E+10	1.11E+12	Yes
12/9/2008	152	20.241	89.5	7.53E+10	7.53E+10	8.91E+11	Yes
11/13/2001	110	17.186	95.6	4.63E+10	4.63E+10	7.57E+11	Yes
1/13/2009	92	37.045	52.7	8.34E+10	8.34E+10	1.63E+12	Yes
2/10/2009	86	21.769	86	4.58E+10	4.58E+10	9.59E+11	Yes

Appendix H

Wasteload Allocations for Point Sources in the Mississippi River Basin

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Table H-1. WLAs for fecal coliform bacteria in the Mississippi River Basin (subsegment 070203)

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
29884	LA0000183	101	Oxbow Calcining LLC - Baton Rouge Calcined Coke Plant	Treated sanitary wastewater	Flow (Ave)	0.0025	400	37,854,120
3387	LA0004057	002	Novolyte Technologies (Ferro Corp) Baton Rouge Site	Low contamination potential stormwater runoff	Flow (DMR)	0.072	200 ^a	545,099,328
3387	LA0004057	003	Novolyte Technologies (Ferro Corp) Baton Rouge Site	Low contamination potential stormwater runoff	Flow (DMR)	0.021	200	158,987,304
1396	LA0004464	001	Exide Technologies - Baton Rouge Recycling Center	noncontact cooling water, stormwater	Flow (30-d max)	0.335	200	2,536,226,040
1396	LA0004464	003	Exide Technologies - Baton Rouge Recycling Center	non-process stormwater	Flow (DMR Ave)	0.043667	200	330,592,648
285	LA0005355	001	ExxonMobil Chemical Co - Baton Rouge Plastics Plant	Process wastewater	Flow (Ave)	1.91	200	14,460,273,840
285	LA0005355	004	ExxonMobil Chemical Co - Baton Rouge Plastics Plant	Non process stormwater	Flow (Est)	0.456	200	3,452,295,744
285	LA0005355	005	ExxonMobil Chemical Co - Baton Rouge Plastics Plant	Non process stormwater	Flow (Est)	0.1489	200	1,127,295,694
285	LA0005355	006	ExxonMobil Chemical Co - Baton Rouge Plastics Plant	Non process stormwater	Flow (Est)	0.2547	200	1,928,288,873
3519	LA0005479	001	ExxonMobil Chemical Co - Baton Rouge Polyolefins Plant	treated process, utility, and sanitary wastewater	Flow	2.36762	200	17,924,834,319
3999	LA0049620	001	LA Department of Corrections - Louis Jetson Correctional Center for Youth	Treated sanitary wastewater	Flow (Design)	0.115	200	870,644,760
2469	LA0066214	001	Petro-Processors Brooklawn - NPC Services Inc	Treated sanitary wastewater	Flow (Ave)	0.0039	200	29,526,214
2469	LA0066214	006	Petro-Processors Brooklawn - NPC Services Inc	Contact stormwater	Flow (DMR)	0.3916	200	2,964,734,678
2469	LA0066214	013	Petro-Processors Brooklawn - NPC Services Inc	Contact stormwater	Flow (DMR)	0.038322	200	290,130,800
11566	LA0068225	001	Carmeuse Lime & Stone Inc - Pelican Operation	Stormwater runoff	Not reported		200	
11566	LA0068225	002	Carmeuse Lime & Stone Inc - Pelican Operation	Stormwater runoff	Not reported		200	
31128	LA0086169	002	East Baton Rouge Parish Landfill (BFI North)	Non-contact stormwater		0.051	200	386,112,024
31128	LA0086169	003	East Baton Rouge Parish Landfill (BFI North)	Non-contact stormwater		0.031	200	234,695,544
31128	LA0086169	004	East Baton Rouge Parish Landfill (BFI North)	Non-contact stormwater		0.022	200	166,558,128

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
31128	LA0086169	009	East Baton Rouge Parish Landfill (BFI North)	Non-contact stormwater, emergency only		0	200	0
42044	LA0102946	002	Kinder Morgan Bulk Terminal Inc - Barge Canal Dock	Sanitary wastewater	Flow (Design)	0.0005	400	7,570,824
145903	LAG532470	001	Made To Go Truck Stop	Sanitary	Flow (Exp)	0.002825	200	21,387,578

^a The facility outfall did not have a permit limit. Limits in **RED ITALICS** indicate water quality target not an actual permit limit.

^b

Table H-2. WLAs for fecal coliform bacteria in the Mississippi River Basin (subsegment 070401)

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
18735	LAG33A030	04B	West Delta Area Block 83 Field E5	Treated sanitary wastewater	Not reported		43	
85168	LAG33A032	04B	Burrwood W8 Facility	Treated sanitary wastewater	Not reported		43	
85167	LAG33A038	04B	West Delta Block 83 W5 Production Facility	Treated sanitary wastewater	Not reported		43	
85169	LAG33A041	04B	Burrwood E8 Facility	Treated sanitary wastewater	Not reported		43	
133264	LAG33A091	04B	Burrwood Field Facility	Treated sanitary wastewater	Not reported		43	
33875	LAG33A130	002A	West Bay Field Facility #3	Deck Drainage	Flow (DMR Ave)	5.19E-05	43	84,438
134616	LAG33A159	04B	South Pass 11 Central Facility - South Pass Block 11 State Lease 998 "Q" Facility	Treated sanitary wastewater	Not reported		43	
134614	LAG33A166	04B	South Pass 11 Central Facility - South Pass Block 11 State Lease 998 "P" Facility	Treated sanitary wastewater	Not reported		43	
134617	LAG33A167	04B	South Pass 11 Central Facility - South Pass Block 11 State Lease 998 "H" Facility	Treated sanitary wastewater	Not reported		43	
134615	LAG33A168	04B	South Pass 11 Central Facility - South Pass Block 11 State Lease 998 "I" Facility	Treated sanitary wastewater	Not reported		43	
32583	LAG33A275	001, 002, 003, 005, 006, 007	Garden Island Bay Tank Battery #12 - S Flank Booster			Not reported	43	
32583	LAG33A275	004B	Garden Island Bay Tank Battery #12 - S Flank Booster	Treated sanitary wastewater		Not reported	43	

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
32609	LAG33A424	04B	South Pass Block 24 Field W2 Production Facility	Treated sanitary wastewater	Not reported		43	
32570	LAG33A430	04B	Garden Island Bay Production Facility	Treated sanitary wastewater	Not reported		43	
32610	LAG33A431	005	South Pass Block 24 Field W1 Production Facility	Domestic wastewater	Flow (DMR Ave)	0.000866	43	1,410,019
32610	LAG33A431	002A	South Pass Block 24 Field W1 Production Facility	Deck Drainage	Flow (DMR Ave)	0.001486	43	2,419,209
32610	LAG33A431	004B	South Pass Block 24 Field W1 Production Facility	Treated Sanitary Wastewater	Flow (DMR Ave)	0.000206	43	335,719
32682	LAG33A480	04B	Southeast Pass Common Facility #1	Treated sanitary wastewater	Not reported		43	
32681	LAG33A481	04B	Southeast Pass Common Facility No 2	Treated sanitary wastewater	Not reported		43	
32680	LAG33A482	04B	Southeast Pass Common Facility No 3	Treated sanitary wastewater	Not reported		43	
32581	LAG33A483	04B	Southeast Pass Common Facility #4	Treated sanitary wastewater	Not reported		43	
32601	LAG33A516	04B	Tank Battery No 160	Treated sanitary wastewater	Not reported		43	
32650	LAG33A523	04B	South Flank Production Facility	Treated sanitary wastewater	Not reported		43	
32630	LAG33A524	04B	West Tank Battery	Treated sanitary wastewater	Not reported		43	
32578	LAG33A525	04B	Main Pass Block 69 Central Facility	Treated sanitary wastewater	Not reported		43	
136161	LAG33A538	04B	205 Platform - Garden Island Field	Treated sanitary wastewater	Not reported		43	
139943	LAG33A609		6A-13 RA SU A - SL 195 QQ Well No 2			DMRs all say "No Discharge"	43	
23741	LAG33A641	04B	East Bay Central Facility	Treated sanitary wastewater	Flow (DMR)	0.002635	43	4,289,061
94687	LAG531581	001	Associated Branch Pilots - Pilot's Station Southwest Pass	Treated sanitary wastewater	Flow (Ave)	0.0025	14	1,324,894
2522	LAG532487	002	Dowell - Division of Schlumberger Technology Corp	Treated sanitary wastewater	Flow (Ave)	0.0025	14	1,324,894
153091	LAG532549	001	L&L Oil and Gas Services - Venice	Sanitary	Flow (exp.)	0.0005	43	813,864

Table H-3. WLAs for fecal coliform bacteria in the Mississippi River Basin (subsegment 070403)

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
93835	LAG33A066	04B	Romere Pass Terminal - Romere Pass Field	Treated sanitary wastewater	Not reported		43	0
32629	LAG33A343	04B	Delta Duck Club CF #5 Tank Battery #3 Facility - Delta Duck Club Field	Treated sanitary wastewater	Not reported		14	0

Table H-4. WLAs for fecal coliform bacteria in the Mississippi River Basin (subsegment 070404)

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
17897	LA0003867	006	Targa Midstream Services LP - Venice Stabilizing Plant	Treated sanitary wastewater	Flow (Ave)	0.0003	43	488,318
17897	LA0003867	102	Targa Midstream Services LP - Venice Stabilizing Plant	Treated sanitary wastewater	Flow (Ave)	0.0015	43	2,441,591
32615	LA0106356	003	Targa Midstream Services Limited Partnership - Delta Gathering Station	Treated sanitary wastewater	Flow (Ave)	0.001388	43	2,259,285
32622	LAG33A026	04B	South Pass Block 24 Field Facility No 2	Treated sanitary wastewater	Not reported		43	
90251	LAG33A346	04B	West Bay Facility #9	Treated sanitary wastewater	Not reported		43	
90908	LAG33A347	04B	West Bay Compressor Station	Treated sanitary wastewater	Not reported		43	
135113	LAG33A349	04B	West Bay Facility #2	Treated sanitary wastewater	Not reported		43	
135111	LAG33A350	04B	West Bay Facility #13	Treated sanitary wastewater	Not reported		43	
135112	LAG33A351	04B	West Bay Facility #1	Treated sanitary wastewater	Not reported		43	
8491	LAG33A526	002, 005, 006, 007	Venice Compressor Station - Venice Plant	Deck drainage, wastewater, misc.		DMRs all say "No Discharge"		
8491	LAG33A526	004B	Venice Compressor Station - Venice Plant	Sanitary		DMRs all say "No Discharge"	43	
32605	LAG33A626	04B	West Bay Oil & Gas Field Facility	Treated sanitary wastewater	Not reported		43	
141493	LAG33A643	04B	South Pass Central Facility - West Bay Field	Treated sanitary wastewater	Not reported		43	
32699	LAG480097	001	Halliburton Energy Services Inc Baroid Yard #2	Treated sanitary wastewater	Flow (Ave)	0.0006	43	976,636
8910	LAG480098	001	Halliburton Energy Services Inc Venice Yard 1	Treated sanitary wastewater	Flow (Ave)	0.0008	43	1,302,182
4685	LAG480140	002	Premier Industries Inc Venice Facility	Treated sanitary wastewater	Flow (Exp)	0.0025	43	4,069,318
19079	LAG480232	001A	John W Stone Oil Distributor LLC - Venice Fuel Dock	Treated sanitary wastewater	Flow (DMR)	0.003198	43	5,205,471
86527	LAG480325	001	Martin Operating Partnership LP - Venice Terminal	Treated sanitary wastewater	Flow (Max - Permit)	0.005	43	8,138,636
30204	LAG480358	001	Liberty Services Inc - Venice Shorebase	Treated sanitary wastewater	Flow (Ave)	0.001	43	1,627,727
42493	LAG480440	001	MiSWACO Venice II Shorebase	Treated sanitary wastewater	Flow (Ave)	0.003	43	4,883,181
132829	LAG480537	001	Devon Energy Production Co LP - Venice Operations Base	Treated sanitary wastewater	Flow (Ave)	0.00065	43	1,058,023
52450	LAG480561	001	Chevron USA Inc - Venice Shore Base	Treated sanitary wastewater	Flow (Ave)	0.01	14	5,299,577

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
42642	LAG530963	001	Newpark Environmental Service	Treated sanitary wastewater	Flow (Max - Permit)	0.005	43	8,138,636
41702	LAG530984	001	Haliburton Energy Service Inc - HES Bulk Plant	Treated sanitary wastewater	Flow (Design)	0.003	14	1,589,873
52451	LAG531086	001	Newpark Drilling Fluids Venice	Treated sanitary wastewater	Flow (Design)	0.003	43	4,883,181
9023	LAG531145	001	USCG - Venice Station	Treated sanitary wastewater	Flow (Ave)	0.0025	43	4,069,318
40547	LAG531199	001	Ambar Drilling Fluids LP LLP - Venice	Treated sanitary wastewater	Flow (Ave)	0.00051	43	830,141
93007	LAG531208	001	Production Management Industries LLG	Treated sanitary wastewater	Flow (Ave)	0.00252	43	4,101,872
41399	LAG531225	001	Environmental Treatment Team - Venice Shorebase Facility	Treated sanitary wastewater	Flow (Ave)	0.0015	43	2,441,591
952	LAG531353	001	BJ Services Co USA - Venice Bulk Plant	Treated sanitary wastewater	Flow (Ave)	0.00005	43	81,386
20979	LAG531468	001	USFWS - Delta National Wildlife Refuge	Treated sanitary wastewater	Flow (Ave)	0.00006	43	97,664
149797	LAG532242	001	US Liquids of LA - Venice Transfer Station	Treated sanitary wastewater	Flow (Max - Permit)	0.0025	43	4,069,318
100326	LAG540258	001	Cypress Cove Lodge	Treated sanitary wastewater	Flow (Max - Permit)	0.025	14	13,248,942
41200	LAG541115	001	Cypress Cove Peninsula Townhomes LLC	Treated sanitary wastewater	Flow (Ave)	0.024	14	12,718,984
52450	LAG541401		Chevron USA Inc - Venice Shore Base		Flow (Exp)	0.01	14	5,299,577

Table H-5. WLAs for fecal coliform bacteria in the Mississippi River Basin (subsegment 070501)

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
19237	LA0032999	001	St Francisville Town of - STP	Treated sanitary wastewater	Flow (Design)	0.3	200	2,271,247,200
41363	LAG530722	001	Elm Park Baptist Church	Treated sanitary wastewater	Flow (Ave)	0.00171	400	25,892,218
84164	LAG531066	001	Ralph's Tavern	Treated sanitary wastewater	Flow (Ave)	0.00005	200	378,541
84504	LAG531110	001	Chris & Dad's Restaurant	Treated sanitary wastewater	Flow (Ave)	0.00006	200	454,249
87549	LAG531117	001	Elm Park Enterprises Inc	Treated sanitary wastewater	Flow (Exp)	0.00171	200	12,946,109
69386	LAG531817	001	Guyon's - M&J's Grocery	Treated sanitary wastewater	Flow (Exp)	0.00006	400	908,499
148654	LAG532204	001	Heirloom Cuisine - WWTP	Treated sanitary wastewater	Flow (Exp)	0.0005	200	3,785,412
149569	LAG532234	001	LADCRT - Office of State Parks - Rosedown Plantation	Treated sanitary wastewater	Flow (Exp)	0.003	400	45,424,944
149569	LAG532234	002	LADCRT - Office of State Parks - Rosedown Plantation	Treated sanitary wastewater	Flow (Exp)	0.0005	400	7,570,824

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
149569	LAG532234	003	LADCRT - Office of State Parks - Rosedown Plantation	Treated sanitary wastewater	Flow (Exp)	0.0005	400	7,570,824
154911	LAG532529	001	US Postal Service - Wakefield Post Office	Sanitary	Flow	0.00004	400	605,666
156371	LAG532779	001	Audubon State Historic Site - WWTP	Sanitary	Flow (exp.)	0.00042	400	6,359,492
156371	LAG532779	002	Audubon State Historic Site - WWTP	Sanitary	Flow (exp.)	0.00022	400	3,331,163
162920	LAG533063	001	Prem & Vimla Menon Family LLC - The Victorian of the Felicianas	Sanitary	Flow (exp.)	0.00262	400	39,671,118
38516	LAG540327	001	Givens Mobile Home Park	Treated sanitary wastewater	Flow (Ave)	0.005901	200	44,675,432
98918	LAG541099	001	Stateline Truck Stop	Treated sanitary wastewater	Flow (Design)	0.012	200	90,849,888
119230	LAG541173	001	West Feliciana Parish Law Enforcement District Work Release Center	Treated sanitary wastewater	Flow (Exp)	0.0175	200	132,489,420
96190	LAG541229	001	Ricks Trailer Park	Treated sanitary wastewater	Flow (Exp)	0.006	200	45,424,944
135397	LAG541414	001	Legacy Park Estates Mobile Home Park - STP	Treated sanitary wastewater	Flow (Design)	0.01	200	75,708,240
43933	LAG560150	001	West Feliciana Parish Police Jury - Hardwood Subdivision STP	Treated sanitary wastewater	Flow (Design)	0.045	200	340,687,080
43932	LAG560151	001	West Feliciana Parish Police Jury - Solitude Sewage System	Treated sanitary wastewater	Flow (Max - Permit)	0.05	200	378,541,200
18977	LAG560152	001	West Feliciana Parish Police Jury - Turner Subdivision STP	Treated sanitary wastewater	Flow (Design)	0.035	200	264,978,840
43935	LAG560153	001	West Feliciana Parish School Board	Treated sanitary wastewater	Flow (Ave)	0.04085	200	309,268,160

Table H-6. WLAs for fecal coliform bacteria in the Mississippi River Basin (subsegment 070502)

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
27646	LA0051144	102	Colonial Pipeline Co - Baton Rouge Junction Facility	Sanitary	Flow (Exp)	0.0028	400	42,396,614
39899	LA0078816	001	Jackson Town of - WWTP	Treated sanitary wastewater	Flow (Ave)	0.439	200	3,323,591,736
31128	LA0086169	001	East Baton Rouge Parish Landfill (BFI North)	Treated leachate, treated sanitary wastewater	Flow (Ave)	0.319	200	2,415,092,856
96336	LA0121991	001	Amitech USA Ltd - Baton Rouge Plant	Treated sanitary wastewater	Flow (Ave)	0.025	200	189,270,600
18692	LA0122301	001	The Bluffs Country Club & Resort	Treated sanitary wastewater	Flow (Design)	0.3	200	2,271,247,200
80781	LAG110098	005	Dolese Brothers Co - Zachary Plant	Treated sanitary wastewater	Flow (DMR)	0.00144	400	21,803,973

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
41364	LAG530188	001	Elm Park Pit Stop Restaurant & Catering	Treated sanitary wastewater	Flow (Max - Permit)	0.005	200	37,854,120
52479	LAG530286	001	LADCRT - Port Hudson State Commemorative Area STP	Treated sanitary wastewater	Flow (Max - Permit)	0.0025	400	37,854,120
42516	LAG530377	001	Miller's Seafood - D'Johns Restaurant	Treated sanitary wastewater	Flow (Ave)	0.001	400	15,141,648
42848	LAG530421	001	Plains Presbyterian Church	Treated sanitary wastewater	Flow (Ave)	0.00144	400	21,803,973
14409	LAG530455	001	Red Stick Armature Works Inc	Treated sanitary wastewater	Flow (Ave)	0.0036	400	54,509,933
43049	LAG530464	001	Ridge Crest Mobile Home Park	Treated sanitary wastewater	Flow (Max - Permit)	0.005	400	75,708,240
32061	LAG530772	001	Transcontinental Gas Pipeline Company Compressor Station #60	Treated sanitary wastewater	Flow (Max - Permit)	0.0025	400	37,854,120
42120	LAG530783	001	La Office of Tourism - Tourist Information Center	Treated sanitary wastewater	Flow (Max - Permit)	0.005	400	75,708,240
83283	LAG531367	001	Asphodel Plantation Village LLC Asphodel Plantation Village	Treated sanitary wastewater	Flow (Design)	0.01	400	151,416,480
41145	LAG540004	001	Country Aire Mobile Home Park	Treated sanitary wastewater	Flow (Max - Permit)	0.025	200	189,270,600
41659	LAG540100	001	Green Acres Campground	Treated sanitary wastewater	Flow (Design)	0.025	200	189,270,600
19728	LAG540279	001	EBR City Parish - Lake Jolie Vue Subdivision #306	Treated sanitary wastewater	Flow (Ave)	0.003	200	22,712,472
41488	LAG540303	001	Farmers Market of Baton Rouge Inc - Bakers Mobil Home Park	Treated sanitary wastewater	Flow (Max - Permit)	0.025	200	189,270,600
42013	LAG540870	001	Judson Baptist Assoc	Treated sanitary wastewater	Flow (Ave)	0.0137	200	103,720,289
89437	LAG541037	001	Rosbottom Interests - Southern Belle Casino	Treated sanitary wastewater	Flow (Exp)	0.00729	200	55,191,307
107949	LAG541114	001	St Francisville Country Manor	Treated sanitary wastewater	Flow (Exp)	0.01264	200	95,695,215
121658	LAG541215	001	Merrydale Place/Weydert Hill - STP	Treated sanitary wastewater	Flow (Exp)	0.018	200	136,274,832
125411	LAG541314	001	Wayne & Sharon Zuccarello - Ridgeline Park Trailer Court	Treated sanitary wastewater	Flow (Exp)	0.008	200	60,566,592
40739	LAG560035		Bayou Waters Ltd Partnership - Sweetbriar Mobile Home Estates	Treated sanitary wastewater	Flow (Ave)	0.0535	400	810,078,168
19480	LAG560111	001	LADOVA - LA War Veterans Home	Treated sanitary wastewater	Flow (Exp)	0.049999	200	378,533,629
51280	LAG560116	001	Norwood Village of	Treated sanitary wastewater	Flow (Exp)	0.04	200	302,832,960
44011	LAG560188	001	Mo-Dad Utilities - Lake Pointe Subdivision	Treated sanitary wastewater	Flow (Exp)	0.0268	200	202,898,083
91166	LAG570219	001	Joint Emergency Services Training Center	Treated sanitary wastewater	Flow (Exp)	0.06	200	454,249,440
119550	LAG570241	001	DKE Development LLC - Pecan Hills	Treated sanitary wastewater	Flow (Exp)	0.098	200	741,940,752

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
			& High Plains Subdivisions					
26494	LAG570330	001	Dixon Correctional Institute	Treated sanitary wastewater	Flow (Exp)	0.05	200	378,541,200
130817	LAG570343	001	Shaw Environmental & Infrastructure Inc / Shaw Environmental Inc / RVTP West	Treated sanitary wastewater	Flow (Exp)	0.028	200	211,983,072
130818	LAG570344	001	Shaw Environmental & Infrastructure Inc / Shaw Environmental Inc / RVTP East	Treated sanitary wastewater	Flow (Exp)	0.068125	200	515,762,385
100619	LAG570353	001	Wastewater Treatment Utilities Inc - Beaver Creek Subdivision STP	Treated sanitary wastewater	Flow (Exp)	0.06	200	454,249,440

Table H-6. WLAs for fecal coliform bacteria in the Mississippi River Basin (subsegment 070503)

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
289	LA0000329	004	Honeywell International Inc. - Baton Rouge South Works	Noncontact stormwater	Flow (DMR)	0.045475	200	344,283,221
1410	LAG110107	001	Dolese Brothers Co - Choctaw Plant	Nonprocess stormwater	Flow (Ave)	0.004183	200	31,670,271
19526	LAG480023	001	Kansas City Southern Railway Co KCSR North Baton Rouge Yard	Stormwater runoff	Not reported		200	
19526	LAG480023	002	Kansas City Southern Railway Co KCSR North Baton Rouge Yard	Stormwater runoff	Not reported		200	
19526	LAG480023	003	Kansas City Southern Railway Co KCSR North Baton Rouge Yard	Stormwater runoff	Flow (DMR)	0.000606	200	4,588,933

Table H-8. WLAs for fecal coliform bacteria in the Mississippi River Basin (subsegment 070505)

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
43934	LAG530828	001	Tunica Elementary School	Treated sanitary wastewater	Flow (Ave)	0.003415	400	51,708,728
154909	LAG532528	001	US Postal Service - Tunica Post Office	Sanitary	Flow	0.00004	400	605,666

Table H-9. WLAs for fecal coliform bacteria in the Mississippi River Basin (subsegment 070601)

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
116035	LA0118192	007	Main Pass 68 Well #1 (Platform A)	Deck drainage	Flow (DMR)	0.00010467	43	
116698	LA0119253	001	West Delta Block 54 - State Lease 17379 Well #2	Treated sanitary wastewater	Flow (Exp)	0.002	43	3,255,454
128345	LA0121118		SL 18383 Well #1 - West Delta Block 52 Area			DMRs all say "No Discharge"		
124267	LA0121894		State Lease 17935 Well #001 - West Delta Block 53 Field			DMRs all say "No Discharge"		
132983	LA0121959		OCS-G-27190 Well #1 - South Pass Block 39			DMRs all say "No Discharge"		
32619	LA0122157		West Delta Block 25 Facility			DMRs all say "No Discharge"	43	
136734	LA0122548	002	State Lease 18550 Well #1	Deck Drainage	Flow (DMR)	0.000155	43	252,298
124119	LA0122556		State Lease 17194 Well No 001			DMRs all say "No Discharge"		
124120	LA0122564		State Lease 17194 Well No 002			DMRs all say "No Discharge"		
32688	LAG260059	003	West Delta Block 54 - Tank Battery #3		Flow (DMR Ave)	0.18335	43	298,443,775
134006	LAG26A002		South Pass 31 State Lease 14846 Facility - South Pass 31 Field		Flow (DMR)	DMRs all say "No Discharge"		
116354	LAG26A011		Main Pass 72-A Platform - SL Wells A1 St & A3 St			DMRs all say "No Discharge"		
32677	LAG26A021	001	Main Pass Block 75 Platform	Deck drainage	Flow (DMR Ave)	0.001624	43	2,642,964
32677	LAG26A021	004	Main Pass Block 75 Platform	Sanitary	Flow (DMR Ave)	0.000075	43	122,080
133524	LAG33A099	04B	Bayou Felice Facility - South Pass Block 24 Field	Treated sanitary wastewater	Not reported		14	0
93947	LAG33A100	04B	Main Pass Block #2 Facility	Treated sanitary wastewater	Not reported		14	0

AI number	Permit number	Pipe	Facility name	Facility outfall	Discharge	Flow (mgd)	Limit (cfu/100 mL)	WLA (cfu/day)
32648	LAG33A515	04B	Tank Battery No 414	Treated sanitary wastewater	Not reported		14	0
32676	LAG33A522	04B	Tank Battery No 49	Treated sanitary wastewater	Flow (DMR)	0.000424	14	224,702
139940	LAG33A608		6A-19 RA SU A - SL 195 QQ Well No 1			DMRs all say "No Discharge"		
101953	LAG33A639	04B	West Delta Block 54	Treated sanitary wastewater	Not reported		14	0
41642	LAG530682	001	Grand Isle Shipyard Inc - Quarter Barge Ella Mae Barge OU-40	Treated sanitary wastewater	Flow (Exp)	0.0036	43	5,859,818
32712	LAG531011	001	Shell Pipeline Co LP - Main Pass 69P Facility	Treated sanitary wastewater	Flow (Exp)	0.00004	43	65,109

Appendix I
Public Comments and Responses

LDEQ Comments Concerning the following TMDLs submitted to EPA by Tetra Tech, Inc.:

DRAFT TMDLs for Fecal Coliform Bacteria for Selected Subsegments in the Mississippi River Basin, Louisiana (070203, 070401, 070403, 070404, 070501, 070502, 070503, 070505, 070601)

By – Tetra Tech, Inc., January 2010

General Comments:

- If any unresolved LDEQ comments to these TMDLs become the basis for an EPA Region 6 objection of an LDEQ drafted permit or permittee objection/appeal of an LDEQ drafted permit, LDEQ shall relinquish permitting authority to EPA Region 6.

EPA Response: The process for EPA Region 6 permit review of state issued permits may be found in 40 C.F.R section 123.44. The Memorandum of Agreement between LDEQ and EPA Region 6 also describes the agencies' agreement regarding administration of the Louisiana Pollution Discharge Elimination System.

- Ambient WQN Site 1098 (Bayou Baton Rouge) was used to assess Subsegment 070203. However, this site is located in the upper reaches of the subsegment and more accurately represents the portion of Bayou Baton Rouge that drains areas in the Thompson Creek subsegment (070502). As such the TMDL should be developed for the Bayou Baton Rouge watershed upstream of site 1098. This is the option that LDEQ is taking for the DO TMDL for Bayou Baton Rouge.

EPA Response: EPA agrees that the site is in the upper reaches and might not representative of the entire subsegment. The assessment point for 070203 is at the upper reaches of Bayou Baton Rouge of the subsegment. It is assumed that quality does not change during its course in the subsegment. That is the assessment point that was used to list subsegment 070203 on the 303(d) list; therefore, it should be used for the TMDL development for the subsegment. EPA recommends that LDEQ add another assessment point in subsegment 070203 that LDEQ feels better represents the subsegment. On the basis of results from that assessment point, this TMDL could be revisited.

- The load duration curve methodology was used to develop the fecal coliform TMDLs for subsegments 070401, 070403, 070404, 070501, 070502, 070505, and 070601. Flow data was obtained from USGS site 07377500 (Comite River near Olive Branch, LA). This methodology is inappropriate for these waterbodies. The selected USGS sites were inappropriate. The selected USGS site resides in the Pontchartrain Basin, whereas the waterbodies in question reside in the Mississippi River Basin. As such, the flows in these waterbodies are often affected by the water levels in the Mississippi River during the annual spring floods. The drainage areas of the Comite River at USGS site 07377500 may be similar to the subsegments in question, however the hydrology, landuse, and soils are significantly different. The Comite River is a free flowing stream with a significant

bedslope. The stream drains an area dominated by forestry, pasture, and agricultural landuses. The streambed consists of sandy soils. The areas that these waterbodies drain consist of landuses that are similar the USGS site 07377500. However, as previously stated, flow in these streams may be impacted by water levels in the Mississippi River and intermediate backwater swamps.

In addition, load-duration curves are typically used to describe the contribution of each constituent as a function of overland flow. Most of the data trends show an inverse relationship between flows and constituent loads (i.e., constituent loads decrease with increasing flow). This trend indicates that impairments are contributed by a constant background source. Because of these factors, any proposed BMPs, which seek to reduce constituent concentrations by mitigating overland inflows, could fail to yield even the slightest reduction in the targeted impairments.

EPA Response: The load duration methodology was only used for subsegments 070501, 070502, and 070505. No continuous flow information was available for the listed subsegments or nearby subsegments in the Mississippi River basin. To account for this, we looked at flow stations in the region. During the initial phases of this TMDL analysis, average flows from 11 USGS gages (including 07377500) in the region were plotted against drainage area. The result was a regression with an R^2 of 0.998. EPA feels that any of these gages is applicable throughout the region. If LDEQ has continuous flow data they would like to be used, please submit the data, the TMDLs may be changed to reflect the new data.

Load duration curves describe contributions of pollutants from surface runoff, subsurface inflow and point sources, not just surface runoff (overland flow). Load duration curves are valid whether the pollutant tends to have higher concentrations at low flows or high flows. When the curve shows higher concentrations at lower flows, this suggests that point sources are the main contributions as opposed to nonpoint sources which appear as high concentrations in high flows. An advantage of the load duration approach is the ability to show allowable loads for a wide range of flow conditions. The load duration curves identify the flow conditions for which the greatest exceedances of water quality criteria are occurring. This information should be considered when BMPs are selected in the future.

- The Load Reduction Approach was used to develop TMDLs for subsegments 070503 (Capital Lake), 070401 (Mississippi River-Head of Passes to Mouth of Passes), 070403 (Ocatve Pass and Main Pass), 070404 (Tiger Pass, Red Pass, Grand Pass, Tante Phine Pass), 070601 (Mississippi River Basin Coastal Bays and Gulf Waters to the 3 mile line). Monthly water yields were obtained from the Louisiana Office of State Climatology and applied to the drainage areas of each subsegment to calculate loads. This is explained in Sections 4.1.1 and 4.2 (pages 17 and 22) of the report. Section 4.2 explicitly states, “The drainage areas of the Lower Mississippi River Basin subsegments were estimated as the subsegment areas.” This approach may be appropriate for Capital Lake, but it is completely inappropriate for the subsegments of the Lower Mississippi [sic] River and coastal waters (070401, 070403, 070404, 070601). These subsegments drain half of the United States. A better approach may be to obtain [sic] a 7Q10 at some point on the Lower Mississippi River and partition the flow among the various subsegments.

EPA Response: The TMDLs represent localized conditions and contributions and do not represent upstream contributions. Using this method, better local control methods may be developed as opposed as trying to allocate loads for the entire Mississippi River drainage basin. In addition, the upstream subsegment 070301 (Mississippi River from Monte Sano Bayou to the Head of Passes) is not listed as impaired for fecal coliform suggesting that the problem is not from upstream sources.

Specific Comments:

- Executive Summary, Table ES-1. Section 303(d) listing information for subsegments included in this report, page IV and Table 1-1 Subsegments and fecal coliform bacteria impairments addressed in this report:

According to the report, the LDEQ's 2006 303(d) report was used to determine the waterbody impairments. The listing presented in the report does not agree with LDEQ's 2006 or Draft 2008 Integrated Reports (305(b)/303(d)). The updated listings are as follows:

070203 – impaired for Primary Contact Recreation PCR; not listed for FWP for fecal coliform. The Draft 2008 Integrated Report lists the same impairments.

070401 – impaired for Oyster Propagation (OYS); Suspected sources are municipal point source discharges, and sources outside state jurisdiction or borders. The Draft 2008 Integrated Report lists the same impairments. However, subsegments 070403 and 070404 were merged into subsegment 070401 in 2007. The fecal coliform TMDLs for subsegments 070401, 070403, and 070404 must be modified to reflect these changes. The changes have been documented in the Draft 2008 Integrated Report. In addition, LDEQ plans to merge the areas used for oyster propagation into subsegment 070601 in the future. At that time, only the canals leading to the oyster propagation areas will be covered by subsegment 070401.

070403, 070404 – All references to these subsegments should be removed. As previously noted, these subsegments no longer exist.

070501 – Impairments are listed correctly in the TMDL report.

070502 – Impairments are listed correctly in the TMDL report.

070503 – Impaired for Primary Contact Recreation; not listed for Fish and Wildlife Propagation for fecal coliforms in the 2006 Integrated Report. The Draft 2008 Integrated Report lists the same impairments.

070505 – Impairments are listed correctly in the TMDL report.

070601 – Impaired for Oyster Propagation (OYS); Suspected sources are municipal point source discharges, and sources outside state jurisdiction or borders. However, the Draft 2008 Integrated Report, does not list any fecal coliform impairments for this subsegment. However, given the plans for the subsegment modifications previously noted, LDEQ believes that the subsegment will be listed for fecal coliform impairments in the future.

EPA Response: The text will be changed to reflect the changes for subsegments 070203 and 070503. As stated in the report, these TMDLs were developed in response to a consent decree

that lists 070401, 070403, 070404, and 070601. EPA decided to give each subsegment, as listed in the consent decree, an allocation. In addition, as you stated 070601 is not listed on the draft 2008 303(d), however, at this time, that list has not been approved and the 2006 303(d) list must be used.

- *Appendix A, Tables A-1 through A-9 and Appendix H, Tables H-1 through H-9:*

Several point source discharges with permit limits for Fecal Coliform Bacteria were omitted. *Table H-1* should be updated to include the omitted point source discharges with permit limits for Fecal Coliform Bacteria. Several of the omitted dischargers in Subsegment 070601 are oil and gas facilities located in the Territorial Seas. Typically these facilities use a Marine Sanitation Device (MSD) to treat sanitary wastewater. LDEQ requests that the TMDL state that Total Residual Chlorine (TRC) is considered to be a surrogate parameter for fecal coliform bacteria for dischargers that utilize a Marine Sanitation Device that complies with the pollution control standards and regulations under Section 312 of the Clean Water Act.

EPA Response: See responses in the tables below for responses to individual permits. Text will be added to the TMDL regarding TRC being a surrogate parameter.

070203- Omitted Dischargers

AI No.	Facility Name	Permit No.	EPA response
1396	Exide Technologies - Baton Rouge Smelter	LA0004464	This facility will be added to the report and receive a WLA.
3519	ExxonMobil Chemical Co - Baton Rouge Polyolefins Plant	LA0005479	This facility will be added to the report and receive a WLA.

070401- Omitted Dischargers

AI No.	Facility Name	Permit No.	EPA response
32583	Garden Island Bay Tank Battery #12 - S Flank Booster	LAG33A275	This facility will be added to the report and however, no flow information is available to assign a WLA.
32610	South Pass Block 24 Field W1 Production Facility	LAG33A431	This facility will be added to the report and receive a WLA.
33875	West Bay Field Facility #3	LAG33A130	This facility will be added to the report and receive a WLA.
139710	West Romere Pass #1	LAG33A606	This facility's permit was terminated on 10/27/2009.
139943	6A-13 RA SU A - SL 195 QQ Well No 2	LAG33A609	This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned.
153091	L&L Oil and Gas Services - Venice	LAG532549	This facility will be added to the report and receive a WLA.

070404 – Omitted Dischargers

AI No.	Facility Name	Permit No.	EPA response
8491	Venice Compressor Station - Venice Plant	LAG33A526	This facility will be added to the report and however, no design flow information is available and DMRs reported “No Discharge” so a WLA cannot be assigned.

070501 – Omitted Dischargers

AI No.	Facility Name	Permit No.	EPA response
41364	Elm Park Pit Stop Restaurant & Catering	LAG530188	This permit was included in the original report.
154911	US Postal Service - Wakefield Post Office	LAG532529	This facility will be added to the report and receive a WLA.
156371	Audubon State Historic Site - WWTP	LAG532779	This facility will be added to the report and receive a WLA.
162920	Prem & Vimla Menon Family LLC - The Victorian of the Felicianas	LAG533063	This facility will be added to the report and receive a WLA.

070505 – Omitted Dischargers

AI No.	Facility Name	Permit No.	EPA response
154909	US Postal Service - Tunica Post Office	LAG532528	This facility will be added to the report and receive a WLA.

070601 – Omitted Dischargers

AI No.	Facility Name	Permit No.	EPA response
32619	West Delta Block 25 Facility	LA0122157	This facility will be added to the report and however, no design flow information is available and DMRs reported “No Discharge” so a WLA cannot be assigned.
32677	Main Pass 75 Platform	LAG260062 LAG26A021	Permit number changed to LAG26A021 in latest permit. This facility will be added to the report and receive a WLA.
32688	West Delta Block 54 - Tank Battery #3	LAG260059	This facility will be added to the report and receive a WLA.
41642	Grand Isle Shipyard Inc - Quarter Barge Ella Mae Barge OU-40 - W Bay Field	LAG530682	This permit was included in the original report.

AI No.	Facility Name	Permit No.	EPA response
116035	Main Pass 68 Well #1 (Platform A)	LA0118192	This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned.
116354	Main Pass 72-A Platform - SL Wells A1 St & A3 St	LAG480388 LAG26A011	Permit number changed to LAG26A011 in latest permit. This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned.
121667	State Lease 17381 #1 Well Production Facilities	LA0121851	This facility's permit was terminated on 10/05/2009.
124119	State Lease 17194 Well No 001	LA0122556	This facility is applying for a general permit under LAG260000, and will terminate this permit number. This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned.
124120	State Lease 17194 Well No 002	LA0122564	This facility is applying for a general permit under LAG260000, and will terminate this permit number. This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned.
124267	State Lease 17935 Well #001 - West Delta Block 53 Field	LA0121894	This facility is applying for a general permit under LAG260000, and will terminate this permit number. This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned.
128345	SL 18383 Well #1 - West Delta Block 52 Area	LA0121118	This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned.

AI No.	Facility Name	Permit No.	EPA response
129072	State Lease 18385 Well #001 - West Delta Block 52 Field	LA0121878	This facility's permit was terminated on 04/09/2010.
132983	OCS-G-27190 Well #1 - South Pass Block 39	LA0121959	This facility is applying for a general permit under LAG260000, and will terminate this permit number. This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned.
134006	South Pass 31 State Lease 14846 Facility - South Pass 31 Field	LA0122181 LAG26A002	Permit number changed to LAG26A002 in latest permit. This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned. (Note DMRs for this facility show a maximum of 264 MGD discharge. DMD discharge data will not be used as it appears to be incorrect.)
136734	State Lease 18550 Well #1	LA0122548	This facility will be added to the report and receive a WLA.
139940	6A-19 RA SU A - SL 195 QQ Well No 1	LAG33A608	This facility will be added to the report and however, no design flow information is available and DMRs reported "No Discharge" so a WLA cannot be assigned.

- According to Appendix B, the following assessment sites seem to consist of insufficient data to provide an assessment:

Site 1094 (subsegment 070403; 2 data points)

Site 1097 (subsegment 070404; 3 data points)

EPA Response: All information available was used for TMDL development. These subsegments were presumably listed on the basis of this information. If LDEQ feels there is insufficient data, these subsegments should be categorized as IRC 3 instead of IRC 5, which require TMDL development.