FINAL

TMDL for Dissolved Oxygen in the West Atchafalaya Basin Floodway—Simmesport to Butte La Rose Bay and Henderson Lake, Louisiana

(Subsegment 010301)

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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 (at Title 40 of the *Code of Federal Regulations* 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 while still meeting the 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 it may include a future growth (FG) component. The TMDL components are illustrated using the following equation:

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

The study area for this TMDL includes subsegment 010301 of the West Atchafalaya Basin Floodway—Simmesport to Butte La Rose Bay and Henderson Lake. The subsegment is a flood diversion area, enclosed on three sides by levees. Henderson Lake is a 6,500-acre freshwater lake at the southern end of the subsegment. The subsegment is in Avoyelles, St. Landry, and St. Martin parishes. The predominant land use in the subsegment is wetlands, followed by cropland.

EPA has included the subsegment on Louisiana's 2006 section 303(d) list of impaired waterbodies (Table ES-1). The subsegment is listed for dissolved oxygen (DO) impairment. The designated uses for the subsegment are primary and secondary contact recreation, and fish and wildlife propagation.

Table ES-1. The subsegment and impairments addressed in this report

Subsegment number	Subsegment description	PCR	SCR	FWP	Impaired use for suspected cause	Suspected causes of impairment	Suspected sources of impairment
010301	West Atchafalaya Basin Floodway-Simmesport to Butte La Rose Bay and Henderson Lake	F	F	N	FWP	Oxygen, Dissolved	Sources Unknown

Source: LDEQ 2006
PCR = primary contact recreation
SCR = secondary contact recreation
FWP = fish and wildlife propagation
N = not supporting
F = fully supporting

In TMDL development, allowable loads from all pollutant sources that cumulatively amount to no more than the TMDL must be established, thereby providing the basis for establishing water quality-based controls. WLAs were assigned to permitted point source dischargers. An explicit MOS of 10 percent and a FG of 10 percent were also included.

A LA-QUAL model was set up for the area of the subsegment around Lake Henderson. On the basis of model results the reduction percentage for total oxygen demand is 34 percent. The total oxygen demand includes oxygen demand from SOD, $CBOD_u$, ammonia, and organic nitrogen. That percentage reduction for nonpoint source loads represents a percentage of the entire nonpoint source loading. Point source loadings were not reduced.

Table ES-2. Summary of oxygen demand TMDL

	Baseline oxygen demand (lb/day)	TMDL oxygen demand (lb/day)
WLA	77.7	77.7
LA	73,491.8	48,231.5
MOS	9,196.2	6,038.7
FG	9,196.2	6,038.7
TMDL	91,961.9	60,386.5

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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 (at 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 (in mass per unit time) of a pollutant that a waterbody is able to assimilate while still supporting 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 dissolved oxygen (DO) and nutrient levels sometimes do not meet the state's water quality criteria for subsegment 010301 in the Atchafalaya River Basin. The designated uses for the subsegment are primary and secondary contact recreation, and fish and wildlife propagation. The subsegment is not supporting the fish and wildlife propagation designated use. Table 1-1 presents information from Louisiana's 2006 section 303(d) list (as included in the 2006 Integrated Reports) for the subsegment. The subsegment has the suspected cause of *unknown sources*, which indicates that various sources might be present but not enough data are available to identify them.

Table 1-1. The subsegment and impairments addressed in this report

Subsegment number	Subsegment description	PCR	SCR	FWP	Impaired use for suspected cause	Suspected causes of impairment	Suspected sources of impairment
010301	West Atchafalaya Basin Floodway—Simmesport to Butte La Rose Bay and Henderson Lake	F	F	N	FWP	Oxygen, dissolved	Sources unknown

Source: LDEQ 2006
PCR = primary contact recreation;
SCR = secondary contact recreation
FWP = fish and wildlife propagation
N = not supporting
F = fully supporting

Oxygen concentrations in the water column fluctuate under natural conditions, but severe depletion can result from human activities that introduce large quantities of biodegradable organic materials into surface waters or introduce high levels of nutrients that cause eutrophication. In organic-material-polluted waters, bacterial degradation of organic materials can result in a net decline in oxygen concentrations in the water. Oxygen depletion can also result from chemical reactions that place a chemical oxygen demand on receiving waters. In highly eutrophic lakes, high levels of algae generate oxygen during the daytime by photosynthesis and consume oxygen by respiration during the night. In addition to respiration, dead algae deposits on the sediment bottom. Because of the early sediment diagenesis process, high sediment oxygen demand (SOD) occurs. In a eutrophic lake or stream, the combined effects of algal respiration and SOD are the major reason for severe oxygen depletion. Other factors, such as temperature and salinity, influence the amount of oxygen dissolved in water. For

example, prolonged hot weather decreases oxygen concentrations and can cause fish kills even in clean waters because warm water cannot hold as much oxygen as cold water (Scorecard 2005).

Other factors that affect DO concentrations include the following (Murphy 2005):

- Volume and velocity of water flowing in the waterbody
- Climate and season
- Type and number of organisms in the waterbody
- Altitude
- Dissolved or suspended solids
- Amount of nutrients in the water
- Organic waste
- Riparian vegetation
- Groundwater inflow

2. BACKGROUND INFORMATION

2.1 General Description

The study region consists of one subsegment in the upper portion of the Atchafalaya River Basin: West Atchafalaya Basin Floodway—Simmesport to Butte La Rose Bay and Henderson Lake (subsegment 010301). The subsegment, which is in the Mississippi Alluvial Plain in south central Louisiana, runs north to south and begins in Simmesport, in Avoyelles Parish and ends just below Henderson Lake in St. Martin Parish to the south. The 5-mile-wide subsegment is bordered on the east by the West Atchafalaya Basin Protection levee system, followed by the Atchafalaya River and on the west by the West Bank Levee. Henderson Lake is a very shallow, 6,500-acre freshwater lake at the southern end of the subsegment. The West Atchafalaya Basin Floodway is a flood diversion area built by the U.S. Army Corps of Engineers. Table 2-1 lists the parishes and approximate drainage area of the subsegment, and Figure 2-1 shows the subsegment's location. The subsegment is in U.S. Geological Survey (USGS) hydrologic unit code 08080101.

Table 2-1. Drainage area and parish of the impaired subsegment

Subsegment name	Subsegment	Parish	Drainage area (acres)
West Atchafalaya Basin Floodway—Simmesport to Butte La Rose Bay and Henderson Lake	010301	Avoyelles, St. Landry, St. Martin	220,271

2.2 Land Use

Land use data were obtained from the 2001 USGS National Land Cover Dataset (NLCD; Table 2-2 and Figure 2-1). The predominant land use in the impaired subsegment is woody wetlands (57.6 percent), followed by cultivated crops (25.1 percent), and pasture/hay (8.9 percent). The subsegment has small amounts of emergent herbaceous wetlands, open water, developed land and grass/shrub (8.4 percent total).

Table 2-2. Land uses percentages for the listed subsegment in the Atchafalaya River Basin

Land use	Percent of total area
Open water	2.5%
Developed	1.7%
Grass/shrub	0.9%
Woody wetlands	57.6%
Emergent herbaceous wetlands	3.3%
Cultivated crops	25.1%
Pasture/hay	8.9%
TOTAL	100.00%

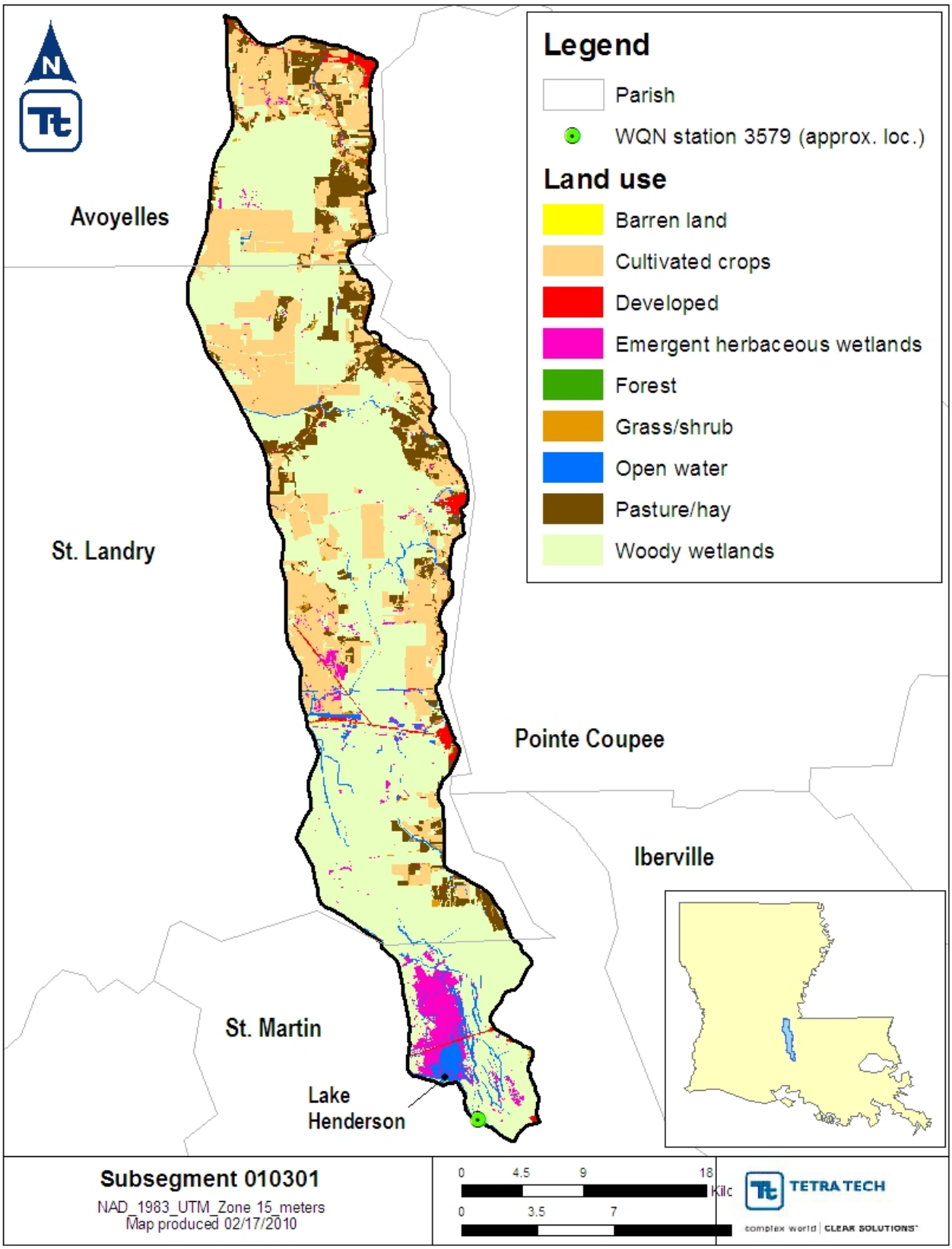

Figure 2-1. Location of and land use in the West Atchafalaya Basin Floodway.

2.3 Hydrologic Setting

Very few USGS flow gages are in the Atchafalaya Basin. The gages do not contain any recent flow data. The subsegment is surrounded on the north, east, and west by flood protection levees. The subsegment is mainly backwater swamp, particularly in the south, and contains waterbodies that are connected only during flood events. The subsegment serves as a floodway for the Atchafalaya River. Few sources of waters are in the subsegment other than precipitation. One source is through control structures, which pump water from the Atchafalaya River, north of Krotz Springs. Flow from that structure goes west and is pumped in Bayou des Glaises Diversion Canal (subsegment 060207) to the west of subsegment 010301.

State Canal flows from the northeast portion of the subsegment to a Darbonne Bay near U.S. 190 where a control structure permits flow to enter Darbonne Bay and Bayou Courtableau. State Canal then flows further south in subsegment 010301. Another control structure south of U.S. 190 connects Bayou Courtableau (subsegment 060204) to the Bayou Courtableau Outlet Channel in subsegment 010301. The channel permits water to flow from Bayou Courtableau into subsegment 010301 during Bayou Courtableau flood conditions.

Flow then goes south to Henderson Lake and out of the subsegment through the canal along the West Atchafalaya Protection Levee Canal at ambient water quality monitoring program station 3579 into subsegment 010501.

2.4 Designated Uses and Water Quality Criteria

Louisiana's 2006 section 303(d) list (as included in the 2006 Integrated Report) (LDEQ 2006) indicates that the listed subsegment does not support its designated use of fish and wildlife propagation because of unknown sources. 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 assessment methodology presented in LDEQ's 305(b) report (LDEQ 2006) specifies that primary contact recreation, secondary contact recreation, and fish and wildlife propagation uses are to be fully supported. The state minimum DO criterion is 5 milligrams per liter (mg/L).

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 that 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 analysis (UAA).

2.5 Identification of Sources

2.5.1 Point Sources

Information on point source discharges to the listed subsegment was obtained from the Louisiana Electronic Document Management System (EDMS) database. Data were pulled from EDMS and analyzed. No municipal separate sewer systems (MS4s) were identified in the subsegment.

There are 12 LPDES (Louisiana Pollutant Discharge Elimination System) permitted facilities discharging to the subsegment, and they are listed in Tables 2-3 and 2-4, which summarize each facility and its discharge amounts and effluent limits. Most of the facilities discharge to various bayous within the floodway. Two facilities discharge directly to Henderson Lake. Four of the facilities are oil and gas operations and have general permits. The outfalls listed in Tables 2-3 and 2-4 note the outfalls indicated in the general permit and might or might not be in use at the facility. The remaining facilities discharge stormwater or treated sanitary wastewater. With the exception of two facilities, all the facilities have small discharges of less than 5,000 gallons per day.

Table 2-3. Permitted facilities' discharge type and receiving waterbody

AI number	Permit ID	Facility name	Facility outfall	Discharge type	Permit expiration	Receiving waterbody
119108	LAG33A035	Plumb Bob Field Central Facility	001	dewatering effluent from reserve pits	12/1/2010	Henderson Lake
			002	deck drainage		
			003	formation test fluids		
			004A	treated sanitary wastewater (non-oyster propagation area)		
			004B	treated sanitary wastewater (oyster propagation area)		
			005	domestic wastewater		
			006	hydrostatic test water		
			007	miscellaneous		
140229	LAR10D575	Multi Purpose Community Evacuation Center		stormwater, construction	10/1/2012?	Wilson Bayou
3116	LA0051942	Alon Refining Krotz Springs Inc	003	stormwater	11/1/2014	ditch to Bayou Courtableau
			005	stormwater		
			006	stormwater		
19509	LAG560110	LADOTD - Atchafalaya Interchange	001	treated sanitary wastewater	6/1/2014	highway ditch to Bay Haha to Lake Bigeux
18829	LAG570243	Total Environmental Solutions Inc - Atchafalaya Acres Camps	001	treated sanitary wastewater	5/1/2014	unnamed ditch then Butte La Rose Bay
122702	LAG541369	Kimbleton Lake Subdivision WWSTP	001	treated sanitary wastewater	7/1/2013	Two O'Clock Bayou
40719	LAG530051	Atchafalaya Basin Landing	001	treated sanitary wastewater	12/1/2012	Henderson Lake
42447	LAG530368	McGee's Landing	001	treated sanitary wastewater	12/1/2012	ditch to Henderson Swamp
116749	LAG532190	Elba Gas Plant	001	treated sanitary wastewater	9/26/2012	ditch to Bayou Rouge
43380	LAG540690	North Central Hugh School	001	treated sanitary wastewater	11/30/2013	Ditch to Bayou Petitie Prairie
138315	LAG33A580	KU #8 Tank Battery - Krotz Springs Field	001	dewatering effluent from reserve pits	12/1/2010	unnamed canal to Big Graw Bayou
			002	deck drainage		
			003	formation test fluids		

AI number	Permit ID	Facility name	Facility outfall	Discharge type	Permit expiration	Receiving waterbody
			04A	treated sanitary wastewater (non-oyster propagation area)		
			04B	treated sanitary wastewater (oyster propagation area)		
			005	domestic wastewater		
			006	hydrostatic test water		
			007	miscellaneous		
163238	LAG33A933	2 O'Clock Bayou Land Corp 13 #1 Tank Battery	001	dewatering effluent from reserve pits	12/1/2010	ditch to Two O'clock Bayou
			002	deck drainage		
			003	formation test fluids		
			04A	treated sanitary wastewater (non-oyster propagation area)		
			04B	treated sanitary wastewater (oyster propagation area)		
			005	domestic wastewater		
			006	hydrostatic test water		
			007	miscellaneous		
30358	LAG33A578	Krotz Springs Gas Plant	001	dewatering effluent from reserve pits	12/1/2010	unnamed canal to Big Graw Bayou
			002	deck drainage		
			003	formation test fluids		
			04A	treated sanitary wastewater (non-oyster propagation area)		
			04B	treated sanitary wastewater (oyster propagation area)		
			005	domestic wastewater		
			006	hydrostatic test water		
			007	miscellaneous		

Table 2-4. Permitted facilities' flow and BOD limits

AI number	Permit ID	Facility name	Facility outfall	Flow type	Flow (mgd)	BOD limit (mg/L)
119108	LAG33A035	Plumb Bob Field Central Facility	001	No discharge per DMRs		
			002	Flow, average	0.000434929	
			003	No discharge per DMRs		
			004A	No discharge per DMRs		45 mg/L 5-day
			004B	No discharge per DMRs		45 mg/L 5-day
			005	No discharge per DMRs		
			006	No discharge per DMRs		
			007	No discharge per DMRs		
140229	LAR10D575	Multi Purpose Community Evacuation Center		No discharge per DMRs		
3116	LA0051942	Alon Refining Krotz Springs Inc	003	Flow, expected	0.00216	
			005	Flow, expected	0.00216	
			006	Flow, expected	0.00216	
19509	LAG560110	LADOTD - Atchafalaya Interchange	001	Flow, design	0.03000	20 mg/L monthly; 30 mg/L weekly

AI number	Permit ID	Facility name	Facility outfall	Flow type	Flow (mgd)	BOD limit (mg/L)
18829	LAG570243	Total Environmental Solutions Inc - Atchafalaya Acres Camps	001	Flow, design	0.06170	10 mg/L monthly; 15 mg/L weekly
122702	LAG541369	Kimbleton Lake Subdivision WWSTP	001	Flow, design	0.005	30 mg/L monthly; 45 mg/L weekly
40719	LAG530051	Atchafalaya Basin Landing	001	Flow, average	0.000661429	45 mg/L weekly
42447	LAG530368	McGee's Landing	001	Flow, expected	0.00125	30 mg/L monthly; 45 mg/L weekly
116749	LAG532190	Elba Gas Plant	001	Flow, expected	0.0001	45 mg/L weekly
43380	LAG540690	North Central Hugh School	001	Flow, average	0.003	30 mg/L monthly; 45 mg/L weekly
138315	LAG33A580	KU #8 Tank Battery - Krotz Springs Field	001	No discharge per DMRs		
			002	Flow, average	0.001397	
			003	No discharge per DMRs		
			04A	No discharge per DMRs		45 mg/L 5-day
			04B	No discharge per DMRs		45 mg/L 5-day
			005	No discharge per DMRs		
			006	No discharge per DMRs		
			007	No discharge per DMRs		
163238	LAG33A933	2 O'Clock Bayou Land Corp 13 #1 Tank Battery	001	No discharge per DMRs		
			002	Flow, average	0.001061333	
			003	No discharge per DMRs		
			04A	No discharge per DMRs		45 mg/L 5-day
			04B	No discharge per DMRs		45 mg/L 5-day
			005	No discharge per DMRs		
			006	No discharge per DMRs		
			007	No discharge per DMRs		
30358	LAG33A578	Krotz Springs Gas Plant	001	No discharge per DMRs		
			002	Flow, average	0.002975833	
			003	No discharge per DMRs		
			04A	No discharge per DMRs		45 mg/L 5-day
			04B	No discharge per DMRs		45 mg/L 5-day
			005	No discharge per DMRs		
			006	No discharge per DMRs		
			007	No discharge per DMRs		

2.5.2 Nonpoint Sources

Louisiana's section 303(d) list does not identify the suspected cause of the DO impairment in the subsegments of the Atchafalaya River Basin. The source is listed as *unknown*. In addition to natural wetlands, land uses in the subsegment include pasture, row crops, and a small amount of developed land. These land uses could also introduce nutrients and oxygen demand to the subsegment.

3. CHARACTERIZATION OF EXISTING WATER QUALITY

3.1 Water Quality Data

Water quality data were obtained from LDEQ's routine ambient water quality monitoring program station 3579 (Figure 2-1). Data collected during 2008 monitoring included measurements of temperature, DO, DO percent saturation, pH; sampling data for total phosphorus (TP), ammonia nitrogen, total Kjeldahl nitrogen (TKN), and nitrate plus nitrite nitrogen (NO_2+NO_3). Tables 3-1 through 3-5 present summaries of the water quality data for DO and nutrients. Biological oxygen demand (BOD) data were not available from LDEQ monitoring sites. Figure 3-1 presents a plot of the LDEQ DO data over time at station 3579.

Table 3-1. LDEQ DO data summary

Subseg.	Station	Station name	Period of record	No. of obs.	DO min (mg/L)	DO max (mg/L)	DO ave (mg/L)	DO median (mg/L)	Number of obs. below criterion[a]	% of obs. below criterion[a]
010301	3579	Henderson Lake at Butte La Rose pontoon bridge, Butte La Rose, Louisiana	10/24/07–8/13/08	11	0.38	7.6	4.71	4.91	6	55%

[a] The min DO criterion is 5 mg/L.

Table 3-2. Summary of LDEQ monitoring data for total nitrite+nitrate

Subsegment	Station	Station name	Period of record	No. of obs.	Total NO_2+NO_3 min (mg/L)	Total NO_2+NO_3 max (mg/L)	Total NO_2+NO_3 ave (mg/L)	Total NO_2+NO_3 median (mg/L)
010301	3579	Henderson Lake at Butte La Rose pontoon bridge, Butte La Rose, Louisiana	10/24/07–8/13/08	11	ND	0.98	0.13[a]	0.05[a]

ND = Not detected
a Non-detected results were treated as 0 mg/L, because the detection limit is not known.

Table 3-3. Summary of LDEQ monitoring data for TKN

Subsegment	Station	Station name	Period of record	No. of obs.	TKN min (mg/L)	TKN max (mg/L)	TKN ave (mg/L)	TKN median (mg/L)
010301	3579	Henderson Lake at Butte La Rose pontoon bridge, Butte La Rose, Louisiana	10/24/07–8/13/08	11	0.62	1.03	0.84	0.86

Table 3-4. Summary of LDEQ monitoring data for ammonia nitrogen

Subsegment	Station	Station name	Period of record	No. of obs.	NH_3 min (mg/L)	NH_3 max (mg/L)	NH_3 ave (mg/L)	NH_3 median (mg/L)
010301	3579	Henderson Lake at Butte La Rose pontoon bridge, Butte La Rose, Louisiana	10/24/07–8/13/08	11	ND	0.3	0.03[a]	0.0[a]

a Non-detected results were treated as 0 mg/L, because the detection limit is not known.

Table 3-5. Summary of LDEQ monitoring data for TP

Subsegment	Station	Station name	Period of record	No. of obs.	TP min (mg/L)	TP max (mg/L)	TP ave (mg/L)	TP median (mg/L)
010301	3579	Henderson Lake at Butte La Rose pontoon bridge, Butte La Rose, Louisiana	10/24/07–8/13/08	11	0.09	0.36	0.20	0.17

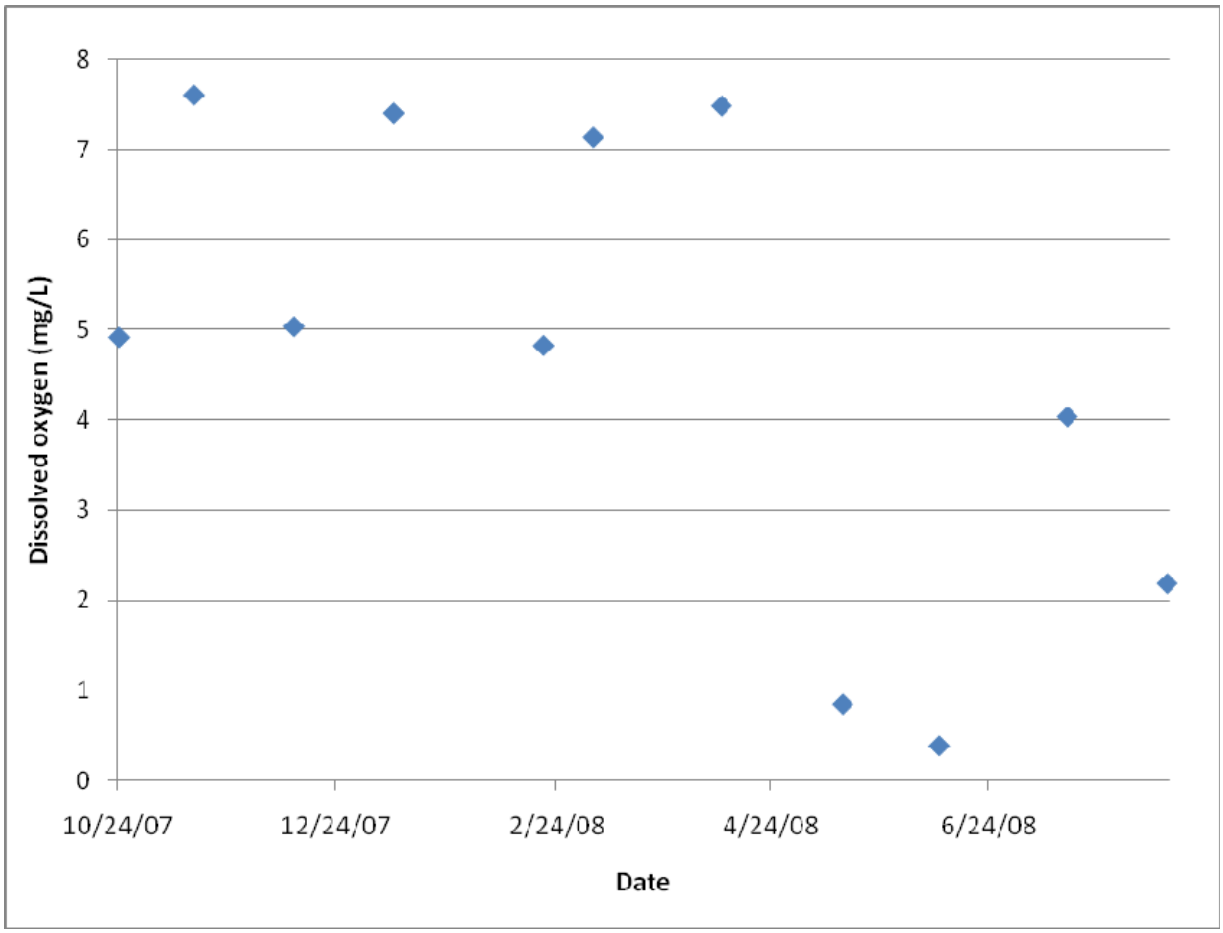

Figure 3-1. DO data observed at Henderson Lake at Butte La Rose pontoon bridge, Butte La Rose, Louisiana at station 3579

3.2 Comparison of Observed Data to Criteria and Data Trends

Table 3-1 provides a summary of the LDEQ DO data at station 3579 (Henderson Lake at Butte La Rose pontoon bridge, Butte La Rose, Louisiana). Station 3579 had 11 observations. Six (55 percent) of the DO observations are below the 5 mg/L water quality criterion. Figure 3-1 shows DO observations over time at station 3579. Although data is available for only one year, there appears to be a strong seasonal decline in DO during the late spring and summer. Appendix A contains all the raw DO and nutrient data.

4. WATER QUALITY MODEL

LA-QUAL (Version 8.00) was chosen to simulate DO in the subsegment. LA-QUAL is a steady-state model that LDEQ developed using the QUAL-TX (Version 3.4) model. Several modifications were made to the QUAL-TX model, including adding new aeration equations that better represent conditions in Louisiana. LA-QUAL evaluates the relationships between pollutant sources and water quality. Model configuration involved setting up the model segments, setting initial conditions, boundary conditions, and hydraulic and kinetic parameters. This section describes key components of the model by their associated data type, which are groupings of model parameters.

Limited data is available for model development, thus only the well-defined portion of the waterbody, in close proximity to the monitoring station was modeled. The model was developed specifically for the area of Lake Henderson and the channel draining from Lake Henderson to Butte La Rose Bay. The simplified model consists of 3 reaches (16 elements): Lake Henderson (1 elements) and the channel (2 elements). Due to data limitations, a number of simplifying assumptions were made. Major model assumptions are listed below. Some of these assumptions and other minor assumptions are discussed throughout this section.

- The critical low-flow period is appropriate for TMDL development, therefore hydrology in the lake and channel can be modeled for a steady-state condition.
- Water quality can also be represented for a steady-state condition.
- Water quality variables are well mixed in each model element.
- The majority of the subsegment drains to the lake.
- Net flow in the lake flows south towards the downstream channel, and the flow behaves similar to a river so LA-QUAL can be applied.
- Mixing due to lake circulation is configured as dispersion in the model.
- DO depletion is mainly caused by CBOD oxidation and SOD. Phytoplankton and periphyton are not considered.
- Dissolved organic carbon from shallow groundwater and the surrounding marsh areas are considered as nonpoint source CBOD.
- Particulate organic carbon from the drainage area and any other sources settle down to the bottom of the lake and channel. This results in the SOD. Therefore controls in the watershed are expected to reduce the SOD and ultimately increase DO levels.
- Point sources are directly input to the model. Decay and transformations that occur between the point source locations and the modeling location are not considered. Only those facilities discharging directly into Henderson Lake have been included in the model. They have little, if any, effect on the model.
- Observed concentrations at the lower end of the model are assumed to be representative of the entire model area.
- Headwater DO for the TMDL model condition will be at criteria (5.0 mg/L) and required reductions to the modeled area are comparable to reductions for the upstream contributing area of the subsegment.

4.1 CALIBRATION

4.1.1 Calibration Period

The calibration period was selected to coincide with the lowest DO observed data point, which occurred on June 20, 2008. The data used for calibration were collected on that date. The period is also considered the critical period because high temperatures decrease DO saturation values and increase rates for oxygen-demanding processes, such as BOD decay, nitrification, and SOD. In addition, lower flow rates do not cause strong reaeration, so the exchange of oxygen between air and water is low.

4.1.2 Model Options (Data Type 2)

Data type 2 is used to identify the constituents being modeled to achieve calibration—for this TMDL, DO, BOD, and a nitrogen series (ammonia and nitrate+nitrite).

4.1.3 Program Constants (Data Type 3)

LA-QUAL is programmed with certain default program constants. Data type 3 is used to override the default constants and is optional; that is, values need to be entered only if values other than the default values are desired. Table 4-1 lists the constants that were changed from their default values. Default values were used for all other program constants. For descriptions of the constants and their default values, see the LA-QUAL user manual (Wiland Consulting 2005).

Table 4-1. Program constants used for modeling

Program constant	010301	Default
Hydraulic calculation method	2	1
Inhibition control value	3	4

4.1.4 Temperature Correction of Kinetics and Temperature Data (Data Types 4 and 5)

Data type 4 contains factors that are used for temperature correction in rate equations. The temperature correction factors used in the model were consistent with the *Standard Operating Procedure for Louisiana TMDL Technical Procedures* (LTP) when those factors were available (LDEQ 2005). The correction factors are as follows:

- Correction for BOD decay: 1.047 (LTP and model default)
- Correction for SOD: 1.065 (LTP and model default)
- Correction for ammonia nitrogen decay: 1.083 (model default)
- Correction for organic nitrogen decay: 1.020 (model default)
- Correction for reaeration: 1.024 (LTP and model default)

The dry bulb and wet bulb air temperature was changed from the default value of 20 degrees Celsius (°C) to 28 °C and 24 °C to match the observed temperature.

4.1.5 Hydraulics and Dispersion (Data Types 9 and 10)

These data types describe the hydraulic and dispersion characteristics of the model reaches. The stream hydraulics were specified in the input file for the model using the following power functions:

$$width = a \times Q^b + c$$

$$depth = d \times Q^e + f$$

where

Q =	flow		
a =	width coefficient	=	0.0
b =	width exponent	=	0.0
c =	width constant	=	average width of segment
d =	depth coefficient	=	0.0
e =	depth exponent	=	0.0
f =	depth constant	=	average depth of segment

The hydraulic data type also contains information on slope and Manning's *n*. For the models, the slope was set to 0.0001, and Manning's *n* was set to 0.08. The average width and depth for each segment were derived from map interpolation and local knowledge. Small amounts of dispersion were added to simulate the mixing at both ends of the system during low-flow conditions.

4.1.6 Initial Conditions (Data Type 11)

Initial conditions were set for temperature, DO, ammonia, and nitrate+nitrite nitrogen using observed water quality data. Because LA-QUAL is a steady-state model, the initial conditions affect only the number of iterations to reach steady-state conditions. Setting initial conditions on the basis of observed data reduces the amount of iterations the model must perform to reach steady-state. Chlorophyll *a* concentrations were assumed on the basis of professional judgment and adjusted to aid in model performance.

Salinity, phosphorus, phytoplankton, and macrophytes were the parameters not simulated in the model. Their initial conditions were set to zero so that the model would not assume a fixed concentration and include their effects.

4.1.7 Water Quality Kinetics (Data Types 12 and 13)

Several kinetic rates were used in the model, including reaeration, SOD, carbonaceous biological oxygen demand (CBOD) decay, nitrification, and mineralization (organic nitrogen decay) rates. The SOD rates were treated as calibration parameters.

Data types 12 and 13 focus on different rates used by the model. The model calculates the reaeration rate by using one of a standard set of equations. For this TMDL, the simplified equation $K_2 = a / D$ is used where a is the oxygen transfer coefficient, and D is the stream depth in meters.

The input file that lists these values is provided in Appendix B. Table 4-3 summarizes the rates. SOD was calibrated in the model and varied per reach. SOD was calibrated after the CBOD levels were finalized. The SOD rates changed iteratively until modeled DO concentrations agreed with measured water column DO concentrations.

Table 4-3. Water quality kinetics rates

Program constant	010301
Background SOD ($g/m^2/d$)	1–2
BOD #1 decay rate (aerobic) (1/d)	0.08
Nitrogen decay rate (1/d)	0.05
Ammonia nitrogen oxidation rate (1/d)	0.1–0.2
Denitrification rate (1/d)	0.05
Oxygen transfer coefficient *a* (m/d)	0.2–0.26

Note
$g/m^2/d$ = grams per square meter per day; m/d = meter per day

4.1.8 Nonpoint Source Loads (Data Type 19)

This data type accounts for nonpoint source loads not associated with incremental and tributary flows. The nonpoint source loads that are specified in the model represent ultimate CBOD ($CBOD_u$) loads from shallow groundwater and from the surrounding marshland. The $CBOD_u$ loads were treated as calibration parameters; their values were adjusted until the model output was similar to the calibration target values.

4.1.9 Headwater Flow and Water Quality (Data Types 20, 21, and 22)

These data types account for flow and water quality from upstream of the modeled subsegment. Headwater water quality data were estimated from observed water quality measurements and professional judgment. Because no flow information is available, 0.1 cubic feet per second (cfs) was used. That flow is the critical flow listed in the LTP when actual flow is less than 0.1 cfs. It was assumed that little flow exits the system during dry weather, so the 0.1 cfs was appropriate.

4.1.10 Wasteload Flow and Water Quality Data (Data Types 24, 25, and 26)

These data types account for flow and water quality from point sources discharging into the listed waterbodies. The model included 3 permitted dischargers that discharge into Henderson Lake (LAG33A035, LAG530051, and LAG530368). Flows for each permit are listed in Table 2-4. DO was set to 5.0 for point sources. Permitted 5-day BOD (BOD_5) discharge limits were converted to ultimate CBOD using a conversion factor of 2.3. Concentrations for ammonia (1.5 mg/L), organic nitrogen (0.5 mg/L), and nitrate+nitrite (0.04 mg/L) were assumed for calibration conditions.

4.1.11 Lower Boundary Condition (Data Type 27)

Dispersion was specified to model the nature of the area. The boundary conditions were based on the observed and assumed concentrations.

4.1.12 Calibration and Model Results

Model calibration entailed adjusting model parameters associated with ammonia, CBOD, and SOD until DO concentrations were reasonably reproduced. The ammonia loads were first adjusted so that predicted ammonia concentrations would match observed concentrations. Ammonia was calibrated first because the effect of ammonia on DO is minimal. After ammonia was calibrated, the CBOD loads were adjusted. Finally, SOD was adjusted until the predicted DO concentrations were similar to the observed concentrations.

Plots of observed and calibration water quality are presented in Appendix C. The existing oxygen demand loading is 83,340 pounds per day (lbs/d). Overall, the model did well in predicting the observed values for DO, and the model was considered adequate on the basis of the data available.

4.2 WATER QUALITY MODEL PROJECTION

EPA's regulations at 40 CFR 130.7 require the determination of TMDLs to take into account critical conditions for stream flow, loading, and water quality parameters. The calibrated model was used to project water quality for critical conditions. Two scenarios were run for the critical conditions: baseline and TMDL. The model was run for baseline conditions, which uses the same water quality and model parameters as the calibration model; however, as described below, the temperature were changed to critical conditions, and effluent water quality from permitted dischargers were changed to the permit limits. The TMDL model run was the same as the baseline run; however, pollutant loadings were reduced so that DO met criteria at all locations. This section discusses identifying critical conditions and the model input data used for critical conditions. Appendix B contains the baseline and TMDL output files. The output files also include the input parameters.

4.2.1 Temperature Inputs

The LTP specifies that the critical temperature should be determined by calculating the 90th percentile seasonal temperature for the waterbody being modeled, if data are available; otherwise, 30 °C is to be used for summer. The critical temperatures were used for incremental and wasteload inputs. The most critical time of year for meeting a constant DO standard is the period of high temperatures and low flows.

4.2.2 Headwater Inputs

The inputs for the headwater for the projection simulation were based on guidance in the LTP. According to the LTP, the critical flow rates for summer should be set to either the 7Q10 flow or 0.1 cfs, whichever is higher. Because 7Q10 values for the waterbodies are not available, the headwater flow used in calibrating the model was kept at 0.1 cfs. It was assumed that during critical times, there might not be headwater flow for 7 days, making the 7Q10 equal to 0 cfs, so 0.1 cfs would be used. DO from the headwaters was set to the water quality criteria 5 mg/L. CBOD from the headwater was reduced.

4.2.3 Point Source Inputs

Ammonia and organic nitrogen levels were changed from observed or assumed concentrations to proposed concentrations. The nitrogen concentrations were assumed to be half the amount of the oxygen demand, with two-thirds assumed to be ammonia loading and one-third as organic nitrogen loading. Those assumptions are consistent with information in the LTP.

4.2.4 Downstream Values

Modeling parameters for downstream boundary conditions were the same as the calibration parameters except for temperature and DO. The temperature was set to the critical condition. The DO value was set to the water quality standard of 5.0 mg/L.

4.2.5 Baseline Model Results

Baseline line conditions were run under critical temperature and water flow conditions for calibrated parameters and water quality values. Plots of baseline water quality are presented in Appendix C. The baseline oxygen demand loading is 91,962 lbs/d.

4.2.6 Model Results for Projection

To meet the DO standard, 5.0 mg/L, total oxygen demand must be reduced 34 percent. The total oxygen demand includes oxygen demand from SOD, $CBOD_u$, ammonia, and organic nitrogen. That percentage reduction for nonpoint source loads represents a percentage of the entire nonpoint source loading. Point source loadings were not reduced. Plots of predicted water quality are presented in Appendix C.

5. TMDL DEVELOPMENT

A TMDL is the total amount of a pollutant that a receiving waterbody can assimilate 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, thereby providing 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, and it may include a future growth (FG) component. The TMDL components are illustrated using the following equation:

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

5.1 TMDLs, WLAs and LAs

The DO TMDLs are presented as oxygen demands derived using LA-QUAL. A summary of the TMDL for watershed loading is presented in Table 5-1. The watershed TMDL was calculated from SOD, $CBOD_u$, ammonia, and organic nitrogen from model inputs, and results and are presented as total oxygen demand because not enough information is available to separate the demand into the separate constituents. The reduction percentage for total oxygen demand is 34 percent. The total oxygen demand includes oxygen demand from SOD, $CBOD_u$, ammonia, and organic nitrogen. That percentage reduction for nonpoint source loads represents a percentage of the entire nonpoint source loading. Point source loadings were not reduced.

Table 5-1. Summary of oxygen demand TMDL

	Baseline oxygen demand (lb/day)	TMDL oxygen demand (lb/day)
WLA	77.7	77.7
LA	73,491.8	48,231.5
MOS	9,196.2	6,038.7
FG	9,196.2	6,038.7
TMDL	91,961.9	60,386.5

5.1.1 Wasteload Allocations

The WLA portion of the TMDL equation is the total loading of a pollutant that is assigned to point sources (Table 5-2) for total oxygen demanding substances, which include BOD, ammonia, and organic nitrogen. Loadings from BOD_5, ammonia, and organic nitrogen were converted to oxygen demand. Allocations were provided in oxygen demand to help relate the point source loads to the total TMDL. No reductions were made to existing permit limits. No MS4 permits are in this watershed.

Table 5-2. Summary of oxygen demand WLAs

AI number	Permit ID	Facility name	Flow (mgd)	Concentration (mg/L)			Oxygen demand loading (lb/d)
				Limit	Estimate		
				BOD_5	Amm.	Org N	
3116	LA0051942	Alon Refining Krotz Springs Inc	0.00648	45	15	7.5	10.87
119108	LAG33A035	Plumb Bob Field Central Facility	0.000434929	45	15	7.5	0.73
30358	LAG33A578	Krotz Springs Gas Plant	0.002975833	45	15	7.5	4.99
138315	LAG33A580	KU #8 Tank Battery - Krotz Springs Field	0.001397	45	15	7.5	2.34
163238	LAG33A933	2 O'Clock Bayou Land Corp 13 #1 Tank Battery	0.001061333	45	15	7.5	1.78
40719	LAG530051	Atchafalaya Basin Landing	0.000661429	45	15	7.5	1.11
42447	LAG530368	McGee's Landing	0.00125	30	10	5	1.40
116749	LAG532190	Elba Gas Plant	0.0001	45	15	7.5	0.17
43380	LAG540690	North Central High School	0.003	30	10	5	2.71
122702	LAG541369	Kimbleton Lake Subdivision WWSTP	0.005	30	10	5	5.59
19509	LAG560110	LADOTD - Atchafalaya Interchange	0.03000	20	6.7	3.3	22.36
18829	LAG570243	Total Environmental Solutions Inc - Atchafalaya Acres Camps	0.06170	10	3.3	1.7	22.99

The WLAs are based on the available flow levels and current BOD limits. None of the permits had ammonia or organic nitrogen limits. Ammonia and organic nitrogen concentrations were based on assumptions and are consistent with information presented in the LTP. The nitrogen contributions to the oxygen demand were assumed to be half, with two-thirds assumed to be ammonia loading and one-third as organic nitrogen loading. The dischargers are small and appear not to have a significant effect on the waterbody. Therefore, the dischargers will remain at their current limits for the current and proposed criteria.

On the basis of the types of activities, lack of existing permit limits for the pollutants of concern, or the minimal flow of some discharges, the permits are believed to be negligible and are assumed to operate at their current levels. However, WLAs are provided for the facilities in case it is determined during a permit review that the permittee has the reasonable potential to cause or contribute to a water quality standards violation and would need a permit limit. To avoid an unnecessary permitting process or unintended monitoring requirements for sources that might not discharge the pollutants of concern, the decision to provide a WLA to these sources does not indicate that an effluent limit is needed or required.

5.1.2 Load Allocation

The LA is the portion of the TMDL assigned to nonpoint sources such as natural background, SOD, and other loadings. For this TMDL, the LA was calculated by subtracting the WLA, MOS, and FG from the total TMDL allocation. LAs were not allocated to separate nonpoint sources because of the lack of available source characterization data.

5.2 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 stream flow, loading, and water quality parameters. The sampling results for all pollutants were plotted over time and reviewed for any seasonal patterns (see Section 3). The water quality criteria for DO apply all year accounting for seasonal variations. This TMDL was developed under critical conditions, providing a conservative year round TMDL.

Critical conditions for DO have been determined to be the following: negligible nonpoint runoff and low stream flow combined with high water temperatures. Oxygen-demanding substances can enter a water system during higher flows and settle to the bottom, where they exert a large oxygen demand during the high-temperature/low-flow seasons. Water temperature is one of the leading factors that affect DO in the segment. High water temperatures lower the DO saturation concentration, decreasing the amount of DO that the stream can contain. In addition, high temperature increases CBOD decay and SOD. Therefore, it is most important to develop a TMDL to address the high-water-temperature conditions. Ambient water quality data from LDEQ show that low DO concentrations occur during the summer months. (For data plots, see Appendix A.)

5.3 Margin of Safety

The MOS is the portion of the pollutant loading reserved to account for any uncertainty in the data. 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 provides an additional level of protection to the designated uses of the subsegments of concern. The MOS is listed in Table 5-1.

5.4 Future Growth

The MOS accounts for uncertainty in the model, while FG accounts for future growth within the subsegment. Ten percent of the load was allocated for FG in the area covered by the TMDL. The growth includes future urban development, including point sources, MS4 areas, agriculture, and other nonpoint sources. The FG could also be used for sources not accounted for or unknown and therefore not otherwise included in the TMDL. The FG is listed in Table 5-1.

6. FUTURE ACTIVITIES

6.1. TMDL Future Activities

To meet the requirements of Louisiana's TMDL consent decree, this TMDL was developed with uncertainties from limited hydrology and water quality data and other information necessary to determine if low DO conditions are directly related to hydrology or water quality. EPA deems it necessary that the certain activities should take place post TMDL development to ensure that future modification to the West Atchafalaya Floodway TMDL (subsegment 010301) will resolve the uncertainties. The uncertainties that exist consist of the following:

1. Impact of the complex hydrology (e.g. operation and maintenance of hydrologic control structures along the border of this subsegment) on low DO in the subsegment.
2. LDEQ concerns about the DO criterion for a hydrologically modified waters.
3. The impact that minor point sources might have on periods of low DO when the hydrologic control structures are not operating (e.g. no flow releases). The water quality model demonstrates that point source impacts are not significant.

EPA recommends that LDEQ consider the following actions to take place, within the noted post-TMDL development time frames, to resolve these uncertainties. These actions consist of the following:

1. *Use Attainability Analysis (UAA)* – LDEQ has indicated that they plan to conduct an UAA for the Atchafalaya River Basin to determine if the current designated uses and/or criteria are appropriate. If the criterion for the West Atchafalaya Floodway subsegment (010301) is revised, EPA recommends that the 010301 be resampled and reassessed to determine if the segment is impaired on the basis of the revised criterion. Typically, an UAA and subsequent water quality assessments take between 1 and 5 years.
2. *Reassessment / Revised TMDL* – After completion of the recommended resurvey and reassessment of subsegment 010301, if water quality data does not demonstrate attainment of the revised DO criterion, this TMDL should be revised to meet a revised criterion. A critical part of the TMDL revision includes the completion of a water quality survey. Typically, both the reassessment and the development of a revised TMDL take between 1 and 5 years. The duration depends largely on the period of the data collection efforts.

If it is determined that this TMDL needs to be updated in order to meet a revised criterion, the following activities are recommended:

1. *Intensive Water Quality Survey* – Conduct an intensive water quality survey of the West Atchafalaya Floodway system to better characterize existing water quality conditions. This intensive water quality survey would capture the necessary seasonal aspect for the West Atchafalaya Floodway system and the operational and non-operational periods of the control structures. Typically, intensive water quality surveys take between 1 to 2 years.
2. *Re-Modeling and TMDL Revision of the West Atchafalaya* – Develop a hydrodynamic water quality model necessary to understand the complex hydrology of the West

Atchafalaya Floodway subsegment. This model should include information on how the control structures in the subsegment are operated and how their operation could affect DO. Once the hydrodynamic water quality model and water quality survey for this subsegment has been completed, LDEQ would have a tool to assist in determining if low DO is the result of hydrologic modification or point/nonpoint source loadings or both. In addition, this tool might assist in determining what critical in-stream flow requirements are necessary to maintain DO levels in the West Atchafalaya Floodway during critical conditions.

6.2. Environmental 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 Louisiana'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, to develop a long-term database for water quality trend analysis, and to monitor the effectiveness of pollution controls. The data obtained through the surface water monitoring program are used to develop the state's biennial section 305(b) report (*Water Quality Inventory*) and section 303(d) list of impaired waters.

LDEQ has implemented a watershed approach to surface water quality monitoring. Through the approach, the entire state is sampled on a 4-year cycle. Long-term, trend-monitoring sites at various locations on the large rivers and Lake Pontchartrain are sampled throughout the 4-year cycle. Sampling is conducted monthly to yield approximately 12 samples per site during each year the site is monitored. Sampling sites are where they are considered 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 during each biennial cycle; sampling occurs statewide each year. That allows LDEQ to determine water quality as a result of TMDL implementation. As monitoring results are evaluated, subsegments are added to or removed from the 303(d) list.

Monitoring will allow LDEQ to determine whether any improvement in water quality has been made following TMDL implementation. As the monitoring results are evaluated at the end of each year, waterbodies might be added to or removed from the section 303(d) list of impaired waterbodies.

6.3. Other Activities in the Subsegment

The U.S. Army Corps of Engineers is preparing a Supplemental Environmental Impact Statement (SEIS) for the Henderson Water Management Unit (HMU). The SEIS will contain an evaluation of alternatives for input and output of freshwater into the HMU and enhancing internal circulation. As part of the completed SEIS, the U.S. Army Corps of Engineers will select a preferred alternative.

7. 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 will be published in the *Federal Register* on February 25, 2010, and the review period will close on March 29, 2010. Any comments will be reviewed, and these TMDLs could be revised if appropriate.

Comments were received from LDEQ and were used to update this TMDL document. LDEQ comments and EPA responses are included in Appendix D of this document.

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

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APPENDIX A
WATER QUALITY DATA

Table A-1. Water quality data for LDEQ ambient water quality station 3579..... 2

Table A-1. Water quality data for LDEQ ambient water quality station 3579

Site#	Date/Time	Parameter	Result	Unit
3579	10/24/07 0:00	Ammonia - nitrogen	Non-detect	
3579	11/14/07 0:00	Ammonia - nitrogen	Non-detect	
3579	12/12/07 0:00	Ammonia - nitrogen	Non-detect	
3579	1/9/08 0:00	Ammonia - nitrogen	Non-detect	
3579	2/20/08 0:00	Ammonia - nitrogen	Non-detect	
3579	3/5/08 0:00	Ammonia - nitrogen	Non-detect	
3579	4/10/08 0:00	Ammonia - nitrogen	Non-detect	
3579	5/14/08 0:00	Ammonia - nitrogen	Non-detect	
3579	6/10/08 0:00	Ammonia - nitrogen	Non-detect	
3579	7/16/08 0:00	Ammonia - nitrogen	Non-detect	
3579	8/13/08 0:00	Ammonia - nitrogen	0.3	mg/L
3579	10/24/07 9:45	Dissolved oxygen	4.91	mg/L
3579	11/14/07 9:35	Dissolved oxygen	7.6	mg/L
3579	12/12/07 9:20	Dissolved oxygen	5.03	mg/L
3579	1/9/08 9:28	Dissolved oxygen	7.4	mg/L
3579	2/20/08 9:07	Dissolved oxygen	4.82	mg/L
3579	3/5/08 9:25	Dissolved oxygen	7.13	mg/L
3579	4/10/08 9:40	Dissolved oxygen	7.48	mg/L
3579	5/14/08 9:25	Dissolved oxygen	0.84	mg/L
3579	6/10/08 9:20	Dissolved oxygen	0.38	mg/L
3579	7/16/08 9:25	Dissolved oxygen	4.03	mg/L
3579	8/13/08 9:40	Dissolved oxygen	2.18	mg/L
3579	10/24/07 9:45	Dissolved oxygen percent saturation	0.549	
3579	11/14/07 9:35	Dissolved oxygen percent saturation	0.838	
3579	12/12/07 9:20	Dissolved oxygen percent saturation	0.539	
3579	1/9/08 9:28	Dissolved oxygen percent saturation	0.724	
3579	2/20/08 9:07	Dissolved oxygen percent saturation	0.474	
3579	3/5/08 9:25	Dissolved oxygen percent saturation	0.705	
3579	4/10/08 9:40	Dissolved oxygen percent saturation	0.754	
3579	5/14/08 9:25	Dissolved oxygen percent saturation	0.095	
3579	6/10/08 9:20	Dissolved oxygen percent saturation	0.049	
3579	7/16/08 9:25	Dissolved oxygen percent saturation	0.541	
3579	8/13/08 9:40	Dissolved oxygen percent saturation	0.285	
3579	10/24/07 0:00	Nitrate+nitrite nitrogen	Non-detect	
3579	11/14/07 0:00	Nitrate+nitrite nitrogen	Non-detect	
3579	12/12/07 0:00	Nitrate+nitrite nitrogen	0.1	mg/L
3579	1/9/08 0:00	Nitrate+nitrite nitrogen	0.08	mg/L
3579	2/20/08 0:00	Nitrate+nitrite nitrogen	0.05	mg/L
3579	3/5/08 0:00	Nitrate+nitrite nitrogen	0.09	mg/L
3579	4/10/08 0:00	Nitrate+nitrite nitrogen	0.98	mg/L
3579	5/14/08 0:00	Nitrate+nitrite nitrogen	Non-detect	
3579	6/10/08 0:00	Nitrate+nitrite nitrogen	Non-detect	
3579	7/16/08 0:00	Nitrate+nitrite nitrogen	0.06	mg/L
3579	8/13/08 0:00	Nitrate+nitrite nitrogen	0.05	mg/L
3579	10/24/07 0:00	Nitrogen, Kjeldahl	1.03	mg/L
3579	11/14/07 0:00	Nitrogen, Kjeldahl	0.81	mg/L

Site#	Date/Time	Parameter	Result	Unit
3579	12/12/07 0:00	Nitrogen, Kjeldahl	1	mg/L
3579	1/9/08 0:00	Nitrogen, Kjeldahl	0.62	mg/L
3579	2/20/08 0:00	Nitrogen, Kjeldahl	0.85	mg/L
3579	3/5/08 0:00	Nitrogen, Kjeldahl	0.87	mg/L
3579	4/10/08 0:00	Nitrogen, Kjeldahl	0.71	mg/L
3579	5/14/08 0:00	Nitrogen, Kjeldahl	0.89	mg/L
3579	6/10/08 0:00	Nitrogen, Kjeldahl	0.89	mg/L
3579	7/16/08 0:00	Nitrogen, Kjeldahl	0.68	mg/L
3579	8/13/08 0:00	Nitrogen, Kjeldahl	1.48	mg/L
3579	10/24/07 0:00	Phosphorus (as P)	0.13	mg/L
3579	11/14/07 0:00	Phosphorus (as P)	0.09	mg/L
3579	12/12/07 0:00	Phosphorus (as P)	0.14	mg/L
3579	1/9/08 0:00	Phosphorus (as P)	0.17	mg/L
3579	2/20/08 0:00	Phosphorus (as P)	0.25	mg/L
3579	3/5/08 0:00	Phosphorus (as P)	0.3	mg/L
3579	4/10/08 0:00	Phosphorus (as P)	0.16	mg/L
3579	5/14/08 0:00	Phosphorus (as P)	0.23	mg/L
3579	6/10/08 0:00	Phosphorus (as P)	0.36	mg/L
3579	7/16/08 0:00	Phosphorus (as P)	0.14	mg/L
3579	8/13/08 0:00	Phosphorus (as P)	0.18	mg/L
3579	10/24/07 9:45	Water temperature	20.94	degrees C
3579	11/14/07 9:35	Water temperature	20.5	degrees C
3579	12/12/07 9:20	Water temperature	18.79	degrees C
3579	1/9/08 9:28	Water temperature	14.8	degrees C
3579	2/20/08 9:07	Water temperature	15.22	degrees C
3579	3/5/08 9:25	Water temperature	15.67	degrees C
3579	4/10/08 9:40	Water temperature	15.61	degrees C
3579	5/14/08 9:25	Water temperature	23.57	degrees C
3579	6/10/08 9:20	Water temperature	28	degrees C
3579	7/16/08 9:25	Water temperature	30.69	degrees C
3579	8/13/08 9:40	Water temperature	29.56	degrees C

APPENDIX B:
MODEL OUTPUT

Calibration output file 1
Baseline output file 14
TMDL output file 27

Calibration output file

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LA-QUAL Version 8.11
Louisiana Department of Environmental Quality
Input file is E:\EPA_R06\LA TMDL 2006\Additional\010301\LA-QUAL\ss010301_Cal_ps.txt
Output produced at 10:53 on 03/31/2010
$$$ DATA TYPE 1 (TITLES AND CONTROL CARDS) $$$
CARD TYPE       CONTROL TITLES
TITLE01         West Atchafalaya Floodway  (Subsegment 010301)
TITLE02          Simulation for Subsegment 010301
CNTROL03   NO   SEQU                        <Warning: legacy control - line ignored>
CNTROL04  YES   METR
CNTROL05  YES   OXYG                        <Warning: legacy control - line ignored>
ENDATA01
$$$ DATA TYPE 2 (MODEL OPTIONS) $$$
CARD TYPE       MODEL OPTION
MODOPT01  Yes   TEMPERATURE
MODOPT02   NO   SALINITY
MODOPT03   NO   CONSERVATIVE MATERIAL #1                        UNITS =
MODOPT04   NO   CONSERVATIVE MATERIAL #2                        UNITS =
MODOPT05  YES   DISSOLVED OXYGEN
MODOPT06  YES   BOD1 BIOCHEMICAL OXYGEN DEMAND #1
MODOPT07   NO   BOD2 BIOCHEMICAL OXYGEN DEMAND #2
MODOPT08  YES   NITROGEN SERIES
MODOPT09   NO   PHOSPHORUS
MODOPT10   NO   CHLOROPHYLL A
MODOPT11   NO   MACROPHYTES
MODOPT12   NO   COLIFORMS
MODOPT13   NO   NONCONSERVATIVE MATERIAL                        UNITS =
ENDATA02
$$$ DATA TYPE 3 (PROGRAM CONSTANTS) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
PROGRAM         MAXImum iteration limit           =      1000.00000
PROGRAM         INHIBITION CONTROL VALUE          =         3.00000 (inhibit all rates but SOD)
PROGRAM         HYDRAULIC CALCULATION METHOD      =         2.00000 (widths and depths)
ENDATA03
$$$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) $$$
 CARD TYPE     RATE CODE     THETA VALUE
ENDATA04
$$$ CONSTANTS TYPE 5 (TEMPERATURE DATA) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
TEMP            WET BULB TEMP                              24.00000 deg C
TEMP            DRY BULB TEMP                              28.00000 deg C
ENDATA05
$$$ DATA TYPE 6 (ALGAE CONSTANTS) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
ENDATA06
$$$ DATA TYPE 7 (MACROPHYTE CONSTANTS) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
ENDATA07
$$$ DATA TYPE 8 (REACH IDENTIFICATION DATA) $$$
                                                BEGIN         END     ELEM    REACH     ELEMS   BEGIN    END
CARD TYPE  REACH  ID  NAME                      REACH       REACH   LENGTH   LENGTH    PER RCH   ELEM   ELEM
                                                   km          km       km       km               NUM    NUM
REACH ID      1    1  Lake Henderson             6.50  TO    2.70   3.8000     3.80       1        1      1
REACH ID      2    2  Butte La Rose Bayou        2.70  TO    2.60   0.0500     0.10       2        2      3
REACH ID      3    3  Butte La Rose Bayou        2.60  TO    0.00   0.2000     2.60      13        4     16
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ENDATA08
$$$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) $$$
CARD TYPE  REACH  ID       WIDTH       WIDTH       WIDTH       DEPTH       DEPTH       DEPTH      SLOPE    MANNINGS
                            "A"         "B"         "C"         "D"         "E"         "F"                  "N"
HYDR-1        1    1       0.000       0.000    2300.000       0.000       0.000       1.220    0.00010   0.080
HYDR-1        2    2       0.000       0.000      21.000       0.000       0.000       1.220    0.00010   0.080
HYDR-1        3    3       0.000       0.000      21.000       0.000       0.000       1.220    0.00010   0.080
ENDATA09
$$$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) $$$
CARD TYPE  REACH  ID     TIDAL     DISPERSION     DISPERSION     DISPERSION     DISPERSION
                        RANGE        "A"            "B"            "C"            "D"
HYDR          1    1      0.00        4.000          0.000          0.000          0.000
HYDR          2    2      0.00        4.000          0.000          0.000          0.000
HYDR          3    3      0.00        4.000          0.000          0.000          0.000
ENDATA10
$$$ DATA TYPE 11 (INITIAL CONDITIONS) $$$
CARD TYPE      REACH  ID        TEMP     SALIN        DO       NH3     NO3+2      PHOS     CHL A     MACRO
INITIAL           1    1       28.00      0.00      0.38      0.10      0.04      0.00     30.00      0.00
INITIAL           2    2       28.00      0.00      0.38      0.10      0.04      0.00     25.00      0.00
INITIAL           3    3       28.00      0.00      0.38      0.10      0.04      0.00     20.00      0.00
ENDATA11
$$$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) $$$
                                                                                                  BOD     ANAER                          BOD2     ANAER
CARD     RCH  RCH  K2                    K2        K2        K2    BKGRND       BOD       BOD      CONV      BOD2      BOD2      BOD2      CONV      BOD2
TYPE     NUM   ID  OPT                   "A"       "B"       "C"       SOD     DECAY      SETT   TO SOD     DECAY     DECAY      SETT   TO SOD     DECAY
                                                                    g/m²/d   per day       m/d              per day   per day       m/d              per day
COEFF-1    1    1  20 K2=a/D           0.260     0.000     0.000     2.000     0.080     0.000     0.000     0.000     0.000     0.000     0.000     0.000
COEFF-1    2    2  20 K2=a/D           0.250     0.000     0.000     2.000     0.080     0.000     0.000     0.000     0.000     0.000     0.000     0.000
COEFF-1    3    3  20 K2=a/D           0.200     0.000     0.000     1.000     0.080     0.000     0.000     0.000     0.000     0.000     0.000     0.000
ENDATA12
$$$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) $$$
CARD TYPE      REACH  ID       ORG-N     ORG-N   ORGN CONV       NH3       NH3      PHOS     DENIT
                             DECA      SETT  TO NH3 SRCE      DECA      SRCE      SRCE      RATE
COEFF-2           1    1       0.050     0.000     0.000       0.100     0.005     0.000     0.050
COEFF-2           2    2       0.050     0.000     0.000       0.200     0.005     0.000     0.050
COEFF-2           3    3       0.050     0.000     0.000       0.200     0.005     0.000     0.050
ENDATA13
$$$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) $$$
CARD TYPE      REACH  ID       SECCHI    ALGAE:     ALGAE    ALG CONV     ALGAE     ALGAE     MACRO     MACRO
                             DEPTH     CHL A      SETT     TO SOD      GROW      RESP      GROW      RESP   SHADING
ENDATA14
$$$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) $$$
CARD TYPE      REACH  ID    COLIFORM       NCM       NCM    NCM CONV
                           DIE-OFF     DECAY      SETT     TO SOD
ENDATA15
$$$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$

CARD TYPE      REACH  ID       OUTFLOW      INFLOW      TEMP     SALIN      CM-I     CM-II   IN/DIST  OUT/DIST
INCR-1            1    1       0.00000     0.00000     30.00      0.00      0.00      0.00   0.00000   0.00000
INCR-1            2    2       0.00000     0.00000     30.00      0.00      0.00      0.00   0.00000   0.00000
INCR-1            3    3       0.00000     0.00000     30.00      0.00      0.00      0.00   0.00000   0.00000
ENDATA16
$$$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) $$$
CARD TYPE      REACH  ID          DO       BOD     ORG-N     NH3-N     NO3-N     BOD#2
INCR-2            1    1        0.00      0.00      0.00      0.00      0.00      0.00
INCR-2            2    2        0.00      0.00      0.00      0.00      0.00      0.00
INCR-2            3    3        0.00      0.00      0.00      0.00      0.00      0.00
ENDATA17
$$$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$
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 CARD TYPE      REACH  ID        PHOS     CHL A      COLI       NCM
ENDATA18
$$$ DATA TYPE 19 (NONPOINT SOURCE DATA) $$$
CARD TYPE      REACH  ID       BOD#1     ORG-N      COLI       NCM        DO     BOD#2
NONPOINT           1    1     8500.00      0.00      0.00      0.00      0.00      0.00
NONPOINT           2    2      250.00      0.00      0.00      0.00      0.00      0.00
NONPOINT           3    3        0.00      0.00      0.00      0.00      0.00      0.00
ENDATA19
$$$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) $$$
CARD TYPE     ELEMENT   NAME                  UNIT     FLOW     FLOW    TEMP    SALIN      CM-I     CM-II
                                                        m³/s      cfs   deg C      ppt
HDWTR-1           1     Lake Henderson          0   0.00283    0.100   28.00     0.00     0.000     0.000   0.00
ENDATA20
$$$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) $$$
CARD TYPE     ELEMENT   NAME                           DO     BOD#1     ORG-N     NH3-N     NO3-N     BOD#2
                                                      mg/L      mg/L      mg/L      mg/L      mg/L      mg/L
HDWTR-2           1     Lake Henderson              0.40     20.00      0.50      0.10      0.04      0.00
ENDATA21
$$$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$
CARD TYPE     ELEMENT   NAME                         PHOS     CHL A      COLI       NCM
                                                      mg/L      mg/L      mg/L      mg/L
ENDATA22
$$$ DATA TYPE 23 (JUNCTION DATA) $$$
CARD TYPE   JUNCTION   UPSTRM     RIVER     NAME
             ELEMENT  ELEMENT     KILOM
ENDATA23
$$$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$
CARD TYPE  ELEMENT    RKILO  NAME                     FLOW       FLOW     FLOW    TEMP    SALIN      CM-I     CM-II
                                                       m³/s        cfs      MGD   deg C      ppt
WSTLD-1        1       6.50  LA0051942             0.00000    0.00000    0.000   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A035             0.00002    0.00071    0.000   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A578             0.00000    0.00000    0.000   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A580             0.00000    0.00000    0.000   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A933             0.00000    0.00000    0.000   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG530051             0.00003    0.00106    0.001   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG530368             0.00005    0.00177    0.001   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG532190             0.00000    0.00000    0.000   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG541369             0.00000    0.00000    0.000   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG560110             0.00000    0.00000    0.000   28.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG570243             0.00000    0.00000    0.000   28.00     0.00     0.000     0.000
ENDATA24
$$$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) $$$
                                                                      % BOD                            %
CARD TYPE     ELEMENT   NAME                           DO       BOD      RMVL     ORG-N     NH3-N    NITRIF     NO3-N     BOD#2
                                                      mg/L      mg/L                mg/L      mg/L                mg/L      mg/L
WSTLD-2           1     LA0051942                   5.00    103.50      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG33A035                   5.00    103.50      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG33A578                   5.00    103.50      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG33A580                   5.00    103.50      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG33A933                   5.00    103.50      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG530051                   5.00    103.50      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG530368                   5.00     69.00      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG532190                   5.00    103.50      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG541369                   5.00     69.00      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG560110                   5.00     46.00      0.00      0.50      1.50      0.00      0.00      0.00
WSTLD-2           1     LAG570243                   5.00     23.00      0.00      0.50      1.50      0.00      0.00      0.00
ENDATA25
$$$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$
CARD TYPE     ELEMENT   NAME                         PHOS     CHL A      COLI       NCM
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                                                  mg/L      mg/L      mg/L      mg/L
ENDATA26
$$$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) $$$
CARD TYPE    CONSTITUENT                    CONCENTRATION
LOWER BC     TEMPERATURE                             28.000     deg C
LOWER BC     SALINITY                                 0.000     ppt
LOWER BC     CONSERVATIVE MATERIAL I                  0.000
LOWER BC     CONSERVATIVE MATERIAL II                 0.000
LOWER BC     DISSOLVED OXYGEN                         0.380     mg/L
LOWER BC     BIOCHEMICAL OXYGEN DEMAND               15.000     mg/L
LOWER BC     ORGANIC NITROGEN                         0.500     mg/L
LOWER BC     AMMONIA NITROGEN                         0.100     mg/L
LOWER BC     NITRATE + NITRITE                        0.040     mg/L
LOWER BC     PHOSPHORUS                               0.360     mg/L
LOWER BC     CHLOROPHYLL A                           10.000     µg/L
LOWER BC     COLIFORM                                 0.000     #/100 mL
LOWER BC     NONCONSERVATIVE MATERIAL                 0.000
ENDATA27
$$$ DATA TYPE 28 (DAM DATA) $$$
CARD TYPE     ELEMENT   NAME                  EQN      "A"       "B"       "H"
ENDATA28
$$$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) $$$
CARD TYPE       PARAMETER     COL 1     COL 2     COL 3     COL 4     COL 5     COL 6     COL 7     COL 8
ENDATA29
$$$ DATA TYPE 30 (PLOT CONTROL CARDS) $$$
NUMBER OF PLOTS =  1
NUMBER OF REACHES IN PLOT 1 =   3
PLOT RCH  1  2  3
ENDATA30
$$$ DATA TYPE 31 (OVERLAY PLOT DATA) $$$
OVERLAY 1 LH_3.OVL                        :Subsegment 010301
ENDATA31
     .....NO ERRORS DETECTED IN INPUT DATA
     .....HYDRAULIC CALCULATIONS COMPLETED
     .....TRIDIAGONAL MATRIX TERMS INITIALIZED
     .....OXYGEN DEPENDENT RATES CONVERGENT IN   6 ITERATIONS
     .....CONSTITUENT CALCULATIONS COMPLETED
 ***** WARNING:  NEGATIVE CONCENTRATIONS SET TO ZERO FOR Nitrate+Nitrite Nitrogen
     .....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11
INTERMEDIATE REPORT
 Dissolved Oxygen                                                 West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                          Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.75
   2     2     2        0.75      0.78
   3     3     4        0.84      0.90      0.94      0.96      0.97      0.96      0.94      0.91      0.86      0.80
   3     3    14        0.71      0.61      0.47
INTERMEDIATE REPORT
 Effective BOD                                                    West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                          Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       20.06
   2     2     2       20.46     20.90
   3     3     4       20.23     19.27     18.41     17.65     17.00     16.45     15.99     15.62     15.34     15.14
   3     3    14       15.02     14.96     14.97
INTERMEDIATE REPORT
 Biochemical Oxygen Demand                                        West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                          Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
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   1     1     1       20.06
   2     2     2       20.46     20.90
   3     3     4       20.23     19.27     18.41     17.65     17.00     16.45     15.99     15.62     15.34     15.14
   3     3    14       15.02     14.96     14.97
INTERMEDIATE REPORT
 Organic Nitrogen                                                    West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                             Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.00
   2     2     2        0.00      0.01
   3     3     4        0.03      0.06      0.09      0.12      0.15      0.19      0.22      0.26      0.30      0.34
   3     3    14        0.38      0.42      0.47
INTERMEDIATE REPORT
 Ammonia Nitrogen                                                    West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                             Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        2.27
   2     2     2        2.26      2.22
   3     3     4        2.12      1.96      1.80      1.64      1.48      1.33      1.17      1.01      0.86      0.69
   3     3    14        0.53      0.36      0.19
INTERMEDIATE REPORT
 Nitrate+Nitrite Nitrogen                                            West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                             Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.00
   2     2     2        0.00      0.00
   3     3     4        0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
   3     3    14        0.00      0.00      0.00
INTERMEDIATE REPORT
 Total Nitrogen                                                      West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                             Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        2.28
   2     2     2        2.26      2.23
   3     3     4        2.15      2.02      1.89      1.76      1.64      1.51      1.39      1.27      1.15      1.03
   3     3    14        0.91      0.79      0.66
INTERMEDIATE REPORT
 Chlorophyll a                                                       West Atchafalaya Floodway  (Subsegment 010301)
     µg/L                                                             Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       25.00
   2     2     2       22.50     20.00
   3     3     4       19.23     18.46     17.69     16.92     16.15     15.38     14.62     13.85     13.08     12.31
   3     3    14       11.54     10.77     10.00
INTERMEDIATE REPORT
 Temperature                                                         West Atchafalaya Floodway  (Subsegment 010301)
     deg C                                                            Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       28.00
   2     2     2       28.00     28.00
   3     3     4       28.00     28.00     28.00     28.00     28.00     28.00     28.00     28.00     28.00     28.00
   3     3    14       28.00     28.00     28.00
INTERMEDIATE REPORT
 Salinity                                                            West Atchafalaya Floodway  (Subsegment 010301)
     ppt                                                              Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.00
   2     2     2        0.00      0.00
   3     3     4        0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
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   3     3    14        0.00      0.00      0.00
INTERMEDIATE REPORT
 River Distance                                                    West Atchafalaya Floodway  (Subsegment 010301)
     km                                                             Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1         3.
   2     2     2         3.        3.
   3     3     4         2.        2.        2.        2.        2.        1.        1.        1.        1.        1.
   3     3    14         0.        0.        0.
INTERMEDIATE REPORT
 Flow                                                              West Atchafalaya Floodway  (Subsegment 010301)
     m³/s                                                           Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.0
   2     2     2        0.0       0.0
   3     3     4        0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
   3     3    14        0.0       0.0       0.0
INTERMEDIATE REPORT
 Dispersion                                                        West Atchafalaya Floodway  (Subsegment 010301)
     m²/s                                                           Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        4.0
   2     2     2        4.0       4.0
   3     3     4        4.0       4.0       4.0       4.0       4.0       4.0       4.0       4.0       4.0       4.0
   3     3    14        4.0       4.0       4.0
INTERMEDIATE REPORT
 Advective Velocity                                                West Atchafalaya Floodway  (Subsegment 010301)
     m/s                                                            Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.0
   2     2     2        0.0       0.0
   3     3     4        0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
   3     3    14        0.0       0.0       0.0
INTERMEDIATE REPORT
 Depth                                                             West Atchafalaya Floodway  (Subsegment 010301)
     m                                                              Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        1.2
   2     2     2        1.2       1.2
   3     3     4        1.2       1.2       1.2       1.2       1.2       1.2       1.2       1.2       1.2       1.2
   3     3    14        1.2       1.2       1.2
INTERMEDIATE REPORT
 Width                                                             West Atchafalaya Floodway  (Subsegment 010301)
     m                                                              Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1     2300.0
   2     2     2       21.0      21.0
   3     3     4       21.0      21.0      21.0      21.0      21.0      21.0      21.0      21.0      21.0      21.0
   3     3    14       21.0      21.0      21.0
INTERMEDIATE REPORT
 Cross-Sectional Area                                              West Atchafalaya Floodway  (Subsegment 010301)
     m²                                                             Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1     2806.0
   2     2     2       25.6      25.6
   3     3     4       25.6      25.6      25.6      25.6      25.6      25.6      25.6      25.6      25.6      25.6
   3     3    14       25.6      25.6      25.6
INTERMEDIATE REPORT
 Reaeration Rate                                                   West Atchafalaya Floodway  (Subsegment 010301)
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     per day                                                    Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       0.248
   2     2     2       0.238     0.238
   3     3     4       0.190     0.190     0.190     0.190     0.190     0.190     0.190     0.190     0.190     0.190
   3     3    14       0.190     0.190     0.190
INTERMEDIATE REPORT
 BOD Decay Rate                                                 West Atchafalaya Floodway  (Subsegment 010301)
     per day                                                     Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.04
   2     2     2        0.04      0.04
   3     3     4        0.05      0.05      0.05      0.05      0.05      0.05      0.05      0.05      0.05      0.05
   3     3    14        0.04      0.03      0.03
INTERMEDIATE REPORT
 BOD Settling Rate                                              West Atchafalaya Floodway  (Subsegment 010301)
     per day                                                     Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.00
   2     2     2        0.00      0.00
   3     3     4        0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
   3     3    14        0.00      0.00      0.00
INTERMEDIATE REPORT
 Ammonia Decay Rate                                             West Atchafalaya Floodway  (Subsegment 010301)
     per day                                                     Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.00
   2     2     2        0.01      0.01
   3     3     4        0.01      0.01      0.02      0.02      0.02      0.02      0.02      0.02      0.01      0.01
   3     3    14        0.01      0.00      0.00
INTERMEDIATE REPORT
 Sediment Oxygen Demand                                         West Atchafalaya Floodway  (Subsegment 010301)
     g/m²/d                                                      Simulation for Subsegment 010301
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        3.31
   2     2     2        3.31      3.31
   3     3     4        1.65      1.65      1.65      1.65      1.65      1.65      1.65      1.65      1.65      1.65
   3     3    14        1.65      1.65      1.65
CONDENSED CAPSULE SUMMARY FOR Lake Henderson
                                                                REAER BOD1 BOD1 BOD2 BOD2  NH3
    DIST     FLOW   TEMP SALN    DO  EBOD1 EBOD2 ORGN  NH3  CHLA  RATE  DECA SETT DECA SETT DECA  SOD
     km      m³/s  deg C  ppt   mg/L  mg/L  mg/L mg/L µg/L  1/da  1/da  1/da 1/da  1/da 1/da 1/da   g/m²/d
   HDWTR   0.00283 28.00 0.00   0.40 20.00  0.00 0.50 0.10 30.00
    2.70   0.00293 28.00 0.00   0.75 20.06  0.00 0.00 2.27 25.00   0.25  0.04 0.00 0.00 0.00 0.00  3.31
    2.65   0.00293 28.00 0.00   0.75 20.46  0.00 0.00 2.26 22.50   0.24  0.04 0.00 0.00 0.00 0.01  3.31
    2.60   0.00293 28.00 0.00   0.78 20.90  0.00 0.01 2.22 20.00   0.24  0.04 0.00 0.00 0.00 0.01  3.31
    2.40   0.00293 28.00 0.00   0.84 20.23  0.00 0.03 2.12 19.23   0.19  0.05 0.00 0.00 0.00 0.01  1.65
    2.20   0.00293 28.00 0.00   0.90 19.27  0.00 0.06 1.96 18.46   0.19  0.05 0.00 0.00 0.00 0.01  1.65
    2.00   0.00293 28.00 0.00   0.94 18.41  0.00 0.09 1.80 17.69   0.19  0.05 0.00 0.00 0.00 0.02  1.65
    1.80   0.00293 28.00 0.00   0.96 17.65  0.00 0.12 1.64 16.92   0.19  0.05 0.00 0.00 0.00 0.02  1.65
    1.60   0.00293 28.00 0.00   0.97 17.00  0.00 0.15 1.48 16.15   0.19  0.05 0.00 0.00 0.00 0.02  1.65
    1.40   0.00293 28.00 0.00   0.96 16.45  0.00 0.19 1.33 15.38   0.19  0.05 0.00 0.00 0.00 0.02  1.65
    1.20   0.00293 28.00 0.00   0.94 15.99  0.00 0.22 1.17 14.62   0.19  0.05 0.00 0.00 0.00 0.02  1.65
    1.00   0.00293 28.00 0.00   0.91 15.62  0.00 0.26 1.01 13.85   0.19  0.05 0.00 0.00 0.00 0.02  1.65
    0.80   0.00293 28.00 0.00   0.86 15.34  0.00 0.30 0.86 13.08   0.19  0.05 0.00 0.00 0.00 0.01  1.65
    0.60   0.00293 28.00 0.00   0.80 15.14  0.00 0.34 0.69 12.31   0.19  0.05 0.00 0.00 0.00 0.01  1.65
    0.40   0.00293 28.00 0.00   0.71 15.02  0.00 0.38 0.53 11.54   0.19  0.04 0.00 0.00 0.00 0.01  1.65
    0.20   0.00293 28.00 0.00   0.61 14.96  0.00 0.42 0.36 10.77   0.19  0.03 0.00 0.00 0.00 0.00  1.65
    0.00   0.00293 28.00 0.00   0.47 14.97  0.00 0.47 0.19 10.00   0.19  0.03 0.00 0.00 0.00 0.00  1.65
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EXPANDED CAPSULE SUMMARY FOR Lake Henderson

IOR	REACH		DIST km	FLOW m³/s	TEMP deg C	SALN ppt	DO mg/L	EBOD1 mg/L	EBOD2 mg/L	ORG-N mg/L	NH3 mg/L	CHLA µg/L	DISP m²/s	DEPTH m	WIDTH m	ADVEC VELO m/s	MEAN VELO m/s	DO SAT mg/L	REAER RATE 1/da	BOD1 DECA 1/da	BOD1 SETT 1/da	BOD2 DECA 1/da	BOD2 SETT 1/da	NH3 DECA 1/da	SOD g/m²/d
			HDWTR	0.003	28.0	0.0	0.4	20.0	0.0	0.5	0.1	30.0													
			WASTELOAD # 001 (LA0051942) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG33A035) ENTERS HERE																						
			WASTELOAD # 001 (LAG33A578) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG33A580) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG33A933) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG530051) ENTERS HERE																						
			WASTELOAD # 001 (LAG530368) ENTERS HERE																						
			WASTELOAD # 001 (LAG532190) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG541369) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG560110) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG570243) ENTERS HERE WITHOUT ANY FLOW																						
1	1	1	2.70	0.003	28.0	0.0	0.7	20.1	0.0	0.0	2.3	25.0	4.0	1.222	300.0	0.000	0.000	7.8	0.248	0.04	0.00	0.00	0.00	0.00	3.31
2	2	2	2.65	0.003	28.0	0.0	0.8	20.5	0.0	0.0	2.3	22.5	4.0	1.22	21.0	0.000	0.000	7.8	0.238	0.04	0.00	0.00	0.00	0.01	3.31
3	2	2	2.60	0.003	28.0	0.0	0.8	20.9	0.0	0.0	2.2	20.0	4.0	1.22	21.0	0.000	0.000	7.8	0.238	0.04	0.00	0.00	0.00	0.01	3.31
4	3	3	2.40	0.003	28.0	0.0	0.8	20.2	0.0	0.0	2.1	19.2	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.01	1.65
5	3	3	2.20	0.003	28.0	0.0	0.9	19.3	0.0	0.1	2.0	18.5	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.01	1.65
6	3	3	2.00	0.003	28.0	0.0	0.9	18.4	0.0	0.1	1.8	17.7	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.02	1.65
7	3	3	1.80	0.003	28.0	0.0	1.0	17.7	0.0	0.1	1.6	16.9	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.02	1.65
8	3	3	1.60	0.003	28.0	0.0	1.0	17.0	0.0	0.2	1.5	16.2	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.02	1.65
9	3	3	1.40	0.003	28.0	0.0	1.0	16.4	0.0	0.2	1.3	15.4	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.02	1.65
10	3	3	1.20	0.003	28.0	0.0	0.9	16.0	0.0	0.2	1.2	14.6	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.02	1.65
11	3	3	1.00	0.003	28.0	0.0	0.9	15.6	0.0	0.3	1.0	13.8	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.02	1.65
12	3	3	0.80	0.003	28.0	0.0	0.9	15.3	0.0	0.3	0.9	13.1	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.01	1.65
13	3	3	0.60	0.003	28.0	0.0	0.8	15.1	0.0	0.3	0.7	12.3	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.05	0.00	0.00	0.00	0.01	1.65
14	3	3	0.40	0.003	28.0	0.0	0.7	15.0	0.0	0.4	0.5	11.5	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.04	0.00	0.00	0.00	0.01	1.65
15	3	3	0.20	0.003	28.0	0.0	0.6	15.0	0.0	0.4	0.4	10.8	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.03	0.00	0.00	0.00	0.00	1.65
16	3	3	0.00	0.003	28.0	0.0	0.5	15.0	0.0	0.5	0.2	10.0	4.0	1.22	21.0	0.000	0.000	7.8	0.190	0.03	0.00	0.00	0.00	0.00	1.65

SPECIAL REPORT: Lake Henderson

WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
1	2.700	28.00	0.0	0.0	0.0	0.75	20.06	0.00	20.06	0.00	0.00	2.27	0.00	2.28	0.00	25.0	0.0	0.	0.00
2	2.650	28.00	0.0	0.0	0.0	0.75	20.46	0.00	20.46	0.00	0.00	2.26	0.00	2.26	0.00	22.5	0.0	0.	0.00
3	2.600	28.00	0.0	0.0	0.0	0.78	20.90	0.00	20.90	0.00	0.01	2.22	0.00	2.23	0.00	20.0	0.0	0.	0.00
4	2.400	28.00	0.0	0.0	0.0	0.84	20.23	0.00	20.23	0.00	0.03	2.12	0.00	2.15	0.03	19.2	0.0	0.	0.00
5	2.200	28.00	0.0	0.0	0.0	0.90	19.27	0.00	19.27	0.00	0.06	1.96	0.00	2.02	0.06	18.5	0.0	0.	0.00
6	2.000	28.00	0.0	0.0	0.0	0.94	18.41	0.00	18.41	0.00	0.09	1.80	0.00	1.89	0.08	17.7	0.0	0.	0.00
7	1.800	28.00	0.0	0.0	0.0	0.96	17.65	0.00	17.65	0.00	0.12	1.64	0.00	1.76	0.11	16.9	0.0	0.	0.00
8	1.600	28.00	0.0	0.0	0.0	0.97	17.00	0.00	17.00	0.00	0.15	1.48	0.00	1.64	0.14	16.2	0.0	0.	0.00
9	1.400	28.00	0.0	0.0	0.0	0.96	16.45	0.00	16.45	0.00	0.19	1.33	0.00	1.51	0.17	15.4	0.0	0.	0.00
10	1.200	28.00	0.0	0.0	0.0	0.94	15.99	0.00	15.99	0.00	0.22	1.17	0.00	1.39	0.19	14.6	0.0	0.	0.00
11	1.000	28.00	0.0	0.0	0.0	0.91	15.62	0.00	15.62	0.00	0.26	1.01	0.00	1.27	0.22	13.8	0.0	0.	0.00
12	0.800	28.00	0.0	0.0	0.0	0.86	15.34	0.00	15.34	0.00	0.30	0.86	0.00	1.15	0.25	13.1	0.0	0.	0.00
13	0.600	28.00	0.0	0.0	0.0	0.80	15.14	0.00	15.14	0.00	0.34	0.69	0.00	1.03	0.28	12.3	0.0	0.	0.00
14	0.400	28.00	0.0	0.0	0.0	0.71	15.02	0.00	15.02	0.00	0.38	0.53	0.00	0.91	0.30	11.5	0.0	0.	0.00
15	0.200	28.00	0.0	0.0	0.0	0.61	14.96	0.00	14.96	0.00	0.42	0.36	0.00	0.79	0.33	10.8	0.0	0.	0.00
16	0.000	28.00	0.0	0.0	0.0	0.47	14.97	0.00	14.97	0.00	0.47	0.19	0.00	0.66	0.36	10.0	0.0	0.	0.00

SPECIAL REPORT: Lake Henderson

BIOLOGICAL AND PHYSICAL COEFFICIENTS

ELEM NO.	ENDING DIST km	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#1 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	FULL SOD *	CORR SOD *	ORG-N DECAY 1/da	ORG-N SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
1	2.700	7.83	0.25	0.04	0.00	0.00	0.00	0.00	0.00	3.31	3.31	0.06	0.00	0.00	0.01	0.05	0.00	1.81	0.00	0.00	0.00	0.00

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   2    2.650  7.83    0.24  0.04  0.00   0.00  0.00  0.00   0.00  3.31  3.31   0.06  0.00   0.01  0.01   0.04  0.00  1.62  0.00   0.00   0.00  0.00
   3    2.600  7.83    0.24  0.04  0.00   0.00  0.00  0.00   0.00  3.31  3.31   0.06  0.00   0.01  0.01   0.04  0.00  1.44  0.00   0.00   0.00  0.00
   4    2.400  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.01  0.01   0.04  0.00  1.39  0.00   0.00   0.00  0.00
   5    2.200  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.01  0.01   0.04  0.00  1.33  0.00   0.00   0.00  0.00
   6    2.000  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.02  0.01   0.04  0.00  1.28  0.00   0.00   0.00  0.00
   7    1.800  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.02  0.01   0.04  0.00  1.22  0.00   0.00   0.00  0.00
   8    1.600  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.02  0.01   0.04  0.00  1.17  0.00   0.00   0.00  0.00
   9    1.400  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.02  0.01   0.04  0.00  1.11  0.00   0.00   0.00  0.00
  10    1.200  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.02  0.01   0.04  0.00  1.06  0.00   0.00   0.00  0.00
  11    1.000  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.02  0.01   0.04  0.00  1.00  0.00   0.00   0.00  0.00
  12    0.800  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.01  0.01   0.04  0.00  0.94  0.00   0.00   0.00  0.00
  13    0.600  7.83    0.19  0.05  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.01  0.01   0.04  0.00  0.89  0.00   0.00   0.00  0.00
  14    0.400  7.83    0.19  0.04  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.01  0.01   0.05  0.00  0.83  0.00   0.00   0.00  0.00
  15    0.200  7.83    0.19  0.03  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.00  0.01   0.05  0.00  0.78  0.00   0.00   0.00  0.00
  16    0.000  7.83    0.19  0.03  0.00   0.00  0.00  0.00   0.00  1.65  1.65   0.06  0.00   0.00  0.01   0.06  0.00  0.72  0.00   0.00   0.00  0.00
 SPECIAL REPORT: Lake Henderson
 HYDRAULIC PARAMETER VALUES
 ELEM   BEGIN  ENDING       FLOW  ADVCTV   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST              VELO                                  AREA    AREA     PRISM    VELO              VELO
          km      km        m³/s     m/s       m       m        m³        m²       m²        m³     m/s      m²/s     m/s
    1    6.50    2.70     0.0029   0.000    1.22  2300.0 10662800.  8740000.0  2806.0        0.   0.000     4.000   0.000
    2    2.70    2.65     0.0029   0.000    1.22    21.0     1281.     1050.0    25.6        0.   0.000     4.000   0.000
    3    2.65    2.60     0.0029   0.000    1.22    21.0     1281.     1050.0    25.6        0.   0.000     4.000   0.000
    4    2.60    2.40     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    5    2.40    2.20     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    6    2.20    2.00     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    7    2.00    1.80     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    8    1.80    1.60     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    9    1.60    1.40     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   10    1.40    1.20     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   11    1.20    1.00     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   12    1.00    0.80     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   13    0.80    0.60     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   14    0.60    0.40     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   15    0.40    0.20     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   16    0.20    0.00     0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
FINAL REPORT    Lake Henderson                                  West Atchafalaya Floodway  (Subsegment 010301)
REACH NO.  1    Lake Henderson                                   Simulation for Subsegment 010301
 ********************************************************** REACH INPUTS **********************************************************
 ELEM  TYPE        FLOW     TEMP     SALN     CM-I    CM-II     DO  BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   PHOS  CHL A     COLI      NCM
 NO.                       deg C      ppt                      mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L  #/100mL
    1  HDWTR     0.00283   28.00     0.00     0.00     0.00   0.40  20.00   0.00  20.00   0.00   0.50   0.10   0.04   0.00  30.00     0.00     0.00
    1  WSTLD     0.00002   28.00     0.00     0.00     0.00   5.00 103.50   0.00 103.50   0.00   0.50   1.50   0.00   0.00   0.00     0.00     0.00
    1  WSTLD     0.00003   28.00     0.00     0.00     0.00   5.00 103.50   0.00 103.50   0.00   0.50   1.50   0.00   0.00   0.00     0.00     0.00
    1  WSTLD     0.00005   28.00     0.00     0.00     0.00   5.00  69.00   0.00  69.00   0.00   0.50   1.50   0.00   0.00   0.00     0.00     0.00
 ********************************************** HYDRAULIC PARAMETER VALUES **********************************************
 ELEM   BEGIN  ENDING       FLOW   PCT   ADVCTV    TRAVEL   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST              EFF     VELO      TIME                                  AREA    AREA     PRISM    VELO              VELO
          km      km        m³/s              m/s      days       m       m        m³        m²       m²        m³     m/s      m²/s     m/s
    1    6.50    2.70    0.00293   3.4   0.00000  42120.16    1.22 2300.00********* 8740000.00 2806.00      0.00   0.000     4.000   0.000
  TOT                                             42120.16              10662800.00 8740000.00
  AVG                                     0.0000              1.22 2300.00                      2806.00
  CUM                                             42120.16
 ******************************************** BIOLOGICAL AND PHYSICAL COEFFICIENTS ********************************************
 ELEM  ENDING  SAT    REAER  BOD#1 BOD#1 ABOD#1  BOD#2 BOD#2 ABOD#2  BKGD  FULL  CORR   ORGN  ORGN    NH3   NH3  DENIT   PO4   ALG   MAC   COLI    NCM
NCM
 NO.     DIST  D.O.    RATE  DECAY  SETT  DECAY  DECAY  SETT  DECAY   SOD   SOD   SOD  DECAY  SETT  DECAY  SRCE   RATE  SRCE  PROD  PROD  DECAY  DECAY
SETT
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                mg/L    1/da   1/da  1/da   1/da   1/da  1/da   1/da    *     *     *    1/da  1/da   1/da    *    1/da    *    **    **    1/da   1/da
1/da
   1    2.700  7.83    0.25   0.04  0.00   0.00   0.00  0.00   0.00  3.31  3.31  3.31   0.06  0.00   0.00  0.01   0.05  0.00  1.81  0.00   0.00   0.00
0.00
 AVG 20 DEG C RATE     0.21   0.08  0.00   0.00   0.00  0.00   0.00  2.00               0.05  0.00   0.10  0.00   0.05  0.00               0.00   0.00
0.00
 *   g/m²/d            **   mg/L/day
 ************************************************ WATER QUALITY CONSTITUENT VALUES ************************************************
 ELEM  ENDING   TEMP  SALN     CM-I    CM-II    DO    BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   TOTN   PHOS  CHL A   MACRO     COLI      NCM
 NO.     DIST  DEG C   PPT                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L    g/m³  #/100mL
   1    2.700  28.00  0.00     0.00     0.00   0.75  20.06   0.00  20.06   0.00   0.00   2.27   0.00   2.28   0.00  25.00    0.00       0.    0.00
FINAL REPORT    Lake Henderson                                   West Atchafalaya Floodway  (Subsegment 010301)
REACH NO.  2    Butte La Rose Bayou                               Simulation for Subsegment 010301
 ********************************************************** REACH INPUTS **********************************************************
 ELEM  TYPE         FLOW     TEMP     SALN     CM-I    CM-II     DO  BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   PHOS  CHL A     COLI      NCM
 NO.                        deg C      ppt                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L  #/100mL
   2  UPR RCH   0.00293   28.00     0.00     0.00     0.00   0.75  20.06   0.00  20.06   0.00   0.00   2.27   0.00   0.00  25.00     0.00    0.00
 ************************************************** HYDRAULIC PARAMETER VALUES **************************************************
 ELEM   BEGIN  ENDING       FLOW   PCT   ADVCTV    TRAVEL   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST              EFF     VELO      TIME                                  AREA    AREA     PRISM    VELO              VELO
          km      km       m³/s            m/s      days       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
   2    2.70    2.65    0.00293   3.4   0.00011     5.06    1.22   21.00   1281.00    1050.00   25.62      0.00   0.000     4.000   0.000
   3    2.65    2.60    0.00293   3.4   0.00011     5.06    1.22   21.00   1281.00    1050.00   25.62      0.00   0.000     4.000   0.000
  TOT                                              10.12                   2562.00    2100.00
  AVG                                     0.0001              1.22   21.00                         25.62
  CUM                                   42130.27
 ********************************************** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********************************************
 ELEM  ENDING  SAT    REAER  BOD#1 BOD#1 ABOD#1  BOD#2 BOD#2 ABOD#2  BKGD  FULL  CORR   ORGN  ORGN    NH3   NH3  DENIT   PO4   ALG   MAC   COLI     NCM
NCM
 NO.     DIST  D.O.    RATE  DECAY  SETT  DECAY  DECAY  SETT  DECAY   SOD   SOD   SOD  DECAY  SETT  DECAY  SRCE   RATE  SRCE  PROD  PROD  DECAY  DECAY
SETT
                mg/L    1/da   1/da  1/da   1/da   1/da  1/da   1/da    *     *     *    1/da  1/da   1/da    *    1/da    *    **    **    1/da   1/da
1/da
   2    2.650  7.83    0.24   0.04  0.00   0.00   0.00  0.00   0.00  3.31  3.31  3.31   0.06  0.00   0.01  0.01   0.04  0.00  1.62  0.00   0.00   0.00
0.00
   3    2.600  7.83    0.24   0.04  0.00   0.00   0.00  0.00   0.00  3.31  3.31  3.31   0.06  0.00   0.01  0.01   0.04  0.00  1.44  0.00   0.00   0.00
0.00
 AVG 20 DEG C RATE     0.20   0.08  0.00   0.00   0.00  0.00   0.00  2.00               0.05  0.00   0.20  0.00   0.05  0.00               0.00   0.00
0.00
 *   g/m²/d            **   mg/L/day
 ************************************************ WATER QUALITY CONSTITUENT VALUES ************************************************
 ELEM  ENDING   TEMP  SALN     CM-I    CM-II    DO    BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   TOTN   PHOS  CHL A   MACRO     COLI      NCM
 NO.     DIST  DEG C   PPT                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L    g/m³  #/100mL
   2    2.650  28.00  0.00     0.00     0.00   0.75  20.46   0.00  20.46   0.00   0.00   2.26   0.00   2.26   0.00  22.50    0.00       0.    0.00
   3    2.600  28.00  0.00     0.00     0.00   0.78  20.90   0.00  20.90   0.00   0.01   2.22   0.00   2.23   0.00  20.00    0.00       0.    0.00
FINAL REPORT    Lake Henderson                                   West Atchafalaya Floodway  (Subsegment 010301)
REACH NO.  3    Butte La Rose Bayou                               Simulation for Subsegment 010301
 ********************************************************** REACH INPUTS **********************************************************
 ELEM  TYPE         FLOW     TEMP     SALN     CM-I    CM-II     DO  BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   PHOS  CHL A     COLI      NCM
 NO.                        deg C      ppt                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L  #/100mL
   4  UPR RCH   0.00293   28.00     0.00     0.00     0.00   0.78  20.90   0.00  20.90   0.00   0.01   2.22   0.00   0.00  20.00     0.00    0.00
 ************************************************** HYDRAULIC PARAMETER VALUES **************************************************
 ELEM   BEGIN  ENDING       FLOW   PCT   ADVCTV    TRAVEL   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST              EFF     VELO      TIME                                  AREA    AREA     PRISM    VELO              VELO
          km      km       m³/s            m/s      days       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
   4    2.60    2.40    0.00293   3.4   0.00011    20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
   5    2.40    2.20    0.00293   3.4   0.00011    20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
   6    2.20    2.00    0.00293   3.4   0.00011    20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
   7    2.00    1.80    0.00293   3.4   0.00011    20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
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8	1.80	1.60	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
9	1.60	1.40	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
10	1.40	1.20	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
11	1.20	1.00	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
12	1.00	0.80	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
13	0.80	0.60	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
14	0.60	0.40	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
15	0.40	0.20	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
16	0.20	0.00	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
TOT						263.13			66612.00	54600.00												
AVG					0.0001		1.22	21.00			25.62											
CUM						42393.42																

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAY	BOD#1 SETT	ABOD#1 DECAY	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NCM DECAY
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da
4	2.400	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.01	0.01	0.04	0.00	1.39	0.00	0.00	0.00
5	2.200	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.01	0.01	0.04	0.00	1.33	0.00	0.00	0.00
6	2.000	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.02	0.01	0.04	0.00	1.28	0.00	0.00	0.00
7	1.800	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.02	0.01	0.04	0.00	1.22	0.00	0.00	0.00
8	1.600	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.02	0.01	0.04	0.00	1.17	0.00	0.00	0.00
9	1.400	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.02	0.01	0.04	0.00	1.11	0.00	0.00	0.00
10	1.200	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.02	0.01	0.04	0.00	1.06	0.00	0.00	0.00
11	1.000	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.02	0.01	0.04	0.00	1.00	0.00	0.00	0.00
12	0.800	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.01	0.01	0.04	0.00	0.94	0.00	0.00	0.00
13	0.600	7.83	0.19	0.05	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.01	0.01	0.04	0.00	0.89	0.00	0.00	0.00
14	0.400	7.83	0.19	0.04	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.01	0.01	0.05	0.00	0.83	0.00	0.00	0.00
15	0.200	7.83	0.19	0.03	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.00	0.01	0.05	0.00	0.78	0.00	0.00	0.00
16	0.000	7.83	0.19	0.03	0.00	0.00	0.00	0.00	0.00	1.65	1.65	1.65	0.06	0.00	0.00	0.01	0.06	0.00	0.72	0.00	0.00	0.00
AVG 20 DEG C RATE			0.16	0.08	0.00	0.00	0.00	0.00	0.00	1.00			0.05	0.00	0.20	0.00	0.05	0.00			0.00	0.00

* $g/m^2/d$ ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m^3	COLI #/100mL	NCM
4	2.400	28.00	0.00	0.00	0.00	0.84	20.23	0.00	20.23	0.00	0.03	2.12	0.00	2.15	0.03	19.23	0.00	0.	0.00
5	2.200	28.00	0.00	0.00	0.00	0.90	19.27	0.00	19.27	0.00	0.06	1.96	0.00	2.02	0.06	18.46	0.00	0.	0.00
6	2.000	28.00	0.00	0.00	0.00	0.94	18.41	0.00	18.41	0.00	0.09	1.80	0.00	1.89	0.08	17.69	0.00	0.	0.00
7	1.800	28.00	0.00	0.00	0.00	0.96	17.65	0.00	17.65	0.00	0.12	1.64	0.00	1.76	0.11	16.92	0.00	0.	0.00
8	1.600	28.00	0.00	0.00	0.00	0.97	17.00	0.00	17.00	0.00	0.15	1.48	0.00	1.64	0.14	16.15	0.00	0.	0.00
9	1.400	28.00	0.00	0.00	0.00	0.96	16.45	0.00	16.45	0.00	0.19	1.33	0.00	1.51	0.17	15.38	0.00	0.	0.00
10	1.200	28.00	0.00	0.00	0.00	0.94	15.99	0.00	15.99	0.00	0.22	1.17	0.00	1.39	0.19	14.62	0.00	0.	0.00
11	1.000	28.00	0.00	0.00	0.00	0.91	15.62	0.00	15.62	0.00	0.26	1.01	0.00	1.27	0.22	13.85	0.00	0.	0.00

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  12    0.800  28.00  0.00     0.00     0.00   0.86  15.34   0.00  15.34   0.00   0.30   0.86   0.00   1.15   0.25  13.08    0.00       0.    0.00
  13    0.600  28.00  0.00     0.00     0.00   0.80  15.14   0.00  15.14   0.00   0.34   0.69   0.00   1.03   0.28  12.31    0.00       0.    0.00
  14    0.400  28.00  0.00     0.00     0.00   0.71  15.02   0.00  15.02   0.00   0.38   0.53   0.00   0.91   0.30  11.54    0.00       0.    0.00
  15    0.200  28.00  0.00     0.00     0.00   0.61  14.96   0.00  14.96   0.00   0.42   0.36   0.00   0.79   0.33  10.77    0.00       0.    0.00
  16    0.000  28.00  0.00     0.00     0.00   0.47  14.97   0.00  14.97   0.00   0.47   0.19   0.00   0.66   0.36  10.00    0.00       0.    0.00
STREAM SUMMARY                                                    West Atchafalaya Floodway  (Subsegment 010301)
Lake Henderson                                                     Simulation for Subsegment 010301
 TRAVEL TIME       =       42393.42 DAYS
 MAXIMUM EFFLUENT  =           3.41 PERCENT
 FLOW              =   0.00293 TO    0.00293   m³/s
 DISPERSION        =   4.0000  TO    4.0000    m²/s
 VELOCITY          =   0.00000 TO    0.00011   m/s
 DEPTH             =   1.22    TO    1.22      m
 WIDTH             =  21.00    TO  ******      m
 BOD DECAY         =    0.03   TO    0.05      per day
 NH3 DECAY         =    0.00   TO    0.02      per day
 SOD               =    1.65   TO    3.31      g/m²/d
 NH3 SOURCE        =    0.01   TO    0.01      g/m²/d
 REAERATION        =    0.19   TO    0.25      per day
 BOD SETTLING      =    0.00   TO    0.00      per day
 ORG-N DECAY       =    0.06   TO    0.06      per day
 ORG-N SETTLING    =    0.00   TO    0.00      per day
 TEMPERATURE       =   28.00   TO   28.00      deg C
 DISSOLVED OXYGEN  =    0.47   TO    0.97      mg/L
West Atchafalaya Floodway  (Subsegment 010301)
 Simulation for Subsegment 010301
REACH SUMMARY REPORT FOR Lake Henderson
 RCH REACH NAME                            BEGIN    ENDING    REACH   TRAVEL   FLOW AT    AVERAGE     AVG     AVG   FLOW AT    AVERAGE     AVG     AVG
 NO.                                        DIST      DIST   LENGTH     TIME       EOR       VELO   DEPTH   WIDTH       EOR       VELO   DEPTH   WIDTH
                                             km        km      km     days      m3/s        m/s       m       m       cfs        fps      ft      ft
   1 Lake Henderson                         6.50      2.70    3.80 42120.16   0.00293    0.00000   1.220 2300.00     0.103      0.000   4.003 7546.30
   2 Butte La Rose Bayou                    2.70      2.60    0.10    10.12   0.00293    0.00011   1.220   21.00     0.103      0.000   4.003   68.90
   3 Butte La Rose Bayou                    2.60      0.00    2.60   263.13   0.00293    0.00011   1.220   21.00     0.103      0.000   4.003   68.90
DISSOLVED OXYGEN LOADING FOR REACH   1: Lake Henderson
 IOR   UPMN    UPTR    LOWR  UPMN  UPTR  LOWR  INCR  INCR  NONP  WSLD  WITH  REAE  BOD1 NH3-N ORG-N   NCM   SOD   SOD   SOD   SOD   ALG   ALG   MAC
TOT     TOT
        ADV     ADV     ADV  DISP  DISP  DISP    IN   OUT    IN    IN   OUT    IN  DECA  DECA  DECA  DECA  BKGD  BOD1   ALG   NCM  PHOT  RESP  PHOT
OUT      IN
   1      0.      0.      0.    0.    0.    3.    0.    0.    0.    0.    0.18688.-8834. -313.    0.    0.******    0.    0.    0.19247.    0.    0. -
38076.2  37938.3-137.95
   2      0.      0.      0.   -3.    0.    4.    0.    0.    0.    0.    0.    2.   -1.    0.    0.    0.   -3.    0.    0.    0.    2.    0.    0.     -
8.3      8.2  -0.02
   3      0.      0.      0.   -4.    0.    5.    0.    0.    0.    0.    0.    2.   -1.    0.    0.    0.   -3.    0.    0.    0.    2.    0.    0.     -
8.7      8.7  -0.02
   4      0.      0.      0.   -5.    0.    3.    0.    0.    0.    0.    0.    7.   -5.    0.    0.    0.   -7.    0.    0.    0.    7.    0.    0.    -
17.0     16.9  -0.06
   5      0.      0.      0.   -3.    0.    2.    0.    0.    0.    0.    0.    7.   -5.   -1.    0.    0.   -7.    0.    0.    0.    7.    0.    0.    -
15.6     15.5  -0.03
   6      0.      0.      0.   -2.    0.    1.    0.    0.    0.    0.    0.    7.   -5.   -1.    0.    0.   -7.    0.    0.    0.    7.    0.    0.    -
14.5     14.4  -0.06
   7      0.      0.      0.   -1.    0.    0.    0.    0.    0.    0.    0.    7.   -5.   -1.    0.    0.   -7.    0.    0.    0.    6.    0.    0.    -
13.5     13.5  -0.07
   8      0.      0.      0.    0.    0.    0.    0.    0.    0.    0.    0.    7.   -5.   -1.    0.    0.   -7.    0.    0.    0.    6.    0.    0.    -
13.0     12.9  -0.08
   9      0.      0.      0.    0.    0.   -1.    0.    0.    0.    0.    0.    7.   -4.   -1.    0.    0.   -7.    0.    0.    0.    6.    0.    0.    -
13.1     13.0  -0.07
  10      0.      0.      0.    1.    0.   -1.    0.    0.    0.    0.    0.    7.   -4.    0.    0.    0.   -7.    0.    0.    0.    5.    0.    0.    -
13.3     13.3  -0.06
```

```
  11      0.      0.      0.    1.    0.   -2.    0.    0.    0.    0.    0.    7.   -4.    0.    0.    0.   -7.    0.    0.    0.    5.    0.    0.    -
13.6     13.6  -0.04
  12      0.      0.      0.    2.    0.   -3.    0.    0.    0.    0.    0.    7.   -4.    0.    0.    0.   -7.    0.    0.    0.    5.    0.    0.    -
14.0     14.0  -0.02
  13      0.      0.      0.    3.    0.   -4.    0.    0.    0.    0.    0.    7.   -4.    0.    0.    0.   -7.    0.    0.    0.    5.    0.    0.    -
14.4     14.4   0.00
  14      0.      0.      0.    4.    0.   -5.    0.    0.    0.    0.    0.    7.   -3.    0.    0.    0.   -7.    0.    0.    0.    4.    0.    0.    -
15.0     15.0  -0.01
  15      0.      0.      0.    5.    0.   -6.    0.    0.    0.    0.    0.    7.   -3.    0.    0.    0.   -7.    0.    0.    0.    4.    0.    0.    -
15.9     15.9  -0.01
  16      0.      0.      0.    6.    0.   -8.    0.    0.    0.    0.    0.    7.   -2.    0.    0.    0.   -7.    0.    0.    0.    4.    0.    0.    -
17.2     17.1  -0.01
 West Atchafalaya Floodway  (Subsegment 010301)
  Simulation for Subsegment 010301
INPUT/OUTPUT LOADING SUMMARY
```

	FLOW	DO	BOD#1	BOD#2	ORG-N	NH3-N	NO3-N	PHOS	CHL A	NCM
	m³/s	kg/d	kg/d	kg/d	kg/d	kg/d	kg/d	kg/d		
HEADWATER FLOW	0.003	0.1	4.9	0.0	0.1	0.0	0.0	0.0	0.0	0.0
INCREMENTAL INFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INCREMENTAL OUTFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WASTELOADS	0.000	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WITHDRAWLS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FLOW THRU LOWER BNDRY	-0.003	-0.1	-3.8	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
DISPERSION THRU LOWER BNDRY		-8.0	2.4	0.0	2.3	-7.9	3.5	0.0	0.0	0.0
DISPERSION THRU HDWTR BNDRY		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NON-POINT INPUT		0.0	8750.0	0.0	0.0					0.0
NATURAL REAERATION		18781.1								
DAM REAERATION		0.0								
BACKGROUND SOD		-29026.7								
BOD#1 DECAY		-8888.1	-8888.1							
BOD#1 SETTLING		0.0	0.0							
ANAEROBIC BOD#1 DECAY			0.0							
BOD#2 DECAY		0.0		0.0						
BOD#2 SETTLING		0.0		0.0						
ANAEROBIC BOD#2 DECAY				0.0						
ORG-N DECAY		0.0			-2.3	2.3				
ORG-N SETTLING					0.0	0.0				
NH3 DECAY		-317.7				-73.4	73.4			
BACKGROUND NH3 SOURCE						77.9				
OTHER DENITRIFICATION							0.0			
PHOSPHORUS SOURCE								0.0		
ALGAE PHOTOSYNTHESIS		19320.9				0.0	-966.0	0.0	0.0	
ALGAE RESPIRATION		0.0				0.0		0.0	0.0	
ALGAE SETTLING		0.0							0.0	
MACRO PHOTOSYNTHESIS		0.0				0.0	0.0	0.0		
NCM DECAY		0.0								0.0
NCM SETTLING		0.0								0.0
TOTAL INPUTS	0.003	38102.1	8758.1	0.0	2.4	80.2	76.9	0.0	0.0	0.0
TOTAL OUTPUTS	-0.003	-38240.6	-8891.9	0.0	-2.4	-81.3	-966.0	0.0	0.0	0.0
NET CONVERGENCE ERROR	0.000	-138.5	-133.8	0.0	0.0	-1.1	-889.1	0.0	0.0	0.0

.....EXECUTION COMPLETED

Baseline output file

```
LA-QUAL Version 8.11
Louisiana Department of Environmental Quality
Input file is E:\EPA_R06\LA TMDL 2006\Additional\010301\LA-QUAL\ss010301_base_ps.txt
Output produced at 11:19 on 03/31/2010
$$$ DATA TYPE 1 (TITLES AND CONTROL CARDS) $$$
CARD TYPE       CONTROL TITLES
TITLE01         West Atchafalaya Floodway  (Subsegment 010301)
TITLE02          Simulation for Subsegment 010301 - Baseline
CNTROL03   NO   SEQU                        <Warning: legacy control - line ignored>
CNTROL04  YES   METR
CNTROL05  YES   OXYG                        <Warning: legacy control - line ignored>
ENDATA01
$$$ DATA TYPE 2 (MODEL OPTIONS) $$$
CARD TYPE       MODEL OPTION
MODOPT01  Yes   TEMPERATURE
MODOPT02   NO   SALINITY
MODOPT03   NO   CONSERVATIVE MATERIAL #1                        UNITS =
MODOPT04   NO   CONSERVATIVE MATERIAL #2                        UNITS =
MODOPT05  YES   DISSOLVED OXYGEN
MODOPT06  YES   BOD1 BIOCHEMICAL OXYGEN DEMAND #1
MODOPT07   NO   BOD2 BIOCHEMICAL OXYGEN DEMAND #2
MODOPT08  YES   NITROGEN SERIES
MODOPT09   NO   PHOSPHORUS
MODOPT10   NO   CHLOROPHYLL A
MODOPT11   NO   MACROPHYTES
MODOPT12   NO   COLIFORMS
MODOPT13   NO   NONCONSERVATIVE MATERIAL                        UNITS =
ENDATA02
$$$ DATA TYPE 3 (PROGRAM CONSTANTS) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
PROGRAM         MAXImum iteration limit           =      1000.00000
PROGRAM         INHIBITION CONTROL VALUE          =         3.00000 (inhibit all rates but SOD)
PROGRAM         HYDRAULIC CALCULATION METHOD      =         2.00000 (widths and depths)
ENDATA03
$$$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) $$$
 CARD TYPE     RATE CODE     THETA VALUE

ENDATA04
$$$ CONSTANTS TYPE 5 (TEMPERATURE DATA) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
TEMP            WET BULB TEMP                              26.00000 deg C
TEMP            DRY BULB TEMP                              30.00000 deg C
ENDATA05
$$$ DATA TYPE 6 (ALGAE CONSTANTS) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
ENDATA06
$$$ DATA TYPE 7 (MACROPHYTE CONSTANTS) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
ENDATA07
$$$ DATA TYPE 8 (REACH IDENTIFICATION DATA) $$$
                                                     BEGIN        END     ELEM    REACH     ELEMS   BEGIN    END
CARD TYPE  REACH  ID  NAME                           REACH       REACH   LENGTH   LENGTH    PER RCH   ELEM   ELEM
                                                        km          km       km       km               NUM    NUM
REACH ID      1    1  Lake Henderson                  6.50  TO    2.70   3.8000     3.80       1        1      1
REACH ID      2    2  Butte La Rose Bayou             2.70  TO    2.60   0.0500     0.10       2        2      3
```

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REACH ID      3    3  Butte La Rose Bayou                  2.60  TO    0.00   0.2000     2.60      13        4     16
ENDATA08
$$$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) $$$
CARD TYPE  REACH  ID       WIDTH       WIDTH       WIDTH       DEPTH       DEPTH       DEPTH      SLOPE    MANNINGS
                            "A"         "B"         "C"         "D"         "E"         "F"                  "N"
HYDR-1        1    1       0.000       0.000    2300.000       0.000       0.000       1.220     0.00010   0.080
HYDR-1        2    2       0.000       0.000      21.000       0.000       0.000       1.220     0.00010   0.080
HYDR-1        3    3       0.000       0.000      21.000       0.000       0.000       1.220     0.00010   0.080
ENDATA09
$$$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) $$$
CARD TYPE  REACH  ID     TIDAL     DISPERSION     DISPERSION     DISPERSION     DISPERSION
                        RANGE        "A"            "B"            "C"            "D"
HYDR          1    1      0.00        4.000          0.000          0.000          0.000
HYDR          2    2      0.00        4.000          0.000          0.000          0.000
HYDR          3    3      0.00        4.000          0.000          0.000          0.000
ENDATA10
$$$ DATA TYPE 11 (INITIAL CONDITIONS) $$$
CARD TYPE      REACH  ID        TEMP     SALIN        DO       NH3     NO3+2      PHOS     CHL A     MACRO
INITIAL            1    1       30.00      0.00      0.38      0.10      0.04      0.00     30.00      0.00
INITIAL            2    2       30.00      0.00      0.38      0.10      0.04      0.00     25.00      0.00
INITIAL            3    3       30.00      0.00      0.38      0.10      0.04      0.00     20.00      0.00
ENDATA11
$$$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) $$$
                                                                                                  BOD     ANAER                                BOD2     ANAER
CARD     RCH  RCH  K2                    K2        K2        K2    BKGRND       BOD       BOD     CONV      BOD2      BOD2      BOD2     CONV      BOD2
TYPE     NUM   ID  OPT                   "A"       "B"       "C"       SOD     DECAY      SETT   TO SOD     DECAY     DECAY      SETT   TO SOD     DECAY
                                                                   g/m²/d   per day       m/d             per day   per day       m/d             per day
COEFF-1    1    1  20 K2=a/D           0.260     0.000     0.000     2.000     0.080     0.000     0.000     0.000     0.000     0.000     0.000     0.000
COEFF-1    2    2  20 K2=a/D           0.250     0.000     0.000     2.000     0.080     0.000     0.000     0.000     0.000     0.000     0.000     0.000
COEFF-1    3    3  20 K2=a/D           0.200     0.000     0.000     1.000     0.080     0.000     0.000     0.000     0.000     0.000     0.000     0.000
ENDATA12
$$$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) $$$
CARD TYPE      REACH  ID       ORG-N     ORG-N   ORGN CONV       NH3       NH3      PHOS     DENIT
                             DECA      SETT  TO NH3 SRCE      DECA      SRCE      SRCE      RATE
COEFF-2            1    1       0.050     0.000     0.000       0.100     0.005     0.000     0.050
COEFF-2            2    2       0.050     0.000     0.000       0.200     0.005     0.000     0.050
COEFF-2            3    3       0.050     0.000     0.000       0.200     0.005     0.000     0.050
ENDATA13
$$$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) $$$
CARD TYPE      REACH  ID       SECCHI    ALGAE:     ALGAE    ALG CONV     ALGAE     ALGAE     MACRO     MACRO
                             DEPTH     CHL A      SETT     TO SOD      GROW      RESP      GROW      RESP   SHADING
ENDATA14
$$$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) $$$
CARD TYPE      REACH  ID    COLIFORM       NCM       NCM    NCM CONV
                           DIE-OFF     DECAY      SETT     TO SOD
ENDATA15
$$$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$
CARD TYPE      REACH  ID       OUTFLOW      INFLOW      TEMP     SALIN      CM-I     CM-II   IN/DIST  OUT/DIST
INCR-1             1    1       0.00000     0.00000     30.00      0.00      0.00      0.00   0.00000   0.00000
INCR-1             2    2       0.00000     0.00000     30.00      0.00      0.00      0.00   0.00000   0.00000
INCR-1             3    3       0.00000     0.00000     30.00      0.00      0.00      0.00   0.00000   0.00000
ENDATA16
$$$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) $$$
CARD TYPE      REACH  ID          DO       BOD     ORG-N     NH3-N     NO3-N     BOD#2
INCR-2             1    1        0.00      0.00      0.00      0.00      0.00      0.00
INCR-2             2    2        0.00      0.00      0.00      0.00      0.00      0.00
INCR-2             3    3        0.00      0.00      0.00      0.00      0.00      0.00
ENDATA17
$$$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$
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 CARD TYPE      REACH  ID        PHOS     CHL A      COLI       NCM
ENDATA18
$$$ DATA TYPE 19 (NONPOINT SOURCE DATA) $$$
CARD TYPE      REACH  ID       BOD#1     ORG-N      COLI       NCM        DO     BOD#2
NONPOINT           1    1     8500.00      0.00      0.00      0.00      0.00      0.00
NONPOINT           2    2      250.00      0.00      0.00      0.00      0.00      0.00
NONPOINT           3    3        0.00      0.00      0.00      0.00      0.00      0.00
ENDATA19
$$$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) $$$
CARD TYPE     ELEMENT   NAME                  UNIT     FLOW     FLOW    TEMP    SALIN      CM-I     CM-II
                                                        m³/s      cfs   deg C      ppt
HDWTR-1           1     Lake Henderson          0   0.00283    0.100   30.00     0.00     0.000     0.000   0.00
ENDATA20
$$$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) $$$
CARD TYPE     ELEMENT   NAME                           DO     BOD#1     ORG-N     NH3-N     NO3-N     BOD#2
                                                      mg/L      mg/L      mg/L      mg/L      mg/L      mg/L
HDWTR-2           1     Lake Henderson              0.40     20.00      0.50      0.10      0.04      0.00
ENDATA21
$$$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$
CARD TYPE     ELEMENT   NAME                         PHOS     CHL A      COLI       NCM
                                                      mg/L      mg/L      mg/L      mg/L
ENDATA22
$$$ DATA TYPE 23 (JUNCTION DATA) $$$
CARD TYPE   JUNCTION   UPSTRM     RIVER     NAME
             ELEMENT  ELEMENT     KILOM
ENDATA23
$$$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$
CARD TYPE  ELEMENT    RKILO  NAME                     FLOW       FLOW     FLOW    TEMP    SALIN      CM-I     CM-II
                                                       m³/s        cfs      MGD   deg C      ppt
WSTLD-1        1       6.50  LA0051942             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A035             0.00002    0.00071    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A578             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A580             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A933             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG530051             0.00003    0.00106    0.001   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG530368             0.00005    0.00177    0.001   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG532190             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG541369             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG560110             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG570243             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
ENDATA24
$$$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) $$$
                                                                      % BOD                          %
CARD TYPE     ELEMENT   NAME                           DO       BOD      RMVL     ORG-N     NH3-N    NITRIF     NO3-N     BOD#2
                                                      mg/L      mg/L                mg/L      mg/L                mg/L      mg/L
WSTLD-2           1     LA0051942                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG33A035                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG33A578                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG33A580                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG33A933                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG530051                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG530368                   5.00     69.00      0.00      5.00     10.00      0.00      0.00      0.00
WSTLD-2           1     LAG532190                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG541369                   5.00     69.00      0.00      5.00     10.00      0.00      0.00      0.00
WSTLD-2           1     LAG560110                   5.00     46.00      0.00      3.30      6.67      0.00      0.00      0.00
WSTLD-2           1     LAG570243                   5.00     23.00      0.00      1.70      3.33      0.00      0.00      0.00
ENDATA25
$$$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$
CARD TYPE     ELEMENT   NAME                         PHOS     CHL A      COLI       NCM
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                                                  mg/L      mg/L      mg/L      mg/L
ENDATA26
$$$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) $$$
CARD TYPE    CONSTITUENT                    CONCENTRATION
LOWER BC     TEMPERATURE                          30.000     deg C
LOWER BC     SALINITY                              0.000     ppt
LOWER BC     CONSERVATIVE MATERIAL I               0.000
LOWER BC     CONSERVATIVE MATERIAL II              0.000
LOWER BC     DISSOLVED OXYGEN                      0.380     mg/L
LOWER BC     BIOCHEMICAL OXYGEN DEMAND            15.000     mg/L
LOWER BC     ORGANIC NITROGEN                      0.500     mg/L
LOWER BC     AMMONIA NITROGEN                      0.100     mg/L
LOWER BC     NITRATE + NITRITE                     0.040     mg/L
LOWER BC     PHOSPHORUS                            0.360     mg/L
LOWER BC     CHLOROPHYLL A                        10.000     µg/L
LOWER BC     COLIFORM                              0.000     #/100 mL
LOWER BC     NONCONSERVATIVE MATERIAL              0.000
ENDATA27
$$$ DATA TYPE 28 (DAM DATA) $$$
CARD TYPE     ELEMENT   NAME                 EQN      "A"       "B"       "H"
ENDATA28
$$$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) $$$
CARD TYPE       PARAMETER     COL 1     COL 2     COL 3     COL 4     COL 5     COL 6     COL 7     COL 8
ENDATA29
$$$ DATA TYPE 30 (PLOT CONTROL CARDS) $$$
NUMBER OF PLOTS =  1
NUMBER OF REACHES IN PLOT 1 =   3
PLOT RCH  1  2  3
ENDATA30
$$$ DATA TYPE 31 (OVERLAY PLOT DATA) $$$
OVERLAY 1 LH_3.OVL                        :Subsegment 010301
ENDATA31
     .....NO ERRORS DETECTED IN INPUT DATA
     .....HYDRAULIC CALCULATIONS COMPLETED
     .....TRIDIAGONAL MATRIX TERMS INITIALIZED
     .....OXYGEN DEPENDENT RATES CONVERGENT IN   7 ITERATIONS
     .....CONSTITUENT CALCULATIONS COMPLETED
 ***** WARNING:  NEGATIVE CONCENTRATIONS SET TO ZERO FOR Nitrate+Nitrite Nitrogen
     .....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11
INTERMEDIATE REPORT
 Dissolved Oxygen                                                 West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                          Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.15
   2     2     2        0.16      0.18
   3     3     4        0.23      0.27      0.28      0.29      0.30      0.31      0.33      0.35      0.38      0.41
   3     3    14        0.42      0.42      0.40
INTERMEDIATE REPORT
 Effective BOD                                                    West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                          Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       81.75
   2     2     2       81.75     81.05
   3     3     4       77.57     72.09     66.71     61.43     56.24     51.14     46.12     41.18     36.30     31.49
   3     3    14       26.73     22.01     17.33
INTERMEDIATE REPORT
 Biochemical Oxygen Demand                                        West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                          Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
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   1     1     1       81.75
   2     2     2       81.75     81.05
   3     3     4       77.57     72.09     66.71     61.43     56.24     51.14     46.12     41.18     36.30     31.49
   3     3    14       26.73     22.01     17.33
INTERMEDIATE REPORT
 Organic Nitrogen                                                    West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                             Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       0.00
   2     2     2       0.00      0.01
   3     3     4       0.03      0.06      0.09      0.12      0.15      0.19      0.22      0.26      0.29      0.33
   3     3    14       0.38      0.42      0.47
INTERMEDIATE REPORT
 Ammonia Nitrogen                                                    West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                             Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       23.74
   2     2     2       23.59     23.16
   3     3     4       22.10     20.39     18.67     16.94     15.20     13.46     11.71      9.95      8.19      6.41
   3     3    14        4.63      2.83      1.01
INTERMEDIATE REPORT
 Nitrate+Nitrite Nitrogen                                            West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                             Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       0.00
   2     2     2       0.00      0.00
   3     3     4       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
   3     3    14       0.00      0.00      0.00
INTERMEDIATE REPORT
 Total Nitrogen                                                      West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                             Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       23.74
   2     2     2       23.59     23.18
   3     3     4       22.13     20.45     18.76     17.06     15.36     13.65     11.93     10.21      8.48      6.75
   3     3    14        5.01      3.25      1.49
INTERMEDIATE REPORT
 Chlorophyll a                                                       West Atchafalaya Floodway  (Subsegment 010301)
     µg/L                                                             Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       25.00
   2     2     2       22.50     20.00
   3     3     4       19.23     18.46     17.69     16.92     16.15     15.38     14.62     13.85     13.08     12.31
   3     3    14       11.54     10.77     10.00
INTERMEDIATE REPORT
 Temperature                                                         West Atchafalaya Floodway  (Subsegment 010301)
     deg C                                                            Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       30.00
   2     2     2       30.00     30.00
   3     3     4       30.00     30.00     30.00     30.00     30.00     30.00     30.00     30.00     30.00     30.00
   3     3    14       30.00     30.00     30.00
INTERMEDIATE REPORT
 Salinity                                                            West Atchafalaya Floodway  (Subsegment 010301)
     ppt                                                              Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       0.00
   2     2     2       0.00      0.00
   3     3     4       0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
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   3     3    14        0.00      0.00      0.00
INTERMEDIATE REPORT
 River Distance                                                    West Atchafalaya Floodway  (Subsegment 010301)
     km                                                             Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1         3.
   2     2     2         3.        3.
   3     3     4         2.        2.        2.        2.        2.        1.        1.        1.        1.        1.
   3     3    14         0.        0.        0.
INTERMEDIATE REPORT
 Flow                                                              West Atchafalaya Floodway  (Subsegment 010301)
     m³/s                                                           Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.0
   2     2     2        0.0       0.0
   3     3     4        0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
   3     3    14        0.0       0.0       0.0
INTERMEDIATE REPORT
 Dispersion                                                        West Atchafalaya Floodway  (Subsegment 010301)
     m²/s                                                           Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        4.0
   2     2     2        4.0       4.0
   3     3     4        4.0       4.0       4.0       4.0       4.0       4.0       4.0       4.0       4.0       4.0
   3     3    14        4.0       4.0       4.0
INTERMEDIATE REPORT
 Advective Velocity                                                West Atchafalaya Floodway  (Subsegment 010301)
     m/s                                                            Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.0
   2     2     2        0.0       0.0
   3     3     4        0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
   3     3    14        0.0       0.0       0.0
INTERMEDIATE REPORT
 Depth                                                             West Atchafalaya Floodway  (Subsegment 010301)
     m                                                              Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        1.2
   2     2     2        1.2       1.2
   3     3     4        1.2       1.2       1.2       1.2       1.2       1.2       1.2       1.2       1.2       1.2
   3     3    14        1.2       1.2       1.2
INTERMEDIATE REPORT
 Width                                                             West Atchafalaya Floodway  (Subsegment 010301)
     m                                                              Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1      2300.0
   2     2     2        21.0      21.0
   3     3     4        21.0      21.0      21.0      21.0      21.0      21.0      21.0      21.0      21.0      21.0
   3     3    14        21.0      21.0      21.0
INTERMEDIATE REPORT
 Cross-Sectional Area                                              West Atchafalaya Floodway  (Subsegment 010301)
     m²                                                             Simulation for Subsegment 010301 - Baseline
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1      2806.0
   2     2     2        25.6      25.6
   3     3     4        25.6      25.6      25.6      25.6      25.6      25.6      25.6      25.6      25.6      25.6
   3     3    14        25.6      25.6      25.6
INTERMEDIATE REPORT
 Reaeration Rate                                                   West Atchafalaya Floodway  (Subsegment 010301)
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per day — Simulation for Subsegment 010301 - Baseline

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	0.256									
2	2	2	0.246	0.246								
3	3	4	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
3	3	14	0.197	0.197	0.197							

INTERMEDIATE REPORT

BOD Decay Rate — West Atchafalaya Floodway (Subsegment 010301)

per day — Simulation for Subsegment 010301 - Baseline

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	0.01									
2	2	2	0.01	0.01								
3	3	4	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
3	3	14	0.02	0.02	0.02							

INTERMEDIATE REPORT

BOD Settling Rate — West Atchafalaya Floodway (Subsegment 010301)

per day — Simulation for Subsegment 010301 - Baseline

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	0.00									
2	2	2	0.00	0.00								
3	3	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	3	14	0.00	0.00	0.00							

INTERMEDIATE REPORT

Ammonia Decay Rate — West Atchafalaya Floodway (Subsegment 010301)

per day — Simulation for Subsegment 010301 - Baseline

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	0.00									
2	2	2	0.00	0.00								
3	3	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	3	14	0.00	0.00	0.00							

INTERMEDIATE REPORT

Sediment Oxygen Demand — West Atchafalaya Floodway (Subsegment 010301)

$g/m^2/d$ — Simulation for Subsegment 010301 - Baseline

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	3.75									
2	2	2	3.75	3.75								
3	3	4	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88
3	3	14	1.88	1.88	1.88							

CONDENSED CAPSULE SUMMARY FOR Lake Henderson

DIST km	FLOW m^3/s	TEMP deg C	SALN ppt	DO mg/L	EBOD1 mg/L	EBOD2 mg/L	ORGN mg/L	NH3 µg/L	CHLA 1/da	REAER RATE 1/da	BOD1 DECA 1/da	BOD1 SETT 1/da	BOD2 DECA 1/da	BOD2 SETT 1/da	NH3 DECA 1/da	SOD $g/m^2/d$
HDWTR	0.00283	30.00	0.00	0.40	20.00	0.00	0.50	0.10	30.00							
2.70	0.00293	30.00	0.00	0.15	81.75	0.00	0.00	23.74	25.00	0.26	0.01	0.00	0.00	0.00	0.00	3.75
2.65	0.00293	30.00	0.00	0.16	81.75	0.00	0.00	23.59	22.50	0.25	0.01	0.00	0.00	0.00	0.00	3.75
2.60	0.00293	30.00	0.00	0.18	81.05	0.00	0.01	23.16	20.00	0.25	0.01	0.00	0.00	0.00	0.00	3.75
2.40	0.00293	30.00	0.00	0.23	77.57	0.00	0.03	22.10	19.23	0.20	0.01	0.00	0.00	0.00	0.00	1.88
2.20	0.00293	30.00	0.00	0.27	72.09	0.00	0.06	20.39	18.46	0.20	0.02	0.00	0.00	0.00	0.00	1.88
2.00	0.00293	30.00	0.00	0.28	66.71	0.00	0.09	18.67	17.69	0.20	0.02	0.00	0.00	0.00	0.00	1.88
1.80	0.00293	30.00	0.00	0.29	61.43	0.00	0.12	16.94	16.92	0.20	0.02	0.00	0.00	0.00	0.00	1.88
1.60	0.00293	30.00	0.00	0.30	56.24	0.00	0.15	15.20	16.15	0.20	0.02	0.00	0.00	0.00	0.00	1.88
1.40	0.00293	30.00	0.00	0.31	51.14	0.00	0.19	13.46	15.38	0.20	0.02	0.00	0.00	0.00	0.00	1.88
1.20	0.00293	30.00	0.00	0.33	46.12	0.00	0.22	11.71	14.62	0.20	0.02	0.00	0.00	0.00	0.00	1.88
1.00	0.00293	30.00	0.00	0.35	41.18	0.00	0.26	9.95	13.85	0.20	0.02	0.00	0.00	0.00	0.00	1.88
0.80	0.00293	30.00	0.00	0.38	36.30	0.00	0.29	8.19	13.08	0.20	0.02	0.00	0.00	0.00	0.00	1.88
0.60	0.00293	30.00	0.00	0.41	31.49	0.00	0.33	6.41	12.31	0.20	0.02	0.00	0.00	0.00	0.00	1.88
0.40	0.00293	30.00	0.00	0.42	26.73	0.00	0.38	4.63	11.54	0.20	0.02	0.00	0.00	0.00	0.00	1.88
0.20	0.00293	30.00	0.00	0.42	22.01	0.00	0.42	2.83	10.77	0.20	0.02	0.00	0.00	0.00	0.00	1.88
0.00	0.00293	30.00	0.00	0.40	17.33	0.00	0.47	1.01	10.00	0.20	0.02	0.00	0.00	0.00	0.00	1.88

EXPANDED CAPSULE SUMMARY FOR Lake Henderson

IOR	REACH		DIST km	FLOW m³/s	TEMP deg C	SALN ppt	DO mg/L	EBOD1 mg/L	EBOD2 mg/L	ORG-N mg/L	NH3 mg/L	CHLA µg/L	DISP m²/s	DEPTH m	WIDTH m	ADVEC VELO m/s	MEAN VELO m/s	DO SAT mg/L	REAER RATE 1/da	BOD1 DECA 1/da	BOD1 SETT 1/da	BOD2 DECA 1/da	BOD2 SETT 1/da	NH3 DECA 1/da	SOD g/m²/d
		HDWTR		0.003	30.0	0.0	0.4	20.0	0.0	0.5	0.1	30.0													
		WASTELOAD # 001 (LA0051942) ENTERS HERE WITHOUT ANY FLOW																							
		WASTELOAD # 001 (LAG33A035) ENTERS HERE																							
		WASTELOAD # 001 (LAG33A578) ENTERS HERE WITHOUT ANY FLOW																							
		WASTELOAD # 001 (LAG33A580) ENTERS HERE WITHOUT ANY FLOW																							
		WASTELOAD # 001 (LAG33A933) ENTERS HERE WITHOUT ANY FLOW																							
		WASTELOAD # 001 (LAG530051) ENTERS HERE																							
		WASTELOAD # 001 (LAG530368) ENTERS HERE																							
		WASTELOAD # 001 (LAG532190) ENTERS HERE WITHOUT ANY FLOW																							
		WASTELOAD # 001 (LAG541369) ENTERS HERE WITHOUT ANY FLOW																							
		WASTELOAD # 001 (LAG560110) ENTERS HERE WITHOUT ANY FLOW																							
		WASTELOAD # 001 (LAG570243) ENTERS HERE WITHOUT ANY FLOW																							
1	1	1	2.70	0.003	30.0	0.0	0.2	81.7	0.0	0.0	23.7	25.0	4.0	1.222	300.0	0.000	0.000	7.6	0.256	0.01	0.00	0.00	0.00	0.00	3.75
2	2	2	2.65	0.003	30.0	0.0	0.2	81.7	0.0	0.0	23.6	22.5	4.0	1.22	21.0	0.000	0.000	7.6	0.246	0.01	0.00	0.00	0.00	0.00	3.75
3	2	2	2.60	0.003	30.0	0.0	0.2	81.1	0.0	0.0	23.2	20.0	4.0	1.22	21.0	0.000	0.000	7.6	0.246	0.01	0.00	0.00	0.00	0.00	3.75
4	3	3	2.40	0.003	30.0	0.0	0.2	77.6	0.0	0.0	22.1	19.2	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.01	0.00	0.00	0.00	0.00	1.88
5	3	3	2.20	0.003	30.0	0.0	0.3	72.1	0.0	0.1	20.4	18.5	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
6	3	3	2.00	0.003	30.0	0.0	0.3	66.7	0.0	0.1	18.7	17.7	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
7	3	3	1.80	0.003	30.0	0.0	0.3	61.4	0.0	0.1	16.9	16.9	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
8	3	3	1.60	0.003	30.0	0.0	0.3	56.2	0.0	0.2	15.2	16.2	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
9	3	3	1.40	0.003	30.0	0.0	0.3	51.1	0.0	0.2	13.5	15.4	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
10	3	3	1.20	0.003	30.0	0.0	0.3	46.1	0.0	0.2	11.7	14.6	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
11	3	3	1.00	0.003	30.0	0.0	0.4	41.2	0.0	0.3	10.0	13.8	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
12	3	3	0.80	0.003	30.0	0.0	0.4	36.3	0.0	0.3	8.2	13.1	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
13	3	3	0.60	0.003	30.0	0.0	0.4	31.5	0.0	0.3	6.4	12.3	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
14	3	3	0.40	0.003	30.0	0.0	0.4	26.7	0.0	0.4	4.6	11.5	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
15	3	3	0.20	0.003	30.0	0.0	0.4	22.0	0.0	0.4	2.8	10.8	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88
16	3	3	0.00	0.003	30.0	0.0	0.4	17.3	0.0	0.5	1.0	10.0	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.02	0.00	0.00	0.00	0.00	1.88

SPECIAL REPORT: Lake Henderson

WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
1	2.700	30.00	0.0	0.0	0.0	0.15	81.75	0.00	81.75	0.00	0.00	23.74	0.00	23.74	0.00	25.0	0.0	0.	0.00
2	2.650	30.00	0.0	0.0	0.0	0.16	81.75	0.00	81.75	0.00	0.00	23.59	0.00	23.59	0.00	22.5	0.0	0.	0.00
3	2.600	30.00	0.0	0.0	0.0	0.18	81.05	0.00	81.05	0.00	0.01	23.16	0.00	23.18	0.00	20.0	0.0	0.	0.00
4	2.400	30.00	0.0	0.0	0.0	0.23	77.57	0.00	77.57	0.00	0.03	22.10	0.00	22.13	0.03	19.2	0.0	0.	0.00
5	2.200	30.00	0.0	0.0	0.0	0.27	72.09	0.00	72.09	0.00	0.06	20.39	0.00	20.45	0.06	18.5	0.0	0.	0.00
6	2.000	30.00	0.0	0.0	0.0	0.28	66.71	0.00	66.71	0.00	0.09	18.67	0.00	18.76	0.08	17.7	0.0	0.	0.00
7	1.800	30.00	0.0	0.0	0.0	0.29	61.43	0.00	61.43	0.00	0.12	16.94	0.00	17.06	0.11	16.9	0.0	0.	0.00
8	1.600	30.00	0.0	0.0	0.0	0.30	56.24	0.00	56.24	0.00	0.15	15.20	0.00	15.36	0.14	16.2	0.0	0.	0.00
9	1.400	30.00	0.0	0.0	0.0	0.31	51.14	0.00	51.14	0.00	0.19	13.46	0.00	13.65	0.17	15.4	0.0	0.	0.00
10	1.200	30.00	0.0	0.0	0.0	0.33	46.12	0.00	46.12	0.00	0.22	11.71	0.00	11.93	0.19	14.6	0.0	0.	0.00
11	1.000	30.00	0.0	0.0	0.0	0.35	41.18	0.00	41.18	0.00	0.26	9.95	0.00	10.21	0.22	13.8	0.0	0.	0.00
12	0.800	30.00	0.0	0.0	0.0	0.38	36.30	0.00	36.30	0.00	0.29	8.19	0.00	8.48	0.25	13.1	0.0	0.	0.00
13	0.600	30.00	0.0	0.0	0.0	0.41	31.49	0.00	31.49	0.00	0.33	6.41	0.00	6.75	0.28	12.3	0.0	0.	0.00
14	0.400	30.00	0.0	0.0	0.0	0.42	26.73	0.00	26.73	0.00	0.38	4.63	0.00	5.01	0.30	11.5	0.0	0.	0.00
15	0.200	30.00	0.0	0.0	0.0	0.42	22.01	0.00	22.01	0.00	0.42	2.83	0.00	3.25	0.33	10.8	0.0	0.	0.00
16	0.000	30.00	0.0	0.0	0.0	0.40	17.33	0.00	17.33	0.00	0.47	1.01	0.00	1.49	0.36	10.0	0.0	0.	0.00

SPECIAL REPORT: Lake Henderson

BIOLOGICAL AND PHYSICAL COEFFICIENTS

ELEM NO.	ENDING DIST km	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#1 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	FULL SOD *	CORR SOD *	ORG-N DECAY 1/da	ORG-N SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
1	2.700	7.56	0.26	0.01	0.00	0.00	0.00	0.00	0.00	3.75	3.75	0.06	0.00	0.00	0.01	0.07	0.00	1.98	0.00	0.00	0.00	0.00
2	2.650	7.56	0.25	0.01	0.00	0.00	0.00	0.00	0.00	3.75	3.75	0.06	0.00	0.00	0.01	0.07	0.00	1.78	0.00	0.00	0.00	0.00

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   3    2.600  7.56    0.25  0.01  0.00   0.00  0.00  0.00   0.00  3.75  3.75   0.06  0.00   0.00  0.01   0.07  0.00  1.58  0.00   0.00   0.00  0.00
   4    2.400  7.56    0.20  0.01  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.07  0.00  1.52  0.00   0.00   0.00  0.00
   5    2.200  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.07  0.00  1.46  0.00   0.00   0.00  0.00
   6    2.000  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.07  0.00  1.40  0.00   0.00   0.00  0.00
   7    1.800  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.07  0.00  1.34  0.00   0.00   0.00  0.00
   8    1.600  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.07  0.00  1.28  0.00   0.00   0.00  0.00
   9    1.400  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.07  0.00  1.22  0.00   0.00   0.00  0.00
  10    1.200  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.07  0.00  1.16  0.00   0.00   0.00  0.00
  11    1.000  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.06  0.00  1.10  0.00   0.00   0.00  0.00
  12    0.800  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.06  0.00  1.04  0.00   0.00   0.00  0.00
  13    0.600  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.06  0.00  0.97  0.00   0.00   0.00  0.00
  14    0.400  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.06  0.00  0.91  0.00   0.00   0.00  0.00
  15    0.200  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.06  0.00  0.85  0.00   0.00   0.00  0.00
  16    0.000  7.56    0.20  0.02  0.00   0.00  0.00  0.00   0.00  1.88  1.88   0.06  0.00   0.00  0.01   0.06  0.00  0.79  0.00   0.00   0.00  0.00
 SPECIAL REPORT: Lake Henderson
 HYDRAULIC PARAMETER VALUES
 ELEM   BEGIN  ENDING       FLOW  ADVCTV   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST                VELO                                AREA    AREA     PRISM    VELO               VELO
          km      km        m³/s     m/s       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
    1    6.50    2.70      0.0029   0.000    1.22  2300.0 10662800.  8740000.0  2806.0        0.   0.000     4.000   0.000
    2    2.70    2.65      0.0029   0.000    1.22    21.0     1281.     1050.0    25.6        0.   0.000     4.000   0.000
    3    2.65    2.60      0.0029   0.000    1.22    21.0     1281.     1050.0    25.6        0.   0.000     4.000   0.000
    4    2.60    2.40      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    5    2.40    2.20      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    6    2.20    2.00      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    7    2.00    1.80      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    8    1.80    1.60      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    9    1.60    1.40      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   10    1.40    1.20      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   11    1.20    1.00      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   12    1.00    0.80      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   13    0.80    0.60      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   14    0.60    0.40      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   15    0.40    0.20      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   16    0.20    0.00      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
FINAL REPORT    Lake Henderson                                  West Atchafalaya Floodway  (Subsegment 010301)
REACH NO.  1    Lake Henderson                                   Simulation for Subsegment 010301 - Baseline
 ******************************************************** REACH INPUTS ********************************************************
 ELEM  TYPE        FLOW     TEMP     SALN     CM-I    CM-II     DO  BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   PHOS  CHL A     COLI      NCM
 NO.                       deg C      ppt                      mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L  #/100mL
    1  HDWTR     0.00283   30.00     0.00     0.00     0.00   0.40  20.00   0.00  20.00   0.00   0.50   0.10   0.04   0.00  30.00     0.00     0.00
    1  WSTLD     0.00002   30.00     0.00     0.00     0.00   5.00 103.50   0.00 103.50   0.00   7.50  15.00   0.00   0.00   0.00     0.00     0.00
    1  WSTLD     0.00003   30.00     0.00     0.00     0.00   5.00 103.50   0.00 103.50   0.00   7.50  15.00   0.00   0.00   0.00     0.00     0.00
    1  WSTLD     0.00005   30.00     0.00     0.00     0.00   5.00  69.00   0.00  69.00   0.00   5.00  10.00   0.00   0.00   0.00     0.00     0.00
 ********************************************** HYDRAULIC PARAMETER VALUES **********************************************
 ELEM   BEGIN  ENDING       FLOW   PCT   ADVCTV    TRAVEL   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST              EFF     VELO      TIME                                  AREA    AREA     PRISM    VELO               VELO
          km      km        m³/s            m/s      days       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
    1    6.50    2.70    0.00293   3.4   0.00000 42120.16    1.22 2300.00********** 8740000.00 2806.00      0.00   0.000     4.000   0.000
  TOT                                             42120.16               10662800.00 8740000.00
  AVG                                     0.0000              1.22 2300.00                      2806.00
  CUM                                             42120.16
 ******************************************** BIOLOGICAL AND PHYSICAL COEFFICIENTS ********************************************
 ELEM  ENDING  SAT    REAER  BOD#1 BOD#1 ABOD#1  BOD#2 BOD#2 ABOD#2  BKGD  FULL  CORR   ORGN  ORGN    NH3   NH3  DENIT   PO4   ALG   MAC   COLI    NCM
NCM
 NO.     DIST  D.O.    RATE  DECAY  SETT  DECAY  DECAY  SETT  DECAY   SOD   SOD   SOD  DECAY  SETT  DECAY  SRCE   RATE  SRCE  PROD  PROD  DECAY  DECAY
SETT
               mg/L    1/da   1/da  1/da   1/da   1/da  1/da   1/da     *     *     *   1/da  1/da   1/da     *   1/da     *    **    **   1/da   1/da
1/da
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   1    2.700  7.56    0.26   0.01  0.00   0.00   0.00  0.00   0.00  3.75  3.75  3.75   0.06  0.00   0.00  0.01   0.07  0.00  1.98  0.00   0.00   0.00
0.00
 AVG 20 DEG C RATE     0.21   0.08  0.00   0.00   0.00  0.00   0.00  2.00               0.05  0.00   0.10  0.00   0.05  0.00               0.00   0.00
0.00
 *   g/m²/d            **   mg/L/day
 ********************************************** WATER QUALITY CONSTITUENT VALUES **********************************************
 ELEM  ENDING   TEMP  SALN     CM-I    CM-II    DO   BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   TOTN   PHOS  CHL A   MACRO     COLI      NCM
 NO.     DIST  DEG C   PPT                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L    g/m³  #/100mL
   1    2.700  30.00  0.00     0.00     0.00   0.15  81.75   0.00  81.75   0.00   0.00  23.74   0.00  23.74   0.00  25.00    0.00       0.    0.00
FINAL REPORT    Lake Henderson                                   West Atchafalaya Floodway  (Subsegment 010301)
REACH NO.  2    Butte La Rose Bayou                               Simulation for Subsegment 010301 - Baseline
 ******************************************************** REACH INPUTS ********************************************************
 ELEM  TYPE         FLOW     TEMP     SALN     CM-I    CM-II     DO  BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   PHOS  CHL A     COLI      NCM
 NO.                        deg C      ppt                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L  #/100mL
   2  UPR RCH   0.00293   30.00     0.00     0.00     0.00   0.15  81.75   0.00  81.75   0.00   0.00  23.74   0.00   0.00  25.00     0.00    0.00
 ************************************************ HYDRAULIC PARAMETER VALUES ************************************************
 ELEM   BEGIN  ENDING       FLOW   PCT   ADVCTV    TRAVEL   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST               EFF     VELO      TIME                                  AREA    AREA     PRISM    VELO               VELO
          km      km        m³/s             m/s      days       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
   2    2.70    2.65    0.00293   3.4   0.00011      5.06    1.22   21.00   1281.00    1050.00   25.62      0.00   0.000     4.000   0.000
   3    2.65    2.60    0.00293   3.4   0.00011      5.06    1.22   21.00   1281.00    1050.00   25.62      0.00   0.000     4.000   0.000
  TOT                                             10.12                     2562.00    2100.00
  AVG                                     0.0001             1.22   21.00                         25.62
  CUM                                   42130.27
 ******************************************** BIOLOGICAL AND PHYSICAL COEFFICIENTS ********************************************
 ELEM  ENDING  SAT    REAER  BOD#1 BOD#1 ABOD#1  BOD#2 BOD#2 ABOD#2  BKGD  FULL  CORR   ORGN  ORGN    NH3   NH3  DENIT   PO4   ALG   MAC   COLI    NCM
NCM
 NO.     DIST  D.O.    RATE  DECAY  SETT  DECAY  DECAY  SETT  DECAY   SOD   SOD   SOD  DECAY  SETT  DECAY  SRCE   RATE  SRCE  PROD  PROD  DECAY  DECAY
SETT
               mg/L    1/da   1/da  1/da   1/da   1/da  1/da   1/da     *     *     *    1/da  1/da   1/da     *    1/da     *    **    **    1/da   1/da
1/da
   2    2.650  7.56    0.25   0.01  0.00   0.00   0.00  0.00   0.00  3.75  3.75  3.75   0.06  0.00   0.00  0.01   0.07  0.00  1.78  0.00   0.00   0.00
0.00
   3    2.600  7.56    0.25   0.01  0.00   0.00   0.00  0.00   0.00  3.75  3.75  3.75   0.06  0.00   0.00  0.01   0.07  0.00  1.58  0.00   0.00   0.00
0.00
 AVG 20 DEG C RATE     0.20   0.08  0.00   0.00   0.00  0.00   0.00  2.00               0.05  0.00   0.20  0.00   0.05  0.00               0.00   0.00
0.00
 *   g/m²/d            **   mg/L/day
 ********************************************** WATER QUALITY CONSTITUENT VALUES **********************************************
 ELEM  ENDING   TEMP  SALN     CM-I    CM-II    DO   BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   TOTN   PHOS  CHL A   MACRO     COLI      NCM
 NO.     DIST  DEG C   PPT                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L    g/m³  #/100mL
   2    2.650  30.00  0.00     0.00     0.00   0.16  81.75   0.00  81.75   0.00   0.00  23.59   0.00  23.59   0.00  22.50    0.00       0.    0.00
   3    2.600  30.00  0.00     0.00     0.00   0.18  81.05   0.00  81.05   0.00   0.01  23.16   0.00  23.18   0.00  20.00    0.00       0.    0.00
FINAL REPORT    Lake Henderson                                   West Atchafalaya Floodway  (Subsegment 010301)
REACH NO.  3    Butte La Rose Bayou                               Simulation for Subsegment 010301 - Baseline
 ******************************************************** REACH INPUTS ********************************************************
 ELEM  TYPE         FLOW     TEMP     SALN     CM-I    CM-II     DO  BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   PHOS  CHL A     COLI      NCM
 NO.                        deg C      ppt                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L  #/100mL
   4  UPR RCH   0.00293   30.00     0.00     0.00     0.00   0.18  81.05   0.00  81.05   0.00   0.01  23.16   0.00   0.00  20.00     0.00    0.00
 ************************************************ HYDRAULIC PARAMETER VALUES ************************************************
 ELEM   BEGIN  ENDING       FLOW   PCT   ADVCTV    TRAVEL   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST               EFF     VELO      TIME                                  AREA    AREA     PRISM    VELO               VELO
          km      km        m³/s             m/s      days       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
   4    2.60    2.40    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
   5    2.40    2.20    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
   6    2.20    2.00    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
   7    2.00    1.80    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
   8    1.80    1.60    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
   9    1.60    1.40    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
```

10	1.40	1.20	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
11	1.20	1.00	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
12	1.00	0.80	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
13	0.80	0.60	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
14	0.60	0.40	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
15	0.40	0.20	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
16	0.20	0.00	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000							
TOT						263.13			66612.00	54600.00												
AVG					0.0001		1.22	21.00			25.62											
CUM						42393.42																

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAY	BOD#1 SETT	ABOD#1 DECAY	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NCM DECAY	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
4	2.400	7.56	0.20	0.01	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.07	0.00	1.52	0.00	0.00	0.00	0.00
5	2.200	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.07	0.00	1.46	0.00	0.00	0.00	0.00
6	2.000	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.07	0.00	1.40	0.00	0.00	0.00	0.00
7	1.800	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.07	0.00	1.34	0.00	0.00	0.00	0.00
8	1.600	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.07	0.00	1.28	0.00	0.00	0.00	0.00
9	1.400	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.07	0.00	1.22	0.00	0.00	0.00	0.00
10	1.200	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.07	0.00	1.16	0.00	0.00	0.00	0.00
11	1.000	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.06	0.00	1.10	0.00	0.00	0.00	0.00
12	0.800	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.06	0.00	1.04	0.00	0.00	0.00	0.00
13	0.600	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.06	0.00	0.97	0.00	0.00	0.00	0.00
14	0.400	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.06	0.00	0.91	0.00	0.00	0.00	0.00
15	0.200	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.06	0.00	0.85	0.00	0.00	0.00	0.00
16	0.000	7.56	0.20	0.02	0.00	0.00	0.00	0.00	0.00	1.88	1.88	1.88	0.06	0.00	0.00	0.01	0.06	0.00	0.79	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.16	0.08	0.00	0.00	0.00	0.00	0.00	1.00			0.05	0.00	0.20	0.00	0.05	0.00			0.00	0.00	0.00

* $g/m^2/d$ ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m^3	COLI #/100mL	NCM
4	2.400	30.00	0.00	0.00	0.00	0.23	77.57	0.00	77.57	0.00	0.03	22.10	0.00	22.13	0.03	19.23	0.00	0.	0.00
5	2.200	30.00	0.00	0.00	0.00	0.27	72.09	0.00	72.09	0.00	0.06	20.39	0.00	20.45	0.06	18.46	0.00	0.	0.00
6	2.000	30.00	0.00	0.00	0.00	0.28	66.71	0.00	66.71	0.00	0.09	18.67	0.00	18.76	0.08	17.69	0.00	0.	0.00
7	1.800	30.00	0.00	0.00	0.00	0.29	61.43	0.00	61.43	0.00	0.12	16.94	0.00	17.06	0.11	16.92	0.00	0.	0.00
8	1.600	30.00	0.00	0.00	0.00	0.30	56.24	0.00	56.24	0.00	0.15	15.20	0.00	15.36	0.14	16.15	0.00	0.	0.00
9	1.400	30.00	0.00	0.00	0.00	0.31	51.14	0.00	51.14	0.00	0.19	13.46	0.00	13.65	0.17	15.38	0.00	0.	0.00
10	1.200	30.00	0.00	0.00	0.00	0.33	46.12	0.00	46.12	0.00	0.22	11.71	0.00	11.93	0.19	14.62	0.00	0.	0.00
11	1.000	30.00	0.00	0.00	0.00	0.35	41.18	0.00	41.18	0.00	0.26	9.95	0.00	10.21	0.22	13.85	0.00	0.	0.00
12	0.800	30.00	0.00	0.00	0.00	0.38	36.30	0.00	36.30	0.00	0.29	8.19	0.00	8.48	0.25	13.08	0.00	0.	0.00
13	0.600	30.00	0.00	0.00	0.00	0.41	31.49	0.00	31.49	0.00	0.33	6.41	0.00	6.75	0.28	12.31	0.00	0.	0.00

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  14    0.400  30.00  0.00     0.00     0.00   0.42  26.73   0.00  26.73   0.00   0.38   4.63   0.00   5.01   0.30  11.54    0.00       0.    0.00
  15    0.200  30.00  0.00     0.00     0.00   0.42  22.01   0.00  22.01   0.00   0.42   2.83   0.00   3.25   0.33  10.77    0.00       0.    0.00
  16    0.000  30.00  0.00     0.00     0.00   0.40  17.33   0.00  17.33   0.00   0.47   1.01   0.00   1.49   0.36  10.00    0.00       0.    0.00
STREAM SUMMARY                                                    West Atchafalaya Floodway  (Subsegment 010301)
Lake Henderson                                                     Simulation for Subsegment 010301 - Baseline
 TRAVEL TIME       =       42393.42 DAYS
 MAXIMUM EFFLUENT  =           3.41 PERCENT
 FLOW              =   0.00293 TO    0.00293   m³/s
 DISPERSION        =   4.0000  TO    4.0000    m²/s
 VELOCITY          =   0.00000 TO    0.00011   m/s
 DEPTH             =   1.22    TO    1.22      m
 WIDTH             =  21.00    TO  ******      m
 BOD DECAY         =    0.01   TO    0.02      per day
 NH3 DECAY         =    0.00   TO    0.00      per day
 SOD               =    1.88   TO    3.75      g/m²/d
 NH3 SOURCE        =    0.01   TO    0.01      g/m²/d
 REAERATION        =    0.20   TO    0.26      per day
 BOD SETTLING      =    0.00   TO    0.00      per day
 ORG-N DECAY       =    0.06   TO    0.06      per day
 ORG-N SETTLING    =    0.00   TO    0.00      per day
 TEMPERATURE       =   30.00   TO   30.00      deg C
 DISSOLVED OXYGEN  =    0.15   TO    0.42      mg/L
West Atchafalaya Floodway  (Subsegment 010301)
 Simulation for Subsegment 010301 - Baseline
REACH SUMMARY REPORT FOR Lake Henderson
 RCH REACH NAME                            BEGIN    ENDING    REACH   TRAVEL   FLOW AT    AVERAGE     AVG     AVG   FLOW AT    AVERAGE     AVG     AVG
 NO.                                        DIST      DIST   LENGTH     TIME       EOR       VELO   DEPTH   WIDTH       EOR       VELO   DEPTH   WIDTH
                                             km        km      km     days      m3/s        m/s       m       m       cfs        fps      ft      ft
   1 Lake Henderson                         6.50      2.70    3.80 42120.16   0.00293    0.00000   1.220 2300.00     0.103      0.000   4.003 7546.30
   2 Butte La Rose Bayou                    2.70      2.60    0.10    10.12   0.00293    0.00011   1.220   21.00     0.103      0.000   4.003   68.90
   3 Butte La Rose Bayou                    2.60      0.00    2.60   263.13   0.00293    0.00011   1.220   21.00     0.103      0.000   4.003   68.90
DISSOLVED OXYGEN LOADING FOR REACH   1: Lake Henderson
 IOR   UPMN    UPTR    LOWR  UPMN  UPTR  LOWR  INCR  INCR  NONP  WSLD  WITH  REAE  BOD1 NH3-N ORG-N   NCM   SOD   SOD   SOD   SOD   ALG   ALG   MAC
TOT     TOT
        ADV     ADV     ADV  DISP  DISP  DISP    IN   OUT    IN    IN   OUT    IN  DECA  DECA  DECA  DECA  BKGD  BOD1   ALG   NCM  PHOT  RESP  PHOT
OUT      IN
   1      0.      0.      0.    0.    0.    2.    0.    0.    0.    0.    0.20239.-8493.  -34.    0.    0.******    0.    0.    0.21098.    0.    0. -
41339.2  41339.7   0.47
   2      0.      0.      0.   -2.    0.    3.    0.    0.    0.    0.    0.    2.   -1.    0.    0.    0.   -4.    0.    0.    0.    2.    0.    0.     -
7.5      7.5   0.00
   3      0.      0.      0.   -3.    0.    4.    0.    0.    0.    0.    0.    2.   -1.    0.    0.    0.   -4.    0.    0.    0.    2.    0.    0.     -
8.0      8.0   0.00
   4      0.      0.      0.   -4.    0.    2.    0.    0.    0.    0.    0.    7.   -5.    0.    0.    0.   -8.    0.    0.    0.    8.    0.    0.    -
17.1     17.0  -0.06
   5      0.      0.      0.   -2.    0.    1.    0.    0.    0.    0.    0.    7.   -6.    0.    0.    0.   -8.    0.    0.    0.    7.    0.    0.    -
15.8     15.7  -0.07
   6      0.      0.      0.   -1.    0.    0.    0.    0.    0.    0.    0.    7.   -6.    0.    0.    0.   -8.    0.    0.    0.    7.    0.    0.    -
15.0     14.9  -0.01
   7      0.      0.      0.    0.    0.    0.    0.    0.    0.    0.    0.    7.   -6.   -1.    0.    0.   -8.    0.    0.    0.    7.    0.    0.    -
14.5     14.6   0.09
   8      0.      0.      0.    0.    0.    0.    0.    0.    0.    0.    0.    7.   -5.   -1.    0.    0.   -8.    0.    0.    0.    7.    0.    0.    -
14.3     14.5   0.18
   9      0.      0.      0.    0.    0.    1.    0.    0.    0.    0.    0.    7.   -5.   -1.    0.    0.   -8.    0.    0.    0.    6.    0.    0.    -
14.3     14.5   0.20
  10      0.      0.      0.   -1.    0.    1.    0.    0.    0.    0.    0.    7.   -5.   -1.    0.    0.   -8.    0.    0.    0.    6.    0.    0.    -
14.3     14.4   0.16
  11      0.      0.      0.   -1.    0.    1.    0.    0.    0.    0.    0.    7.   -4.   -1.    0.    0.   -8.    0.    0.    0.    6.    0.    0.    -
14.1     14.2   0.08
```

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  12      0.      0.      0.   -1.    0.    1.    0.    0.    0.    0.    0.    7.   -4.    0.    0.    0.   -8.    0.    0.    0.    5.    0.    0.    -
13.7     13.7  -0.02
  13      0.      0.      0.   -1.    0.    1.    0.    0.    0.    0.    0.    7.   -4.    0.    0.    0.   -8.    0.    0.    0.    5.    0.    0.    -
13.1     13.0  -0.07
  14      0.      0.      0.   -1.    0.    0.    0.    0.    0.    0.    0.    7.   -3.    0.    0.    0.   -8.    0.    0.    0.    5.    0.    0.    -
12.2     12.1  -0.10
  15      0.      0.      0.    0.    0.   -1.    0.    0.    0.    0.    0.    7.   -3.    0.    0.    0.   -8.    0.    0.    0.    4.    0.    0.    -
11.8     11.7  -0.08
  16      0.      0.      0.    1.    0.   -2.    0.    0.    0.    0.    0.    7.   -2.    0.    0.    0.   -8.    0.    0.    0.    4.    0.    0.    -
12.3     12.3  -0.02
 West Atchafalaya Floodway  (Subsegment 010301)
  Simulation for Subsegment 010301 - Baseline
INPUT/OUTPUT LOADING SUMMARY
                                    FLOW          DO     BOD#1     BOD#2     ORG-N     NH3-N     NO3-N      PHOS     CHL A       NCM
                                    m³/s        kg/d      kg/d      kg/d      kg/d      kg/d      kg/d      kg/d
 HEADWATER FLOW                    0.003         0.1       4.9       0.0       0.1       0.0       0.0       0.0       0.0       0.0
 INCREMENTAL INFLOW                0.000         0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 INCREMENTAL OUTFLOW               0.000         0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 WASTELOADS                        0.000         0.0       0.7       0.0       0.1       0.1       0.0       0.0       0.0       0.0
 WITHDRAWLS                        0.000         0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 FLOW THRU LOWER BNDRY            -0.003        -0.1      -4.4       0.0      -0.1      -0.3       0.0       0.0       0.0       0.0
 DISPERSION THRU LOWER BNDRY                    -2.1    -206.3       0.0       2.3     -80.9       3.5       0.0       0.0       0.0
 DISPERSION THRU HDWTR BNDRY                     0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 NON-POINT INPUT                                 0.0    8750.0       0.0       0.0                                           0.0
 NATURAL REAERATION                          20338.3
 DAM REAERATION                                  0.0
 BACKGROUND SOD                             -32922.7
 BOD#1 DECAY                                 -8553.5   -8553.5
 BOD#1 SETTLING                                  0.0       0.0
 ANAEROBIC BOD#1 DECAY                                     0.0
 BOD#2 DECAY                                     0.0                 0.0
 BOD#2 SETTLING                                  0.0                 0.0
 ANAEROBIC BOD#2 DECAY                                               0.0
 ORG-N DECAY                                     0.0                          -2.4       2.4
 ORG-N SETTLING                                                        0.0       0.0
 NH3 DECAY                                     -38.9                                  -9.0       9.0
 BACKGROUND NH3 SOURCE                                                           89.8
 OTHER DENITRIFICATION                                                                      0.0
 PHOSPHORUS SOURCE                                                                                0.0
 ALGAE PHOTOSYNTHESIS                        21179.7                                   0.0   -1059.0       0.0       0.0
 ALGAE RESPIRATION                               0.0                                   0.0                 0.0       0.0
 ALGAE SETTLING                                  0.0                                                             0.0
 MACRO PHOTOSYNTHESIS                            0.0                                   0.0       0.0       0.0
 NCM DECAY                                       0.0                                                                         0.0
 NCM SETTLING                                    0.0                                                                         0.0
 TOTAL INPUTS                      0.003     41518.2    8755.6       0.0       2.5      92.3      12.5       0.0       0.0       0.0
 TOTAL OUTPUTS                    -0.003    -41517.4   -8764.2       0.0      -2.5     -90.2   -1059.0       0.0       0.0       0.0
 NET CONVERGENCE ERROR             0.000         0.8      -8.6       0.0       0.0       2.2   -1046.4       0.0       0.0       0.0
     .....EXECUTION COMPLETED
```

TMDL output file

```
LA-QUAL Version 8.11
Louisiana Department of Environmental Quality
Input file is E:\EPA_R06\LA TMDL 2006\Additional\010301\LA-QUAL\ss010301_tmdl_ps.txt
Output produced at 11:19 on 03/31/2010
$$$ DATA TYPE 1 (TITLES AND CONTROL CARDS) $$$
CARD TYPE       CONTROL TITLES
TITLE01         West Atchafalaya Floodway  (Subsegment 010301)
TITLE02          Simulation for Subsegment 010301 - TMDL
CNTROL03   NO   SEQU                        <Warning: legacy control - line ignored>
CNTROL04  YES   METR
CNTROL05  YES   OXYG                        <Warning: legacy control - line ignored>
ENDATA01
$$$ DATA TYPE 2 (MODEL OPTIONS) $$$
CARD TYPE       MODEL OPTION
MODOPT01  Yes   TEMPERATURE
MODOPT02   NO   SALINITY
MODOPT03   NO   CONSERVATIVE MATERIAL #1                        UNITS =
MODOPT04   NO   CONSERVATIVE MATERIAL #2                        UNITS =
MODOPT05  YES   DISSOLVED OXYGEN
MODOPT06  YES   BOD1 BIOCHEMICAL OXYGEN DEMAND #1
MODOPT07   NO   BOD2 BIOCHEMICAL OXYGEN DEMAND #2
MODOPT08  YES   NITROGEN SERIES
MODOPT09   NO   PHOSPHORUS
MODOPT10   NO   CHLOROPHYLL A
MODOPT11   NO   MACROPHYTES
MODOPT12   NO   COLIFORMS
MODOPT13   NO   NONCONSERVATIVE MATERIAL                        UNITS =
ENDATA02
$$$ DATA TYPE 3 (PROGRAM CONSTANTS) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
PROGRAM         MAXImum iteration limit           =      1000.00000
PROGRAM         INHIBITION CONTROL VALUE          =         3.00000 (inhibit all rates but SOD)
PROGRAM         HYDRAULIC CALCULATION METHOD      =         2.00000 (widths and depths)
ENDATA03
$$$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) $$$
 CARD TYPE     RATE CODE     THETA VALUE

ENDATA04
$$$ CONSTANTS TYPE 5 (TEMPERATURE DATA) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
TEMP            WET BULB TEMP                              26.00000 deg C
TEMP            DRY BULB TEMP                              30.00000 deg C
ENDATA05
$$$ DATA TYPE 6 (ALGAE CONSTANTS) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
ENDATA06
$$$ DATA TYPE 7 (MACROPHYTE CONSTANTS) $$$
CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE
ENDATA07
$$$ DATA TYPE 8 (REACH IDENTIFICATION DATA) $$$
                                                BEGIN        END     ELEM    REACH     ELEMS   BEGIN    END
CARD TYPE  REACH  ID  NAME                      REACH       REACH   LENGTH   LENGTH    PER RCH  ELEM   ELEM
                                                   km          km       km       km               NUM    NUM
REACH ID      1    1  Lake Henderson             6.50  TO    2.70   3.8000     3.80       1       1      1
REACH ID      2    2  Butte La Rose Bayou        2.70  TO    2.60   0.0500     0.10       2       2      3
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REACH ID      3    3  Butte La Rose Bayou                  2.60  TO    0.00   0.2000     2.60      13        4     16
ENDATA08
$$$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) $$$
CARD TYPE  REACH  ID       WIDTH       WIDTH       WIDTH       DEPTH       DEPTH       DEPTH      SLOPE    MANNINGS
                            "A"         "B"         "C"         "D"         "E"         "F"                  "N"
HYDR-1        1    1       0.000       0.000    2300.000       0.000       0.000       1.220     0.00010   0.080
HYDR-1        2    2       0.000       0.000      21.000       0.000       0.000       1.220     0.00010   0.080
HYDR-1        3    3       0.000       0.000      21.000       0.000       0.000       1.220     0.00010   0.080
ENDATA09
$$$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) $$$
CARD TYPE  REACH  ID     TIDAL     DISPERSION     DISPERSION     DISPERSION     DISPERSION
                        RANGE        "A"            "B"            "C"            "D"
HYDR          1    1      0.00        4.000          0.000          0.000          0.000
HYDR          2    2      0.00        4.000          0.000          0.000          0.000
HYDR          3    3      0.00        4.000          0.000          0.000          0.000
ENDATA10
$$$ DATA TYPE 11 (INITIAL CONDITIONS) $$$
CARD TYPE      REACH  ID        TEMP     SALIN        DO       NH3     NO3+2      PHOS     CHL A     MACRO
INITIAL            1    1       30.00      0.00      5.00      0.10      0.04      0.00     30.00      0.00
INITIAL            2    2       30.00      0.00      5.00      0.10      0.04      0.00     25.00      0.00
INITIAL            3    3       30.00      0.00      5.00      0.10      0.04      0.00     20.00      0.00
ENDATA11
$$$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) $$$
                                                                                                  BOD     ANAER                          BOD2     ANAER
CARD     RCH  RCH  K2                    K2        K2        K2    BKGRND       BOD       BOD     CONV      BOD2      BOD2      BOD2     CONV      BOD2
TYPE     NUM   ID  OPT                   "A"       "B"       "C"       SOD     DECAY      SETT   TO SOD     DECAY     DECAY      SETT   TO SOD     DECAY
                                                                   g/m²/d   per day       m/d              per day   per day       m/d              per day
COEFF-1    1    1  20 K2=a/D           0.260     0.000     0.000     1.500     0.080     0.000     0.000     0.000     0.000     0.000     0.000     0.000
COEFF-1    2    2  20 K2=a/D           0.250     0.000     0.000     2.000     0.080     0.000     0.000     0.000     0.000     0.000     0.000     0.000
COEFF-1    3    3  20 K2=a/D           0.200     0.000     0.000     0.100     0.080     0.000     0.000     0.000     0.000     0.000     0.000     0.000
ENDATA12
$$$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) $$$
CARD TYPE      REACH  ID       ORG-N     ORG-N   ORGN CONV       NH3       NH3      PHOS     DENIT
                             DECA      SETT  TO NH3 SRCE      DECA      SRCE      SRCE      RATE
COEFF-2            1    1       0.050     0.000     0.000       0.100     0.005     0.000     0.050
COEFF-2            2    2       0.050     0.000     0.000       0.200     0.005     0.000     0.050
COEFF-2            3    3       0.050     0.000     0.000       0.200     0.005     0.000     0.050
ENDATA13
$$$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) $$$
CARD TYPE      REACH  ID       SECCHI    ALGAE:     ALGAE    ALG CONV     ALGAE     ALGAE     MACRO     MACRO
                             DEPTH     CHL A      SETT     TO SOD      GROW      RESP      GROW      RESP   SHADING
ENDATA14
$$$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) $$$
CARD TYPE      REACH  ID    COLIFORM       NCM       NCM    NCM CONV
                           DIE-OFF     DECAY      SETT     TO SOD
ENDATA15
$$$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$
CARD TYPE      REACH  ID       OUTFLOW      INFLOW      TEMP     SALIN      CM-I     CM-II   IN/DIST  OUT/DIST
INCR-1             1    1       0.00000     0.00000     30.00      0.00      0.00      0.00   0.00000   0.00000
INCR-1             2    2       0.00000     0.00000     30.00      0.00      0.00      0.00   0.00000   0.00000
INCR-1             3    3       0.00000     0.00000     30.00      0.00      0.00      0.00   0.00000   0.00000
ENDATA16
$$$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) $$$
CARD TYPE      REACH  ID          DO       BOD     ORG-N     NH3-N     NO3-N     BOD#2
INCR-2             1    1        0.00      0.00      0.00      0.00      0.00      0.00
INCR-2             2    2        0.00      0.00      0.00      0.00      0.00      0.00
INCR-2             3    3        0.00      0.00      0.00      0.00      0.00      0.00
ENDATA17
$$$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$
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 CARD TYPE      REACH  ID        PHOS     CHL A      COLI       NCM
ENDATA18
$$$ DATA TYPE 19 (NONPOINT SOURCE DATA) $$$
CARD TYPE      REACH  ID       BOD#1     ORG-N      COLI       NCM        DO     BOD#2
NONPOINT           1    1     2500.00      0.00      0.00      0.00      0.00      0.00
NONPOINT           2    2      225.00      0.00      0.00      0.00      0.00      0.00
NONPOINT           3    3        0.00      0.00      0.00      0.00      0.00      0.00
ENDATA19
$$$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) $$$
CARD TYPE     ELEMENT   NAME                  UNIT     FLOW     FLOW    TEMP    SALIN      CM-I     CM-II
                                                        m³/s      cfs   deg C      ppt
HDWTR-1           1     Lake Henderson          0   0.00283    0.100   30.00     0.00     0.000     0.000   0.00
ENDATA20
$$$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) $$$
CARD TYPE     ELEMENT   NAME                           DO     BOD#1     ORG-N     NH3-N     NO3-N     BOD#2
                                                      mg/L      mg/L      mg/L      mg/L      mg/L      mg/L
HDWTR-2           1     Lake Henderson              5.00     20.00      0.50      0.10      0.04      0.00
ENDATA21
$$$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$
CARD TYPE     ELEMENT   NAME                         PHOS     CHL A      COLI       NCM
                                                      mg/L      mg/L      mg/L      mg/L
ENDATA22
$$$ DATA TYPE 23 (JUNCTION DATA) $$$
CARD TYPE   JUNCTION   UPSTRM     RIVER     NAME
             ELEMENT  ELEMENT     KILOM
ENDATA23
$$$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$
CARD TYPE  ELEMENT    RKILO  NAME                     FLOW       FLOW     FLOW    TEMP    SALIN      CM-I     CM-II
                                                       m³/s        cfs      MGD   deg C      ppt
WSTLD-1        1       6.50  LA0051942             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A035             0.00002    0.00071    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A578             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A580             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG33A933             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG530051             0.00003    0.00106    0.001   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG530368             0.00005    0.00177    0.001   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG532190             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG541369             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG560110             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
WSTLD-1        1       6.50  LAG570243             0.00000    0.00000    0.000   30.00     0.00     0.000     0.000
ENDATA24
$$$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) $$$
                                                                      % BOD                            %
CARD TYPE     ELEMENT   NAME                           DO       BOD      RMVL     ORG-N     NH3-N    NITRIF     NO3-N     BOD#2
                                                      mg/L      mg/L                mg/L      mg/L                mg/L      mg/L
WSTLD-2           1     LA0051942                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG33A035                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG33A578                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG33A580                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG33A933                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG530051                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG530368                   5.00     69.00      0.00      5.00     10.00      0.00      0.00      0.00
WSTLD-2           1     LAG532190                   5.00    103.50      0.00      7.50     15.00      0.00      0.00      0.00
WSTLD-2           1     LAG541369                   5.00     69.00      0.00      5.00     10.00      0.00      0.00      0.00
WSTLD-2           1     LAG560110                   5.00     46.00      0.00      3.30      6.67      0.00      0.00      0.00
WSTLD-2           1     LAG570243                   5.00     23.00      0.00      1.70      3.33      0.00      0.00      0.00
ENDATA25
$$$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$
CARD TYPE     ELEMENT   NAME                         PHOS     CHL A      COLI       NCM
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                                                  mg/L      mg/L      mg/L      mg/L
ENDATA26
$$$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) $$$
CARD TYPE    CONSTITUENT                    CONCENTRATION
LOWER BC     TEMPERATURE                          30.000     deg C
LOWER BC     SALINITY                              0.000     ppt
LOWER BC     CONSERVATIVE MATERIAL I               0.000
LOWER BC     CONSERVATIVE MATERIAL II              0.000
LOWER BC     DISSOLVED OXYGEN                      5.000     mg/L
LOWER BC     BIOCHEMICAL OXYGEN DEMAND            15.000     mg/L
LOWER BC     ORGANIC NITROGEN                      0.500     mg/L
LOWER BC     AMMONIA NITROGEN                      0.100     mg/L
LOWER BC     NITRATE + NITRITE                     0.040     mg/L
LOWER BC     PHOSPHORUS                            0.360     mg/L
LOWER BC     CHLOROPHYLL A                        10.000     µg/L
LOWER BC     COLIFORM                              0.000     #/100 mL
LOWER BC     NONCONSERVATIVE MATERIAL              0.000
ENDATA27
$$$ DATA TYPE 28 (DAM DATA) $$$
CARD TYPE     ELEMENT   NAME                 EQN      "A"       "B"       "H"
ENDATA28
$$$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) $$$
CARD TYPE       PARAMETER     COL 1     COL 2     COL 3     COL 4     COL 5     COL 6     COL 7     COL 8
ENDATA29
$$$ DATA TYPE 30 (PLOT CONTROL CARDS) $$$
NUMBER OF PLOTS =  1
NUMBER OF REACHES IN PLOT 1 =   3
PLOT RCH  1  2  3
ENDATA30
$$$ DATA TYPE 31 (OVERLAY PLOT DATA) $$$
OVERLAY 1 LH_3.OVL                        :Subsegment 010301
ENDATA31
     .....NO ERRORS DETECTED IN INPUT DATA
     .....HYDRAULIC CALCULATIONS COMPLETED
     .....TRIDIAGONAL MATRIX TERMS INITIALIZED
     .....OXYGEN DEPENDENT RATES CONVERGENT IN   5 ITERATIONS
     .....CONSTITUENT CALCULATIONS COMPLETED
 ***** WARNING:  NEGATIVE CONCENTRATIONS SET TO ZERO FOR Nitrate+Nitrite Nitrogen
     .....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11
INTERMEDIATE REPORT
 Dissolved Oxygen                                                  West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                           Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        5.13
   2     2     2        5.17      5.27
   3     3     4        5.56      5.88      6.07      6.16      6.16      6.09      5.97      5.80      5.61      5.41
   3     3    14        5.23      5.08      5.00
INTERMEDIATE REPORT
 Effective BOD                                                     West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                           Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        2.03
   2     2     2        2.51      3.23
   3     3     4        3.44      3.83      4.28      4.79      5.37      6.04      6.80      7.67      8.65      9.76
   3     3    14       11.03     12.46     14.08
INTERMEDIATE REPORT
 Biochemical Oxygen Demand                                         West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                           Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
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   1     1     1        2.03
   2     2     2        2.51      3.23
   3     3     4        3.44      3.83      4.28      4.79      5.37      6.04      6.80      7.67      8.65      9.76
   3     3    14       11.03     12.46     14.08
INTERMEDIATE REPORT
 Organic Nitrogen                                                   West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                            Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.00
   2     2     2        0.00      0.01
   3     3     4        0.03      0.06      0.09      0.12      0.15      0.19      0.22      0.26      0.29      0.33
   3     3    14        0.38      0.42      0.47
INTERMEDIATE REPORT
 Ammonia Nitrogen                                                   West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                            Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.04
   2     2     2        0.04      0.04
   3     3     4        0.04      0.04      0.05      0.05      0.05      0.06      0.06      0.07      0.07      0.08
   3     3    14        0.08      0.09      0.10
INTERMEDIATE REPORT
 Nitrate+Nitrite Nitrogen                                           West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                            Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.00
   2     2     2        0.00      0.00
   3     3     4        0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
   3     3    14        0.00      0.00      0.00
INTERMEDIATE REPORT
 Total Nitrogen                                                     West Atchafalaya Floodway  (Subsegment 010301)
     mg/L                                                            Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.04
   2     2     2        0.05      0.05
   3     3     4        0.07      0.10      0.14      0.17      0.20      0.24      0.28      0.32      0.37      0.41
   3     3    14        0.46      0.51      0.57
INTERMEDIATE REPORT
 Chlorophyll a                                                      West Atchafalaya Floodway  (Subsegment 010301)
     µg/L                                                            Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       25.00
   2     2     2       22.50     20.00
   3     3     4       19.23     18.46     17.69     16.92     16.15     15.38     14.62     13.85     13.08     12.31
   3     3    14       11.54     10.77     10.00
INTERMEDIATE REPORT
 Temperature                                                        West Atchafalaya Floodway  (Subsegment 010301)
     deg C                                                           Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1       30.00
   2     2     2       30.00     30.00
   3     3     4       30.00     30.00     30.00     30.00     30.00     30.00     30.00     30.00     30.00     30.00
   3     3    14       30.00     30.00     30.00
INTERMEDIATE REPORT
 Salinity                                                           West Atchafalaya Floodway  (Subsegment 010301)
     ppt                                                             Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.00
   2     2     2        0.00      0.00
   3     3     4        0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
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   3     3    14        0.00      0.00      0.00
INTERMEDIATE REPORT
 River Distance                                                    West Atchafalaya Floodway  (Subsegment 010301)
     km                                                             Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1         3.
   2     2     2         3.        3.
   3     3     4         2.        2.        2.        2.        2.        1.        1.        1.        1.        1.
   3     3    14         0.        0.        0.
INTERMEDIATE REPORT
 Flow                                                              West Atchafalaya Floodway  (Subsegment 010301)
     m³/s                                                           Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.0
   2     2     2        0.0       0.0
   3     3     4        0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
   3     3    14        0.0       0.0       0.0
INTERMEDIATE REPORT
 Dispersion                                                        West Atchafalaya Floodway  (Subsegment 010301)
     m²/s                                                           Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        4.0
   2     2     2        4.0       4.0
   3     3     4        4.0       4.0       4.0       4.0       4.0       4.0       4.0       4.0       4.0       4.0
   3     3    14        4.0       4.0       4.0
INTERMEDIATE REPORT
 Advective Velocity                                                West Atchafalaya Floodway  (Subsegment 010301)
     m/s                                                            Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        0.0
   2     2     2        0.0       0.0
   3     3     4        0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
   3     3    14        0.0       0.0       0.0
INTERMEDIATE REPORT
 Depth                                                             West Atchafalaya Floodway  (Subsegment 010301)
     m                                                              Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1        1.2
   2     2     2        1.2       1.2
   3     3     4        1.2       1.2       1.2       1.2       1.2       1.2       1.2       1.2       1.2       1.2
   3     3    14        1.2       1.2       1.2
INTERMEDIATE REPORT
 Width                                                             West Atchafalaya Floodway  (Subsegment 010301)
     m                                                              Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1      2300.0
   2     2     2        21.0      21.0
   3     3     4        21.0      21.0      21.0      21.0      21.0      21.0      21.0      21.0      21.0      21.0
   3     3    14        21.0      21.0      21.0
INTERMEDIATE REPORT
 Cross-Sectional Area                                              West Atchafalaya Floodway  (Subsegment 010301)
     m²                                                             Simulation for Subsegment 010301 - TMDL
  ID   RCH  ELEM         +0        +1        +2        +3        +4        +5        +6        +7        +8        +9
   1     1     1      2806.0
   2     2     2        25.6      25.6
   3     3     4        25.6      25.6      25.6      25.6      25.6      25.6      25.6      25.6      25.6      25.6
   3     3    14        25.6      25.6      25.6
INTERMEDIATE REPORT
 Reaeration Rate                                                   West Atchafalaya Floodway  (Subsegment 010301)
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per day Simulation for Subsegment 010301 - TMDL

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	0.256									
2	2	2	0.246	0.246								
3	3	4	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
3	3	14	0.197	0.197	0.197							

INTERMEDIATE REPORT

BOD Decay Rate West Atchafalaya Floodway (Subsegment 010301)

per day Simulation for Subsegment 010301 - TMDL

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	0.13									
2	2	2	0.13	0.13								
3	3	4	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
3	3	14	0.13	0.13	0.13							

INTERMEDIATE REPORT

BOD Settling Rate West Atchafalaya Floodway (Subsegment 010301)

per day Simulation for Subsegment 010301 - TMDL

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	0.00									
2	2	2	0.00	0.00								
3	3	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	3	14	0.00	0.00	0.00							

INTERMEDIATE REPORT

Ammonia Decay Rate West Atchafalaya Floodway (Subsegment 010301)

per day Simulation for Subsegment 010301 - TMDL

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	0.20									
2	2	2	0.41	0.41								
3	3	4	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.41
3	3	14	0.41	0.41	0.41							

INTERMEDIATE REPORT

Sediment Oxygen Demand West Atchafalaya Floodway (Subsegment 010301)

$g/m^2/d$ Simulation for Subsegment 010301 - TMDL

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
1	1	1	2.82									
2	2	2	3.75	3.75								
3	3	4	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
3	3	14	0.19	0.19	0.19							

CONDENSED CAPSULE SUMMARY FOR Lake Henderson

DIST km	FLOW m^3/s	TEMP deg C	SALN ppt	DO mg/L	EBOD1 mg/L	EBOD2 mg/L	ORGN mg/L	NH3 µg/L	CHLA 1/da	REAER RATE 1/da	BOD1 DECA 1/da	BOD1 SETT 1/da	BOD2 DECA 1/da	BOD2 SETT 1/da	NH3 DECA 1/da	SOD $g/m^2/d$
HDWTR	0.00283	30.00	0.00	5.00	20.00	0.00	0.50	0.10	30.00							
2.70	0.00293	30.00	0.00	5.13	2.03	0.00	0.00	0.04	25.00	0.26	0.13	0.00	0.00	0.00	0.20	2.82
2.65	0.00293	30.00	0.00	5.17	2.51	0.00	0.00	0.04	22.50	0.25	0.13	0.00	0.00	0.00	0.41	3.75
2.60	0.00293	30.00	0.00	5.27	3.23	0.00	0.01	0.04	20.00	0.25	0.13	0.00	0.00	0.00	0.41	3.75
2.40	0.00293	30.00	0.00	5.56	3.44	0.00	0.03	0.04	19.23	0.20	0.13	0.00	0.00	0.00	0.41	0.19
2.20	0.00293	30.00	0.00	5.88	3.83	0.00	0.06	0.04	18.46	0.20	0.13	0.00	0.00	0.00	0.42	0.19
2.00	0.00293	30.00	0.00	6.07	4.28	0.00	0.09	0.05	17.69	0.20	0.13	0.00	0.00	0.00	0.42	0.19
1.80	0.00293	30.00	0.00	6.16	4.79	0.00	0.12	0.05	16.92	0.20	0.13	0.00	0.00	0.00	0.42	0.19
1.60	0.00293	30.00	0.00	6.16	5.37	0.00	0.15	0.05	16.15	0.20	0.13	0.00	0.00	0.00	0.42	0.19
1.40	0.00293	30.00	0.00	6.09	6.04	0.00	0.19	0.06	15.38	0.20	0.13	0.00	0.00	0.00	0.42	0.19
1.20	0.00293	30.00	0.00	5.97	6.80	0.00	0.22	0.06	14.62	0.20	0.13	0.00	0.00	0.00	0.42	0.19
1.00	0.00293	30.00	0.00	5.80	7.67	0.00	0.26	0.07	13.85	0.20	0.13	0.00	0.00	0.00	0.42	0.19
0.80	0.00293	30.00	0.00	5.61	8.65	0.00	0.29	0.07	13.08	0.20	0.13	0.00	0.00	0.00	0.42	0.19
0.60	0.00293	30.00	0.00	5.41	9.76	0.00	0.33	0.08	12.31	0.20	0.13	0.00	0.00	0.00	0.41	0.19
0.40	0.00293	30.00	0.00	5.23	11.03	0.00	0.38	0.08	11.54	0.20	0.13	0.00	0.00	0.00	0.41	0.19
0.20	0.00293	30.00	0.00	5.08	12.46	0.00	0.42	0.09	10.77	0.20	0.13	0.00	0.00	0.00	0.41	0.19
0.00	0.00293	30.00	0.00	5.00	14.08	0.00	0.47	0.10	10.00	0.20	0.13	0.00	0.00	0.00	0.41	0.19

EXPANDED CAPSULE SUMMARY FOR Lake Henderson

IOR	REACH		DIST km	FLOW m³/s	TEMP deg C	SALN ppt	DO mg/L	EBOD1 mg/L	EBOD2 mg/L	ORG-N mg/L	NH3 mg/L	CHLA µg/L	DISP m²/s	DEPTH m	WIDTH m	ADVEC VELO m/s	MEAN VELO m/s	DO SAT mg/L	REAER RATE 1/da	BOD1 DECA 1/da	BOD1 SETT 1/da	BOD2 DECA 1/da	BOD2 SETT 1/da	NH3 DECA 1/da	SOD g/m²/d
			HDWTR	0.003	30.0	0.0	5.0	20.0	0.0	0.5	0.1	30.0													
			WASTELOAD # 001 (LA0051942) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG33A035) ENTERS HERE																						
			WASTELOAD # 001 (LAG33A578) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG33A580) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG33A933) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG530051) ENTERS HERE																						
			WASTELOAD # 001 (LAG530368) ENTERS HERE																						
			WASTELOAD # 001 (LAG532190) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG541369) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG560110) ENTERS HERE WITHOUT ANY FLOW																						
			WASTELOAD # 001 (LAG570243) ENTERS HERE WITHOUT ANY FLOW																						
1	1	1	2.70	0.003	30.0	0.0	5.1	2.0	0.0	0.0	0.0	25.0	4.0	1.222	300.0	0.000	0.000	7.6	0.256	0.13	0.00	0.00	0.00	0.20	2.82
2	2	2	2.65	0.003	30.0	0.0	5.2	2.5	0.0	0.0	0.0	22.5	4.0	1.22	21.0	0.000	0.000	7.6	0.246	0.13	0.00	0.00	0.00	0.41	3.75
3	2	2	2.60	0.003	30.0	0.0	5.3	3.2	0.0	0.0	0.0	20.0	4.0	1.22	21.0	0.000	0.000	7.6	0.246	0.13	0.00	0.00	0.00	0.41	3.75
4	3	3	2.40	0.003	30.0	0.0	5.6	3.4	0.0	0.0	0.0	19.2	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.41	0.19
5	3	3	2.20	0.003	30.0	0.0	5.9	3.8	0.0	0.1	0.0	18.5	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.42	0.19
6	3	3	2.00	0.003	30.0	0.0	6.1	4.3	0.0	0.1	0.0	17.7	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.42	0.19
7	3	3	1.80	0.003	30.0	0.0	6.2	4.8	0.0	0.1	0.0	16.9	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.42	0.19
8	3	3	1.60	0.003	30.0	0.0	6.2	5.4	0.0	0.2	0.1	16.2	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.42	0.19
9	3	3	1.40	0.003	30.0	0.0	6.1	6.0	0.0	0.2	0.1	15.4	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.42	0.19
10	3	3	1.20	0.003	30.0	0.0	6.0	6.8	0.0	0.2	0.1	14.6	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.42	0.19
11	3	3	1.00	0.003	30.0	0.0	5.8	7.7	0.0	0.3	0.1	13.8	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.42	0.19
12	3	3	0.80	0.003	30.0	0.0	5.6	8.6	0.0	0.3	0.1	13.1	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.42	0.19
13	3	3	0.60	0.003	30.0	0.0	5.4	9.8	0.0	0.3	0.1	12.3	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.41	0.19
14	3	3	0.40	0.003	30.0	0.0	5.2	11.0	0.0	0.4	0.1	11.5	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.41	0.19
15	3	3	0.20	0.003	30.0	0.0	5.1	12.5	0.0	0.4	0.1	10.8	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.41	0.19
16	3	3	0.00	0.003	30.0	0.0	5.0	14.1	0.0	0.5	0.1	10.0	4.0	1.22	21.0	0.000	0.000	7.6	0.197	0.13	0.00	0.00	0.00	0.41	0.19

SPECIAL REPORT: Lake Henderson

WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
1	2.700	30.00	0.0	0.0	0.0	5.13	2.03	0.00	2.03	0.00	0.00	0.04	0.00	0.04	0.00	25.0	0.0	0.	0.00
2	2.650	30.00	0.0	0.0	0.0	5.17	2.51	0.00	2.51	0.00	0.00	0.04	0.00	0.05	0.00	22.5	0.0	0.	0.00
3	2.600	30.00	0.0	0.0	0.0	5.27	3.23	0.00	3.23	0.00	0.01	0.04	0.00	0.05	0.00	20.0	0.0	0.	0.00
4	2.400	30.00	0.0	0.0	0.0	5.56	3.44	0.00	3.44	0.00	0.03	0.04	0.00	0.07	0.03	19.2	0.0	0.	0.00
5	2.200	30.00	0.0	0.0	0.0	5.88	3.83	0.00	3.83	0.00	0.06	0.04	0.00	0.10	0.06	18.5	0.0	0.	0.00
6	2.000	30.00	0.0	0.0	0.0	6.07	4.28	0.00	4.28	0.00	0.09	0.05	0.00	0.14	0.08	17.7	0.0	0.	0.00
7	1.800	30.00	0.0	0.0	0.0	6.16	4.79	0.00	4.79	0.00	0.12	0.05	0.00	0.17	0.11	16.9	0.0	0.	0.00
8	1.600	30.00	0.0	0.0	0.0	6.16	5.37	0.00	5.37	0.00	0.15	0.05	0.00	0.20	0.14	16.2	0.0	0.	0.00
9	1.400	30.00	0.0	0.0	0.0	6.09	6.04	0.00	6.04	0.00	0.19	0.06	0.00	0.24	0.17	15.4	0.0	0.	0.00
10	1.200	30.00	0.0	0.0	0.0	5.97	6.80	0.00	6.80	0.00	0.22	0.06	0.00	0.28	0.19	14.6	0.0	0.	0.00
11	1.000	30.00	0.0	0.0	0.0	5.80	7.67	0.00	7.67	0.00	0.26	0.07	0.00	0.32	0.22	13.8	0.0	0.	0.00
12	0.800	30.00	0.0	0.0	0.0	5.61	8.65	0.00	8.65	0.00	0.29	0.07	0.00	0.37	0.25	13.1	0.0	0.	0.00
13	0.600	30.00	0.0	0.0	0.0	5.41	9.76	0.00	9.76	0.00	0.33	0.08	0.00	0.41	0.28	12.3	0.0	0.	0.00
14	0.400	30.00	0.0	0.0	0.0	5.23	11.03	0.00	11.03	0.00	0.38	0.08	0.00	0.46	0.30	11.5	0.0	0.	0.00
15	0.200	30.00	0.0	0.0	0.0	5.08	12.46	0.00	12.46	0.00	0.42	0.09	0.00	0.51	0.33	10.8	0.0	0.	0.00
16	0.000	30.00	0.0	0.0	0.0	5.00	14.08	0.00	14.08	0.00	0.47	0.10	0.00	0.57	0.36	10.0	0.0	0.	0.00

SPECIAL REPORT: Lake Henderson

BIOLOGICAL AND PHYSICAL COEFFICIENTS

ELEM NO.	ENDING DIST km	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#1 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	FULL SOD *	CORR SOD *	ORG-N DECAY 1/da	ORG-N SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
1	2.700	7.56	0.26	0.13	0.00	0.00	0.00	0.00	0.00	2.82	2.82	0.06	0.00	0.20	0.01	0.00	0.00	1.98	0.00	0.00	0.00	0.00
2	2.650	7.56	0.25	0.13	0.00	0.00	0.00	0.00	0.00	3.75	3.75	0.06	0.00	0.41	0.01	0.00	0.00	1.78	0.00	0.00	0.00	0.00

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   3    2.600  7.56    0.25  0.13  0.00   0.00  0.00  0.00   0.00  3.75  3.75   0.06  0.00   0.41  0.01   0.00  0.00  1.58  0.00   0.00   0.00  0.00
   4    2.400  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.41  0.01   0.00  0.00  1.52  0.00   0.00   0.00  0.00
   5    2.200  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.42  0.01   0.00  0.00  1.46  0.00   0.00   0.00  0.00
   6    2.000  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.42  0.01   0.00  0.00  1.40  0.00   0.00   0.00  0.00
   7    1.800  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.42  0.01   0.00  0.00  1.34  0.00   0.00   0.00  0.00
   8    1.600  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.42  0.01   0.00  0.00  1.28  0.00   0.00   0.00  0.00
   9    1.400  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.42  0.01   0.00  0.00  1.22  0.00   0.00   0.00  0.00
  10    1.200  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.42  0.01   0.00  0.00  1.16  0.00   0.00   0.00  0.00
  11    1.000  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.42  0.01   0.00  0.00  1.10  0.00   0.00   0.00  0.00
  12    0.800  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.42  0.01   0.00  0.00  1.04  0.00   0.00   0.00  0.00
  13    0.600  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.41  0.01   0.00  0.00  0.97  0.00   0.00   0.00  0.00
  14    0.400  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.41  0.01   0.00  0.00  0.91  0.00   0.00   0.00  0.00
  15    0.200  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.41  0.01   0.00  0.00  0.85  0.00   0.00   0.00  0.00
  16    0.000  7.56    0.20  0.13  0.00   0.00  0.00  0.00   0.00  0.19  0.19   0.06  0.00   0.41  0.01   0.00  0.00  0.79  0.00   0.00   0.00  0.00
 SPECIAL REPORT: Lake Henderson
 HYDRAULIC PARAMETER VALUES
 ELEM   BEGIN  ENDING       FLOW  ADVCTV   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST                VELO                                AREA    AREA     PRISM    VELO               VELO
          km      km        m³/s     m/s       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
    1    6.50    2.70      0.0029   0.000    1.22  2300.0 10662800.  8740000.0  2806.0        0.   0.000     4.000   0.000
    2    2.70    2.65      0.0029   0.000    1.22    21.0     1281.     1050.0    25.6        0.   0.000     4.000   0.000
    3    2.65    2.60      0.0029   0.000    1.22    21.0     1281.     1050.0    25.6        0.   0.000     4.000   0.000
    4    2.60    2.40      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    5    2.40    2.20      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    6    2.20    2.00      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    7    2.00    1.80      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    8    1.80    1.60      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
    9    1.60    1.40      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   10    1.40    1.20      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   11    1.20    1.00      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   12    1.00    0.80      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   13    0.80    0.60      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   14    0.60    0.40      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   15    0.40    0.20      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
   16    0.20    0.00      0.0029   0.000    1.22    21.0     5124.     4200.0    25.6        0.   0.000     4.000   0.000
FINAL REPORT    Lake Henderson                                  West Atchafalaya Floodway  (Subsegment 010301)
REACH NO.  1    Lake Henderson                                   Simulation for Subsegment 010301 - TMDL
 ********************************************************** REACH INPUTS **********************************************************
 ELEM  TYPE        FLOW     TEMP     SALN     CM-I    CM-II     DO  BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   PHOS  CHL A     COLI      NCM
 NO.                       deg C      ppt                      mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L  #/100mL
    1  HDWTR     0.00283   30.00     0.00     0.00     0.00   5.00  20.00   0.00  20.00   0.00   0.50   0.10   0.04   0.00  30.00     0.00     0.00
    1  WSTLD     0.00002   30.00     0.00     0.00     0.00   5.00 103.50   0.00 103.50   0.00   7.50  15.00   0.00   0.00   0.00     0.00     0.00
    1  WSTLD     0.00003   30.00     0.00     0.00     0.00   5.00 103.50   0.00 103.50   0.00   7.50  15.00   0.00   0.00   0.00     0.00     0.00
    1  WSTLD     0.00005   30.00     0.00     0.00     0.00   5.00  69.00   0.00  69.00   0.00   5.00  10.00   0.00   0.00   0.00     0.00     0.00
 ********************************************** HYDRAULIC PARAMETER VALUES **********************************************
 ELEM   BEGIN  ENDING       FLOW   PCT   ADVCTV    TRAVEL   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST              EFF     VELO      TIME                                  AREA    AREA     PRISM    VELO               VELO
          km      km        m³/s            m/s      days       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
    1    6.50    2.70    0.00293   3.4   0.00000 42120.16    1.22 2300.00********** 8740000.00 2806.00      0.00   0.000     4.000   0.000
  TOT                                             42120.16               10662800.00 8740000.00
  AVG                                     0.0000              1.22 2300.00                      2806.00
  CUM                                             42120.16
 ********************************************** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********************************************
 ELEM  ENDING  SAT    REAER  BOD#1 BOD#1 ABOD#1  BOD#2 BOD#2 ABOD#2  BKGD  FULL  CORR   ORGN  ORGN    NH3   NH3  DENIT   PO4   ALG   MAC   COLI    NCM
NCM
 NO.     DIST  D.O.    RATE  DECAY  SETT  DECAY  DECAY  SETT  DECAY   SOD   SOD   SOD  DECAY  SETT  DECAY  SRCE   RATE  SRCE  PROD  PROD  DECAY  DECAY
SETT
               mg/L    1/da   1/da  1/da   1/da   1/da  1/da   1/da     *     *     *   1/da  1/da   1/da     *   1/da     *    **    **   1/da   1/da
1/da
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   1    2.700  7.56    0.26   0.13  0.00   0.00   0.00  0.00   0.00  2.82  2.82  2.82   0.06  0.00   0.20  0.01   0.00  0.00  1.98  0.00   0.00   0.00
0.00
 AVG 20 DEG C RATE     0.21   0.08  0.00   0.00   0.00  0.00   0.00  1.50               0.05  0.00   0.10  0.00   0.05  0.00               0.00   0.00
0.00
 *   g/m²/d            **   mg/L/day
 ********************************************** WATER QUALITY CONSTITUENT VALUES **********************************************
 ELEM  ENDING   TEMP  SALN     CM-I    CM-II    DO   BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   TOTN   PHOS  CHL A   MACRO     COLI      NCM
 NO.     DIST  DEG C   PPT                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L    g/m³  #/100mL
   1    2.700  30.00  0.00     0.00     0.00   5.13   2.03   0.00   2.03   0.00   0.00   0.04   0.00   0.04   0.00  25.00    0.00       0.    0.00
FINAL REPORT    Lake Henderson                                  West Atchafalaya Floodway  (Subsegment 010301)
REACH NO.  2    Butte La Rose Bayou                              Simulation for Subsegment 010301 - TMDL
 ******************************************************** REACH INPUTS ********************************************************
 ELEM  TYPE         FLOW     TEMP     SALN     CM-I    CM-II     DO  BOD#1  BOD#2 EBOD#2 EBOD#2   ORGN    NH3  NO3+2   PHOS  CHL A     COLI      NCM
 NO.                        deg C      ppt                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L  #/100mL
    2  UPR RCH   0.00293   30.00     0.00     0.00     0.00   5.13   2.03   0.00   2.03   0.00   0.00   0.04   0.00   0.00  25.00     0.00    0.00
 ************************************************ HYDRAULIC PARAMETER VALUES ************************************************
 ELEM   BEGIN  ENDING       FLOW   PCT   ADVCTV    TRAVEL   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST               EFF     VELO      TIME                                  AREA    AREA     PRISM    VELO               VELO
          km      km        m³/s             m/s      days       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
    2    2.70    2.65    0.00293   3.4   0.00011      5.06    1.22   21.00   1281.00    1050.00   25.62      0.00   0.000     4.000   0.000
    3    2.65    2.60    0.00293   3.4   0.00011      5.06    1.22   21.00   1281.00    1050.00   25.62      0.00   0.000     4.000   0.000
  TOT                                             10.12                        2562.00    2100.00
  AVG                                     0.0001              1.22   21.00                          25.62
  CUM                                   42130.27
 ******************************************** BIOLOGICAL AND PHYSICAL COEFFICIENTS ********************************************
 ELEM  ENDING  SAT    REAER  BOD#1 BOD#1 ABOD#1  BOD#2 BOD#2 ABOD#2  BKGD  FULL  CORR   ORGN  ORGN    NH3   NH3  DENIT   PO4   ALG   MAC   COLI    NCM
NCM
 NO.     DIST  D.O.    RATE  DECAY  SETT  DECAY  DECAY  SETT  DECAY   SOD   SOD   SOD  DECAY  SETT  DECAY  SRCE   RATE  SRCE  PROD  PROD  DECAY  DECAY
SETT
               mg/L    1/da   1/da  1/da   1/da   1/da  1/da   1/da     *     *     *   1/da  1/da   1/da     *    1/da     *    **    **    1/da   1/da
1/da
   2    2.650  7.56    0.25   0.13  0.00   0.00   0.00  0.00   0.00  3.75  3.75  3.75   0.06  0.00   0.41  0.01   0.00  0.00  1.78  0.00   0.00   0.00
0.00
   3    2.600  7.56    0.25   0.13  0.00   0.00   0.00  0.00   0.00  3.75  3.75  3.75   0.06  0.00   0.41  0.01   0.00  0.00  1.58  0.00   0.00   0.00
0.00
 AVG 20 DEG C RATE     0.20   0.08  0.00   0.00   0.00  0.00   0.00  2.00               0.05  0.00   0.20  0.00   0.05  0.00               0.00   0.00
0.00
 *   g/m²/d            **   mg/L/day
 ********************************************** WATER QUALITY CONSTITUENT VALUES **********************************************
 ELEM  ENDING   TEMP  SALN     CM-I    CM-II    DO   BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   TOTN   PHOS  CHL A   MACRO     COLI      NCM
 NO.     DIST  DEG C   PPT                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L    g/m³  #/100mL
   2    2.650  30.00  0.00     0.00     0.00   5.17   2.51   0.00   2.51   0.00   0.00   0.04   0.00   0.05   0.00  22.50    0.00       0.    0.00
   3    2.600  30.00  0.00     0.00     0.00   5.27   3.23   0.00   3.23   0.00   0.01   0.04   0.00   0.05   0.00  20.00    0.00       0.    0.00
FINAL REPORT    Lake Henderson                                  West Atchafalaya Floodway  (Subsegment 010301)
REACH NO.  3    Butte La Rose Bayou                              Simulation for Subsegment 010301 - TMDL
 ******************************************************** REACH INPUTS ********************************************************
 ELEM  TYPE         FLOW     TEMP     SALN     CM-I    CM-II     DO  BOD#1  BOD#2 EBOD#1 EBOD#2   ORGN    NH3  NO3+2   PHOS  CHL A     COLI      NCM
 NO.                        deg C      ppt                     mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   mg/L   µg/L  #/100mL
    4  UPR RCH   0.00293   30.00     0.00     0.00     0.00   5.27   3.23   0.00   3.23   0.00   0.01   0.04   0.00   0.00  20.00     0.00    0.00
 ************************************************ HYDRAULIC PARAMETER VALUES ************************************************
 ELEM   BEGIN  ENDING       FLOW   PCT   ADVCTV    TRAVEL   DEPTH   WIDTH    VOLUME    SURFACE  X-SECT     TIDAL   TIDAL   DISPRSN    MEAN
  NO.    DIST    DIST               EFF     VELO      TIME                                  AREA    AREA     PRISM    VELO               VELO
          km      km        m³/s             m/s      days       m       m        m³         m²      m²        m³     m/s      m²/s     m/s
    4    2.60    2.40    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
    5    2.40    2.20    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
    6    2.20    2.00    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
    7    2.00    1.80    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
    8    1.80    1.60    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
    9    1.60    1.40    0.00293   3.4   0.00011     20.24    1.22   21.00   5124.00    4200.00   25.62      0.00   0.000     4.000   0.000
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10	1.40	1.20	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000						
11	1.20	1.00	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000						
12	1.00	0.80	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000						
13	0.80	0.60	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000						
14	0.60	0.40	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000						
15	0.40	0.20	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000						
16	0.20	0.00	0.00293	3.4	0.00011	20.24	1.22	21.00	5124.00	4200.00	25.62	0.00	0.000	4.000	0.000						
TOT						263.13			66612.00	54600.00											
AVG					0.0001		1.22	21.00			25.62										
CUM						42393.42															

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAY	BOD#1 SETT	ABOD#1 DECAY	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NCM DECAY	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
4	2.400	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.41	0.01	0.00	0.00	1.52	0.00	0.00	0.00	0.00
5	2.200	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.42	0.01	0.00	0.00	1.46	0.00	0.00	0.00	0.00
6	2.000	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.42	0.01	0.00	0.00	1.40	0.00	0.00	0.00	0.00
7	1.800	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.42	0.01	0.00	0.00	1.34	0.00	0.00	0.00	0.00
8	1.600	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.42	0.01	0.00	0.00	1.28	0.00	0.00	0.00	0.00
9	1.400	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.42	0.01	0.00	0.00	1.22	0.00	0.00	0.00	0.00
10	1.200	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.42	0.01	0.00	0.00	1.16	0.00	0.00	0.00	0.00
11	1.000	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.42	0.01	0.00	0.00	1.10	0.00	0.00	0.00	0.00
12	0.800	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.42	0.01	0.00	0.00	1.04	0.00	0.00	0.00	0.00
13	0.600	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.41	0.01	0.00	0.00	0.97	0.00	0.00	0.00	0.00
14	0.400	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.41	0.01	0.00	0.00	0.91	0.00	0.00	0.00	0.00
15	0.200	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.41	0.01	0.00	0.00	0.85	0.00	0.00	0.00	0.00
16	0.000	7.56	0.20	0.13	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.06	0.00	0.41	0.01	0.00	0.00	0.79	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.16	0.08	0.00	0.00	0.00	0.00	0.00	0.10			0.05	0.00	0.20	0.00	0.05	0.00			0.00	0.00	0.00

* $g/m^2/d$ ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m^3	COLI #/100mL	NCM
4	2.400	30.00	0.00	0.00	0.00	5.56	3.44	0.00	3.44	0.00	0.03	0.04	0.00	0.07	0.03	19.23	0.00	0.	0.00
5	2.200	30.00	0.00	0.00	0.00	5.88	3.83	0.00	3.83	0.00	0.06	0.04	0.00	0.10	0.06	18.46	0.00	0.	0.00
6	2.000	30.00	0.00	0.00	0.00	6.07	4.28	0.00	4.28	0.00	0.09	0.05	0.00	0.14	0.08	17.69	0.00	0.	0.00
7	1.800	30.00	0.00	0.00	0.00	6.16	4.79	0.00	4.79	0.00	0.12	0.05	0.00	0.17	0.11	16.92	0.00	0.	0.00
8	1.600	30.00	0.00	0.00	0.00	6.16	5.37	0.00	5.37	0.00	0.15	0.05	0.00	0.20	0.14	16.15	0.00	0.	0.00
9	1.400	30.00	0.00	0.00	0.00	6.09	6.04	0.00	6.04	0.00	0.19	0.06	0.00	0.24	0.17	15.38	0.00	0.	0.00
10	1.200	30.00	0.00	0.00	0.00	5.97	6.80	0.00	6.80	0.00	0.22	0.06	0.00	0.28	0.19	14.62	0.00	0.	0.00
11	1.000	30.00	0.00	0.00	0.00	5.80	7.67	0.00	7.67	0.00	0.26	0.07	0.00	0.32	0.22	13.85	0.00	0.	0.00
12	0.800	30.00	0.00	0.00	0.00	5.61	8.65	0.00	8.65	0.00	0.29	0.07	0.00	0.37	0.25	13.08	0.00	0.	0.00
13	0.600	30.00	0.00	0.00	0.00	5.41	9.76	0.00	9.76	0.00	0.33	0.08	0.00	0.41	0.28	12.31	0.00	0.	0.00

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  14    0.400  30.00  0.00     0.00     0.00   5.23  11.03   0.00  11.03   0.00   0.38   0.08   0.00   0.46   0.30  11.54    0.00       0.    0.00
  15    0.200  30.00  0.00     0.00     0.00   5.08  12.46   0.00  12.46   0.00   0.42   0.09   0.00   0.51   0.33  10.77    0.00       0.    0.00
  16    0.000  30.00  0.00     0.00     0.00   5.00  14.08   0.00  14.08   0.00   0.47   0.10   0.00   0.57   0.36  10.00    0.00       0.    0.00
STREAM SUMMARY                                                    West Atchafalaya Floodway  (Subsegment 010301)
Lake Henderson                                                     Simulation for Subsegment 010301 - TMDL
 TRAVEL TIME       =       42393.42 DAYS
 MAXIMUM EFFLUENT  =           3.41 PERCENT
 FLOW              =   0.00293 TO    0.00293   m³/s
 DISPERSION        =   4.0000  TO    4.0000    m²/s
 VELOCITY          =   0.00000 TO    0.00011   m/s
 DEPTH             =   1.22    TO    1.22      m
 WIDTH             =  21.00    TO  ******      m
 BOD DECAY         =    0.13   TO    0.13      per day
 NH3 DECAY         =    0.20   TO    0.42      per day
 SOD               =    0.19   TO    3.75      g/m²/d
 NH3 SOURCE        =    0.01   TO    0.01      g/m²/d
 REAERATION        =    0.20   TO    0.26      per day
 BOD SETTLING      =    0.00   TO    0.00      per day
 ORG-N DECAY       =    0.06   TO    0.06      per day
 ORG-N SETTLING    =    0.00   TO    0.00      per day
 TEMPERATURE       =   30.00   TO   30.00      deg C
 DISSOLVED OXYGEN  =    5.00   TO    6.16      mg/L
West Atchafalaya Floodway  (Subsegment 010301)
 Simulation for Subsegment 010301 - TMDL
REACH SUMMARY REPORT FOR Lake Henderson
 RCH REACH NAME                            BEGIN    ENDING    REACH   TRAVEL   FLOW AT    AVERAGE     AVG     AVG   FLOW AT    AVERAGE     AVG     AVG
 NO.                                        DIST      DIST   LENGTH     TIME       EOR       VELO   DEPTH   WIDTH       EOR       VELO   DEPTH   WIDTH
                                             km        km       km     days      m3/s        m/s       m       m       cfs        fps      ft      ft
   1 Lake Henderson                         6.50      2.70     3.80 42120.16   0.00293    0.00000   1.220 2300.00     0.103      0.000   4.003 7546.30
   2 Butte La Rose Bayou                    2.70      2.60     0.10    10.12   0.00293    0.00011   1.220   21.00     0.103      0.000   4.003   68.90
   3 Butte La Rose Bayou                    2.60      0.00     2.60   263.13   0.00293    0.00011   1.220   21.00     0.103      0.000   4.003   68.90
DISSOLVED OXYGEN LOADING FOR REACH   1: Lake Henderson
 IOR   UPMN    UPTR    LOWR  UPMN  UPTR  LOWR  INCR  INCR  NONP  WSLD  WITH  REAE  BOD1 NH3-N ORG-N   NCM   SOD   SOD   SOD   SOD   ALG   ALG   MAC
TOT     TOT
        ADV     ADV     ADV  DISP  DISP  DISP    IN   OUT    IN    IN   OUT    IN  DECA  DECA  DECA  DECA  BKGD  BOD1   ALG   NCM  PHOT  RESP  PHOT
OUT      IN
   1      1.      0.     -1.    0.    0.   17.    0.    0.    0.    0.    0. 6631.-2744. -393.    0.    0.******    0.    0.    0.21098.    0.    0. -
27747.8  27747.6  -0.17
   2      1.      0.     -1.  -17.    0.   19.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.   -4.    0.    0.    0.    2.    0.    0.    -
22.9     22.9   0.00
   3      1.      0.     -1.  -19.    0.   20.    0.    0.    0.    0.    0.    1.   -1.    0.    0.    0.   -4.    0.    0.    0.    2.    0.    0.    -
24.4     24.4   0.00
   4      1.      0.     -1.  -20.    0.   14.    0.    0.    0.    0.    0.    2.   -2.    0.    0.    0.   -1.    0.    0.    0.    8.    0.    0.    -
25.2     25.2   0.00
   5      1.      0.     -1.  -14.    0.    9.    0.    0.    0.    0.    0.    2.   -2.    0.    0.    0.   -1.    0.    0.    0.    7.    0.    0.    -
19.2     19.2   0.00
   6      1.      0.     -2.   -9.    0.    4.    0.    0.    0.    0.    0.    2.   -3.    0.    0.    0.   -1.    0.    0.    0.    7.    0.    0.    -
14.2     14.2   0.00
   7      2.      0.     -2.   -4.    0.    0.    0.    0.    0.    0.    0.    1.   -3.    0.    0.    0.   -1.    0.    0.    0.    7.    0.    0.     -
9.9      9.9   0.00
   8      2.      0.     -2.    0.    0.   -3.    0.    0.    0.    0.    0.    1.   -3.    0.    0.    0.   -1.    0.    0.    0.    7.    0.    0.     -
9.5      9.5   0.00
   9      2.      0.     -2.    3.    0.   -6.    0.    0.    0.    0.    0.    1.   -4.   -1.    0.    0.   -1.    0.    0.    0.    6.    0.    0.    -
12.4     12.4   0.00
  10      2.      0.     -2.    6.    0.   -7.    0.    0.    0.    0.    0.    2.   -4.   -1.    0.    0.   -1.    0.    0.    0.    6.    0.    0.    -
14.7     14.7   0.00
  11      2.      0.     -1.    7.    0.   -8.    0.    0.    0.    0.    0.    2.   -5.   -1.    0.    0.   -1.    0.    0.    0.    6.    0.    0.    -
16.3     16.3   0.00
```

```
  12      1.      0.     -1.    8.    0.   -9.    0.    0.    0.    0.    0.    2.   -6.   -1.    0.    0.   -1.    0.    0.    0.    5.    0.    0.    -
17.2     17.2   0.00
  13      1.      0.     -1.    9.    0.   -8.    0.    0.    0.    0.    0.    2.   -6.   -1.    0.    0.   -1.    0.    0.    0.    5.    0.    0.    -
17.3     17.3   0.00
  14      1.      0.     -1.    8.    0.   -7.    0.    0.    0.    0.    0.    2.   -7.   -1.    0.    0.   -1.    0.    0.    0.    5.    0.    0.    -
16.5     16.5   0.00
  15      1.      0.     -1.    7.    0.   -4.    0.    0.    0.    0.    0.    3.   -8.   -1.    0.    0.   -1.    0.    0.    0.    4.    0.    0.    -
14.7     14.7   0.00
  16      1.      0.     -1.    4.    0.    0.    0.    0.    0.    0.    0.    3.   -9.   -1.    0.    0.   -1.    0.    0.    0.    4.    0.    0.    -
12.1     12.1   0.00
 West Atchafalaya Floodway  (Subsegment 010301)
  Simulation for Subsegment 010301 - TMDL
INPUT/OUTPUT LOADING SUMMARY
                                    FLOW          DO     BOD#1     BOD#2     ORG-N     NH3-N     NO3-N      PHOS     CHL A       NCM
                                    m³/s        kg/d      kg/d      kg/d      kg/d      kg/d      kg/d      kg/d
 HEADWATER FLOW                    0.003         1.2       4.9       0.0       0.1       0.0       0.0       0.0       0.0       0.0
 INCREMENTAL INFLOW                0.000         0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 INCREMENTAL OUTFLOW               0.000         0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 WASTELOADS                        0.000         0.0       0.7       0.0       0.1       0.1       0.0       0.0       0.0       0.0
 WITHDRAWLS                        0.000         0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 FLOW THRU LOWER BNDRY            -0.003        -1.3      -3.6       0.0      -0.1       0.0       0.0       0.0       0.0       0.0
 DISPERSION THRU LOWER BNDRY                     0.4      81.4       0.0       2.3       0.3       3.5       0.0       0.0       0.0
 DISPERSION THRU HDWTR BNDRY                     0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 NON-POINT INPUT                                 0.0    2725.0       0.0       0.0                                             0.0
 NATURAL REAERATION                           6656.9
 DAM REAERATION                                  0.0
 BACKGROUND SOD                             -24627.4
 BOD#1 DECAY                                 -2808.5   -2808.5
 BOD#1 SETTLING                                  0.0       0.0
 ANAEROBIC BOD#1 DECAY                                     0.0
 BOD#2 DECAY                                     0.0                 0.0
 BOD#2 SETTLING                                  0.0                 0.0
 ANAEROBIC BOD#2 DECAY                                               0.0
 ORG-N DECAY                                     0.0                           -2.4       2.4
 ORG-N SETTLING                                                         0.0       0.0
 NH3 DECAY                                    -401.2                                  -92.7      92.7
 BACKGROUND NH3 SOURCE                                                                   89.8
 OTHER DENITRIFICATION                                                                            0.0
 PHOSPHORUS SOURCE                                                                                       0.0
 ALGAE PHOTOSYNTHESIS                         21179.7                                     0.0   -1059.0       0.0       0.0
 ALGAE RESPIRATION                               0.0                                      0.0                 0.0       0.0
 ALGAE SETTLING                                  0.0                                                                 0.0
 MACRO PHOTOSYNTHESIS                            0.0                                      0.0       0.0       0.0
 NCM DECAY                                       0.0                                                                           0.0
 NCM SETTLING                                    0.0                                                                           0.0
 TOTAL INPUTS                      0.003     27838.3    2812.0       0.0       2.5      92.7      96.2       0.0       0.0       0.0
 TOTAL OUTPUTS                    -0.003    -27838.4   -2812.0       0.0      -2.5     -92.7   -1059.0       0.0       0.0       0.0
 NET CONVERGENCE ERROR             0.000        -0.1       0.0       0.0       0.0       0.0    -962.8       0.0       0.0       0.0
     .....EXECUTION COMPLETED
```

APPENDIX C:
MODEL PLOTS

Figure C-1. Calibration DO modeling results. 1
Figure C-2. Baseline DO modeling results. 2
Figure C-3. TMDL DO modeling results. 3

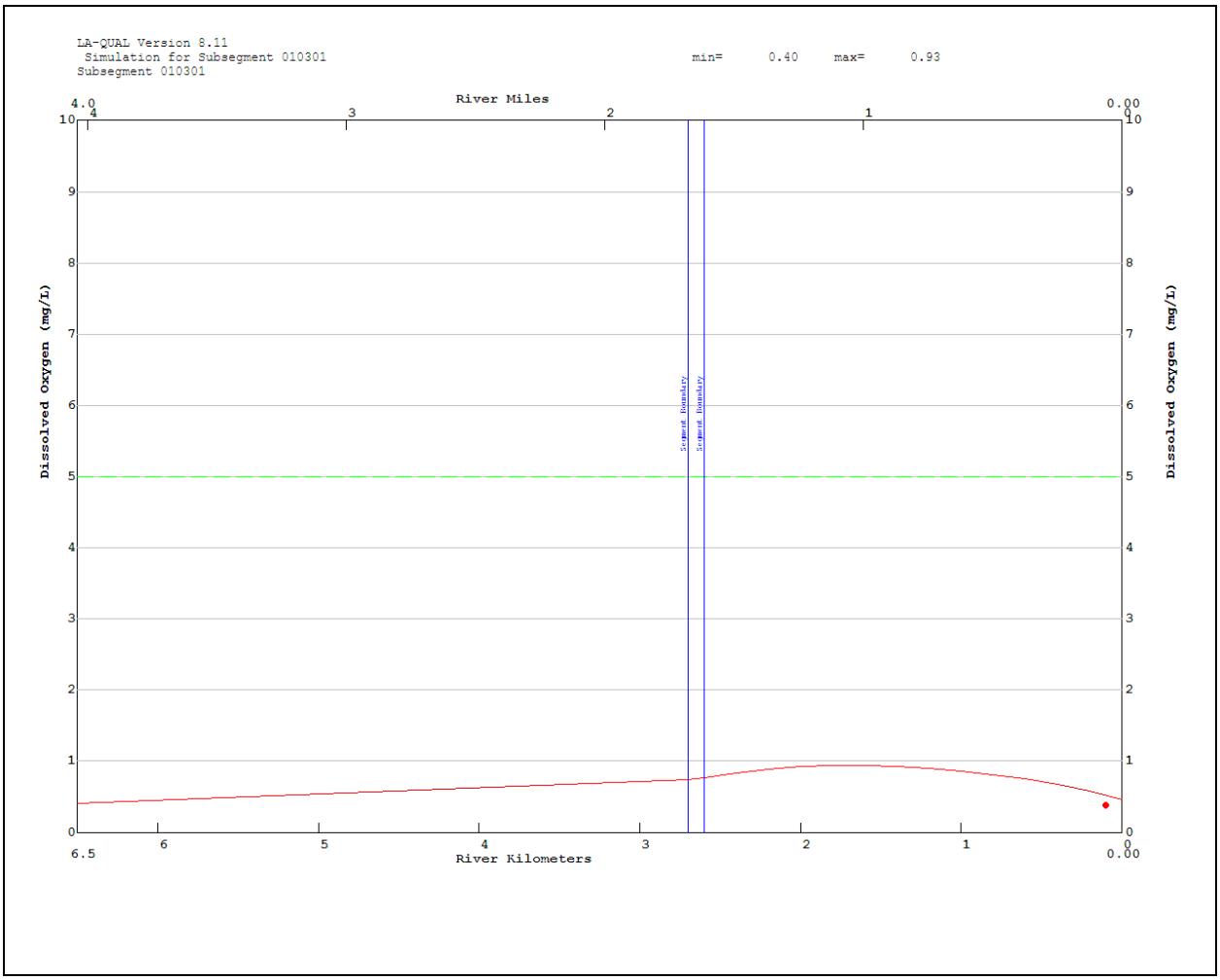

Figure C-1. Calibration DO modeling results.

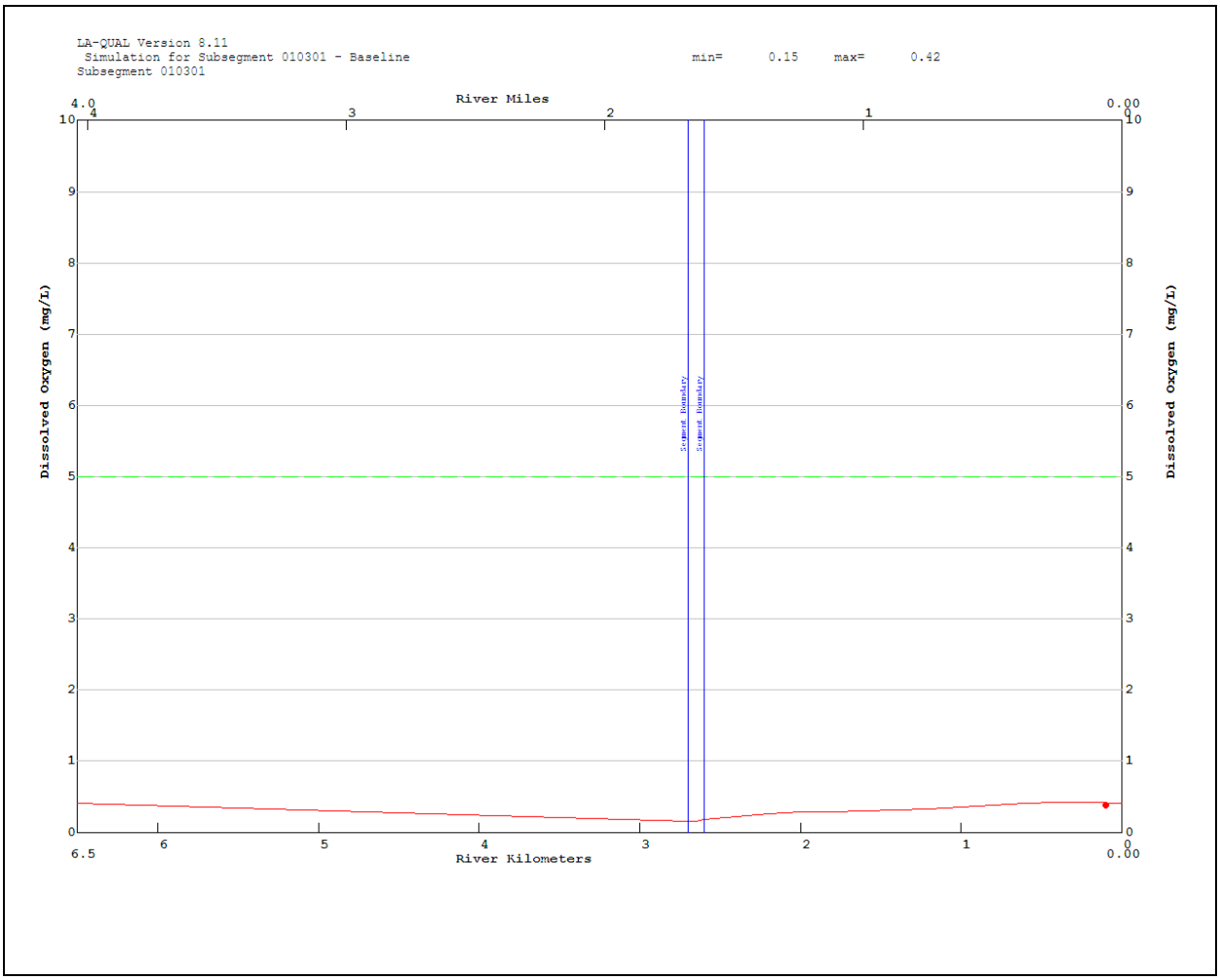

Figure C-2. Baseline DO modeling results.

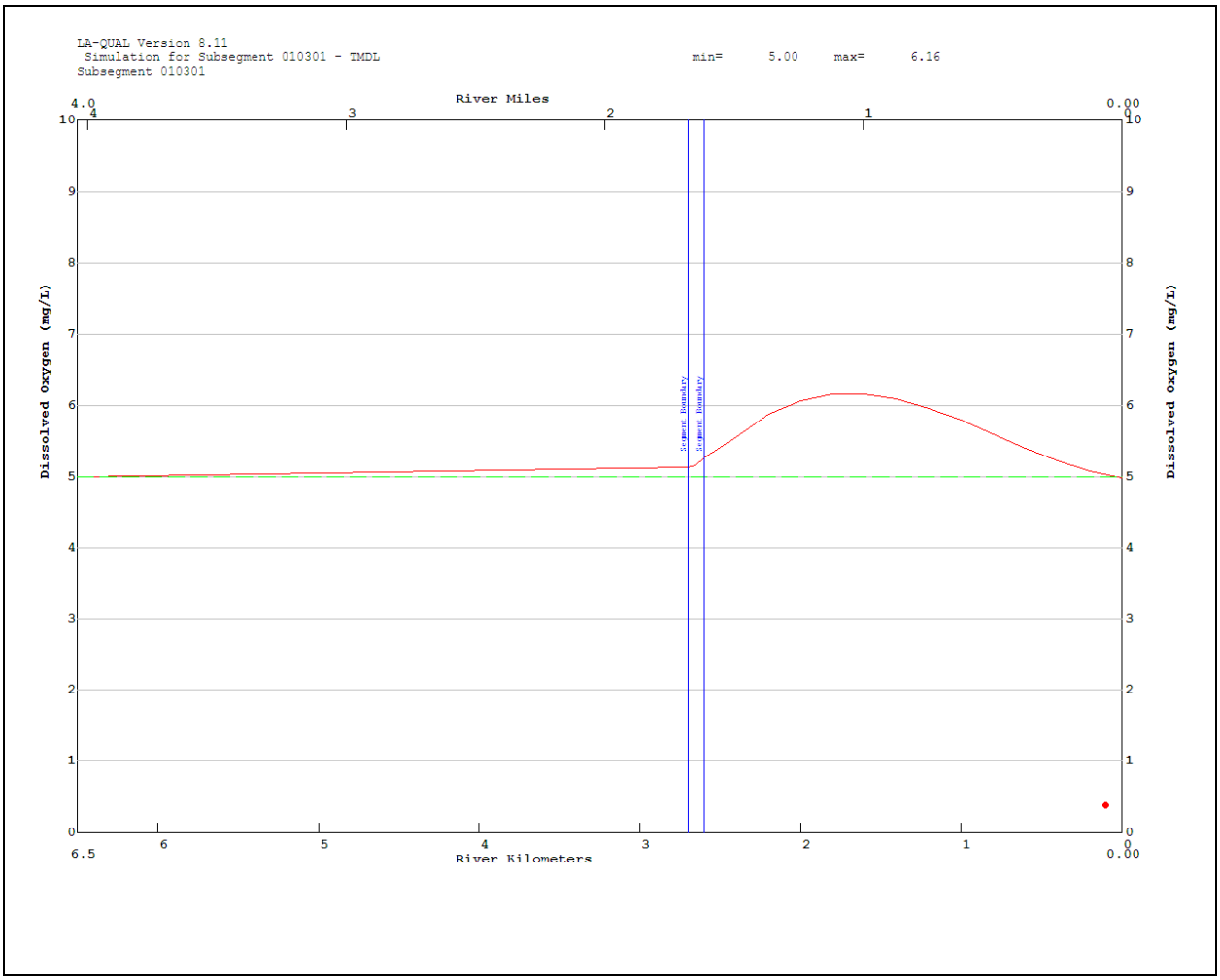

Figure C-3. TMDL DO modeling results.

APPENDIX D:
RESPONSE TO PUBLIC COMMENTS

Public Comments from Louisiana Department of Environmental Quality. 2

Public Comments from Louisiana Department of Environmental Quality.

DRAFT TMDLs for Dissolved Oxygen in the West Atchafalaya Basin Floodway-Simmesport to Butte La Rose Bay and Henderson Lake, Louisiana (010301)
By – Tetra Tech, Inc., February 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.

- LDEQ believes that a Use Attainability Analysis (UAA) or a Watershed Plan would be more appropriate actions for addressing the water quality problems with Subsegment 010301 than a TMDL. Subsegment 010301 serves as a floodway for the Atchafalaya River. The subsegment is bordered on the north, east, and west sides by flood protection levees. There are control structures located north of Krotz Springs that pump water from the Atchafalaya River into a canal within subsegment 010301. This canal carries the water westward across Subsegment 010301. From there, the water is pumped into the Bayou des Glaises Diversion Channel which is in Subsegment 060207. This channel leads to Darbonne Bay and Bayou Courtableau. The flow eventually reaches Bayou Tech and the Vermilion River and is a critical component of for the improved water quality in both of those waterbodies. Within Subsegment 010301, State Canal extends from the northeast part of the subsegment down to a control structure at Darbonne Bay near US-190. This structure also allows the water to flow into Darbonne Bay and Bayou Courtableau. The channel also extends farther south in Subsegment 010301. There is another control structure south of US 190 that connects Bayou Courtableau in Subsegment 060204 to the Bayou Courtableau outlet Channel in Subsegment 010301. The primary purpose of this channel is to allow water to flow from Bayou Courtableau into Subsegment 010301 during flood conditions in Bayou Courtableau. From there, the flow may continue southward through the floodway to Henderson Lake and out of the subsegment through the canal along the West Atchafalaya Protection Levee Canal at the Ambient WQN Site 3579. However, the water may flow out of Subsegment 010301 through this lower structure due to backwater flooding in the Atchafalaya River. As the flow goes southward out of Subsegment 010301, it enters Subsegment 010501. However, Subsegment 010501 is also bordered by levees to the east and west. The area is primarily natural backwater swamp land surrounding the Atchafalaya River. Both

subsegments 010301 and 010501 are largely unpopulated and there appears to be a minimal number of dischargers. Many of the interspersed water bodies are only connected during flood events. Otherwise they are mostly isolated from each other and the outside world. LDEQ believes that a TMDL cannot provide the intended benefits. Point source dischargers are extremely sparse and small. Some of them discharge directly to water bodies like the Atchafalaya River or the Intercoastal Waterway. EPA and its contractors should take more time to understand such a complex system before undertaking activities such as TMDL development. LDEQ recommends that subsegment 010301 be removed from the 303d list and the TMDL not be approved, in lieu of more appropriate actions such as a UAA or Watershed Plan.

EPA Response: In 1996, two Louisiana environmental groups, the Sierra Club and Louisiana Environmental Action Network (plaintiffs), filed a lawsuit in Federal Court against EPA, styled Sierra Club, et al. v. Clifford et al., No. 96-0527, (E.D. La.). Among other claims, plaintiffs alleged that EPA failed to establish Louisiana TMDLs in a timely manner. EPA established this TMDL pursuant to a consent decree entered in this lawsuit. EPA recommends that the actions included in Section 6.1 of the TMDL take place post-TMDL to resolve these uncertainties.

LDEQ objects to the development of a model and TMDL based on no hydrologic data and water quality data collected at one site.

EPA Response: Please see above response.

- Based on the observations presented in these comments, the model and TMDL are inadequate. They should not be finalized and approved.

EPA Response: Please see above response.

Specific Comments:

- Executive Summary, 7th paragraph in the section, page iii, and Section 5.0 TMDL Development, paragraph 3 page 17:

  Both paragraphs have the following statement: "In the event that the UAA and subsegment criteria revision are not completed, approved, and promulgated within 5 years from the TMDL Phase I approval date, the TMDL will be reevaluated." Revision of the dissolved oxygen criteria for the corresponding ecoregion has not yet begun and is expected to take some time. Therefore the 5-year time period time period should be extended to 10 years. The document must state that LDEQ intends to conduct such a UAA in the future, but the exact date is not known. The TMDL must state how implementation should occur during Phase I. The communities within the watershed are small and may not have the funding to upgrade their facilities to meet more stringent permit limits. Much consideration must be given to the fact that the criteria revision may not occur in a timely manner, pending comments from the public

and approval by EPA. EPA should indicate what happens if the dissolved oxygen criteria for the subsegment is not revised within the 10-year time period

EPA Response: Thank you for your comments. The TMDL document has been modified.

- Section 2.3 Hydrologic Setting, 5th sentence in the section, page 5:
  The sentence states that "Very little flow enters the subsegment other than direct rainfall and overflow from Bayou Courtableu during high-flow events in that bayou. This description of the hydrologic relationship between Bayou Courtableau and Subsegment 010301 is not completely correct. An accurate description of the hydrologic condition of the subsegment must be provided in the TMDL report. See the general comment above.

EPA Response: This section has been updated with additional information provided in your comments.

- Section 4.0 Water Quality Model, page 11:
  A model was developed for Henderson Lake and used to characterize the entire basin. This is not appropriate for this subsegment due to the hydrologic conditions. Either the model needs to address the entire watershed or the TMDL should only address the area that was assessed and modeled.

EPA Response: Please see above response.

- Section 4.1.9 Headwater Flow and Water Quality (Data Types 20, 21, and 22), page 14:
  The report states that no flow information was available, therefore a headwater flow of 0.1 cubic feet per second (cfs) was used as recommended in the Louisiana Total Maximum Daily Load Technical Procedures Manual (LTP). However, the LTP recommended values are intended to be used in projection models, not calibration models. Survey data collected under the appropriate conditions should be used for the calibration model. LDEQ objects to the lack of data used to develop this TMDL. LDEQ recommends that EPA not finalize the TMDL without collecting the proper data to develop the LAQUAL model and TMDL report.

EPA Response: EPA recognizes that there are uncertainties in the model. One of these is the lack of flow information. With the absence of flow information, it was assumed that the system was at critical condition, so EPA used this value since additional information was not available. Please see responses above regarding future steps in the watershed for addressing uncertainties in the model.

- Section 4.2.2 Headwater Inputs, page 15:

This section states that a headwater flow of 0.1 cfs was used because 7Q10 values were not available for the waterbodies. The report assumes that the 7Q10 is 0 cfs. This assumption may be correct, however the 7Q10 statistic should only be used in free-flowing streams. The 7Q10 flow statistic is not appropriate for waterbodies in which the flow is largely controlled by pump systems. Perhaps a more appropriate flow statistic would be the mean or median. Flow records should be obtained for all pumping stations that pump water into and out of the subsegment. This includes the pumps taking water from the Atchafalaya River and placing water into Bayou Courtableau. EPA and its contractors should consider the operational procedures for all control structures located throughout the subsegment. Additional flow information can be obtained from the Teche - Vermilion Fresh Water District regarding the Atchafalaya Basin Floodway Project.

EPA Response: This TMDL was developed for critical summer low flow conditions. At these points it is assumed that upstream inflow from pumping operations, which operate during flood conditions, are not operating. Additional text will be added to the TMDL.

- Table 5-2, summary of oxygen demand WLAs, page 18:

  Two point source discharges with permit limits for oxygen demanding substances were omitted. *Table 5-2* should be updated to include the omitted point source discharges with permit limits for oxygen demanding substances. *010301- Omitted Dischargers*

AI No.	Facility Name	Permit No.
43380	North Central High School	LAG540690
127383	Moncrief Central Facility	LA0121096

EPA Response: Neither permit was on the list of permits submitted to EPA. LAG540690 will be added to the TMDL. The permittee for LA0121096 submitted a request for termination in January 2010 since the facility has not discharged since 2005. This permit will not be added to the TMDL.

- Section 5.1.1 Wasteload Allocation, second paragraph in the section, sentence 6, page 18:

  The TMDL states "Therefore, the dischargers will remain at their current limits for the current and proposed criteria. Additionally, no implementation of permit limits will be required as a part of Phase I." How will Phase I be implemented for new dischargers? The TMDL needs to provide an explanation for Phase I implementation.

EPA Response: Thank you for your comment. The TMDL document has been modified.

- Section 6.1 TMDL Implementation Strategies, page 20:
  This section should be revised to indicate how implementation should occur during Phase I.

EPA Response: Thank you for your comment. The TMDL document has been modified.

- Appendix B Model Output, Calibration Output File (All of the comments below reflect the fact that the calibration model was developed with no hydrologic data and water quality data collected at one site. Such a lack of data is not appropriate for such a complex system. The model and TMDL are inadequate and should not be finalized.)

  - The Inhibition Control Value was set to "0", which means that none of the rates were dependent upon oxygen concentration in the stream. LDEQ's experience has shown that the many of the decay rates are oxygen dependent. LDEQ typically sets the Inhibition Control Value to "3" so that all rates except sediment oxygen demand are dependent upon the oxygen concentration in the stream.

EPA Response: This factor will be adjusted in the model.

  - Henderson Lake was characterized as having an average width and depth of 400 meters and 1.2 meters respectively. ARCVIEW mapping shows that the lake has a average width of approximately 2,300 meters. Without survey data, the depth is not known and should not be arbitrarily set to 1.2 meters.

EPA Response: The average width of the lake will be adjusted in the model. The depth of the lake was obtained from local staff with knowledge of the lake.

  - The background sediment oxygen demand was shown to be 1.0 gm O_2/m^2/day. LDEQ's experience has shown that waterbodies of this type usually have a much greater sediment oxygen demand.

EPA Response: This parameter will be reviewed for the final model and adjusted as necessary.

  - Nine of the permitted dischargers were modeled as if they discharged directly into the of the top of Henderson Lake and two of the dischargers were modeled as if they entered the system south of Henderson Lake. Such assumptions are not appropriate. Some of these dischargers are located approximately 15 kilometers from the north end of Henderson Lake and one facility is located approximately 42 kilometers away. Only one facility, Total Environmental Solutions, Inc. – Atchafalaya Acres Camps (AI # 18829) is the only known facility that might be considered as

entering the system south of Henderson Lake. It is located approximately 0.5 kilometers from the swamp land bordering Henderson Lake to the southeast. However it is approximately 4 kilometers from Henderson Lake. Therefore, it should not be modeled as if it discharges directly to Henderson Lake.

EPA Response: All dischargers have been removed from the model, except the 3 that discharge to the lake (LAG33A035, LAG530051, and LAG530368).

- Chlorophyll a was not used in the model. LDEQ experience has shown that chlorophyll a is usually present in waterbodies like Henderson Lake.

EPA Response: Chlorophyll *a* has been added to the model and reflected in the TMDL.