

# Sabine River Authority of Texas



Sabine River Below Toledo Bend Reservoir

## Sabine River Basin Highlights 2009

➤ *Prepared in Cooperation with the Texas Commission on Environmental Quality  
Under the Authorization of the Texas Clean Rivers Act*



[www.sratx.org](http://www.sratx.org)



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**Designated Segments in the Sabine Basin**

Segment	Description	SRA Monitoring Stations for FY2009	Major Cities (>5,000)	Significant Influences
0501	Sabine River Tidal - from the confluence with Sabine Lake in Orange County to West Bluff in Orange County	6 (2 off Segment)	2	Urban / Industrial
0502	Sabine River Above Tidal - from West Bluff in Orange County to the confluence with Caney Creek in Newton County	1	0	Minimal
0503	Sabine River Above Caney Creek - from a point immediately upstream of the confluence with Caney Creek in Newton County up to Toledo Bend Dam in Newton County	3 (2 off Segment)	0	Industrial
0504	Toledo Bend Reservoir - from Toledo Bend Dam in Newton County to a point immediately upstream of the confluence of Murvaul Creek in Panola County, up to the normal pool elevation of 172 feet (impounds Sabine River)	10	2	No Major Permitted Discharges
0505	Sabine River Above Toledo Bend Reservoir - from a point immediately upstream of the confluence of Murvaul Creek in Panola County to a point 100 meters (110 yards) downstream of US 271 in Gregg County	5	6	Urban / Industrial / Oilfields
0506	Sabine River Below Lake Tawakoni - from a point 100 meters (110 yards) downstream of US 271 in Gregg County to Iron Bridge Dam in Rains County	4	1	Industrial
0507	Lake Tawakoni - from Iron Bridge Dam in Rains County up to the normal pool elevation of 437.5 feet (impounds Sabine River)	3	1	Urban / Agriculture
0508	Adams Bayou Tidal - from the confluence with the Sabine River in Orange County to a point 1.1 kilometers (0.7 mile) upstream of IH 10 in Orange County	0 (TMDL in progress)	1	Urban / Industrial
0509	Murvaul Lake - from Murvaul Dam in Panola County up to the normal pool elevation of 265.3 feet (impounds Murvaul Bayou)	0 (2 sites monitored by TCEQ)	0	Minimal
0510	Lake Cherokee - from Cherokee Dam in Gregg/Rusk County up to the normal pool elevation of 280 feet (impounds Cherokee Bayou)	0 (2 sites monitored by City of Longview & TCEQ)	0	Industrial
0511	Cow Bayou Tidal - from the confluence with the Sabine River in Orange County to a point 4.8 kilometers (3.0 miles) upstream of IH 10 in Orange County	0 (TMDL in progress)	1	Urban / Industrial
0512	Lake Fork Reservoir - from Lake Fork Dam in Wood County up to the normal pool elevation of 403 feet (impounds Lake Fork Creek)	3	0	Dairies
0513	Big Cow Creek - from the confluence with the Sabine River in Newton County to a point 4.6 kilometers (2.9 miles) upstream of R 255 in Newton County	1	0	Minimal
0514	Big Sandy Creek - from the confluence with the Sabine River in Upshur County to a point 2.6 kilometers (1.6 miles) upstream of SH 11 in Hopkins County	1	0	Minimal
0515	Lake Fork Creek - from the confluence with the Sabine River in Wood County to Lake Fork Dam in Wood County	1	0	Minimal

**Summary of Current Water Quality Conditions for FY2009**

**Segment 0501 - Sabine River Tidal**

**Water Quality:** This segment was highly impacted by Hurricane Ike, which made landfall on 9/13/08 along the upper Gulf coast. Almost the entire segment was inundated by the hurricane's tidal storm surge. An abnormally large number of elevated bacteria levels were detected in this segment. Samples for *enterococci* exceeded Stream Standards numeric criteria. Sporadic high *E.coli* results were also observed, but all sites were within the standards numeric criteria. Changes in birding patterns, due to the major destruction along the coast caused by the hurricane, could also be a factor in the elevated *enterococci* results

**Segment 0502 - Sabine River Above Tidal**

**Water Quality:** An elevated bacterial count was noted once during the past year, but the sampling event closely followed a rain event and higher than normal flows were observed.

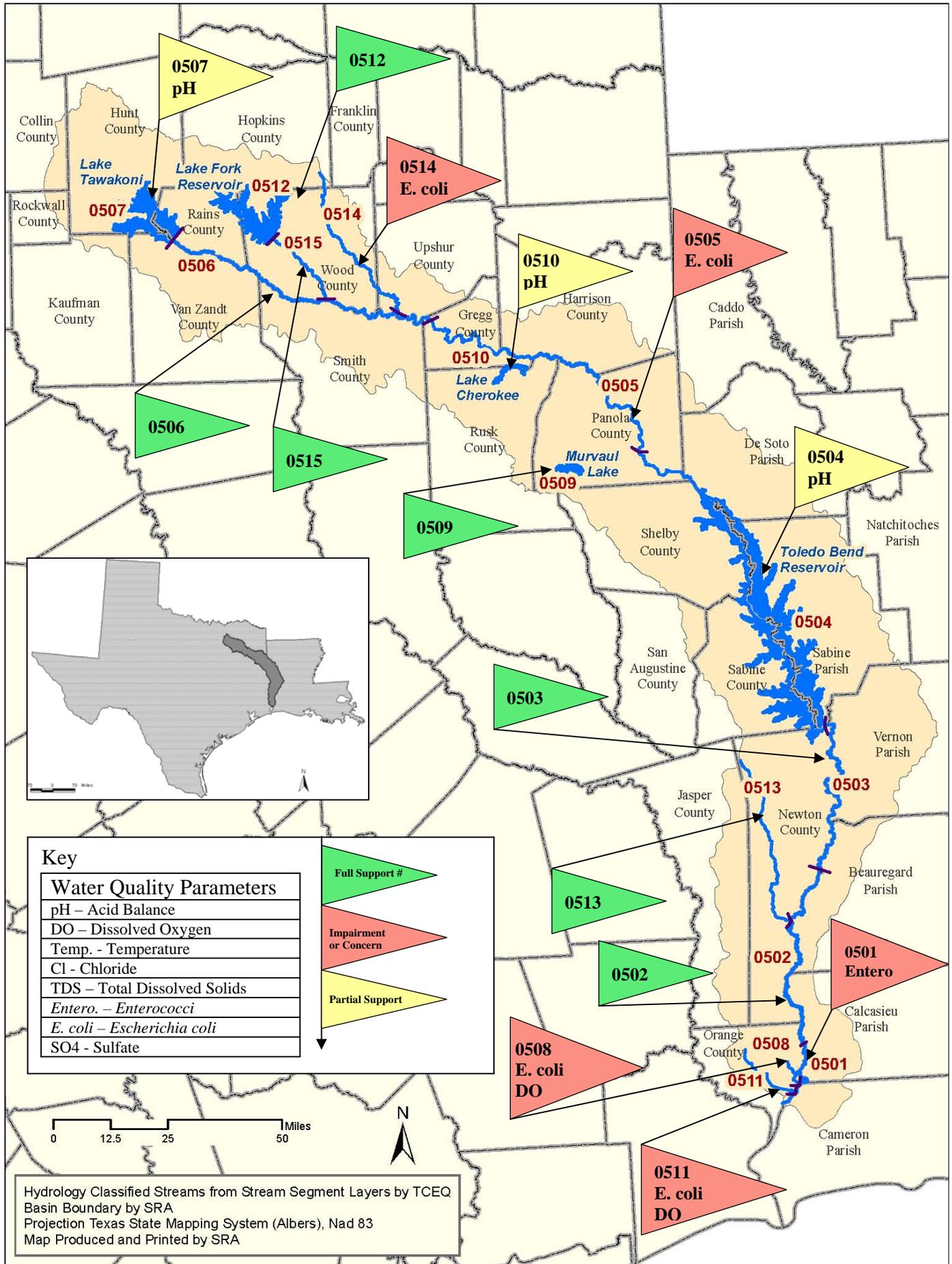
**Segment 0503 - Sabine River Above Caney Creek**

**Water Quality:** Elevated bacterial counts were measured at several sites during the past year, but most of these sampling events closely followed a significant rainfall event and higher than normal flows were observed. This suggests the runoff from these events was the major cause of the elevated results.

**Segment 0504 - Toledo Bend Reservoir**

**Water Quality:** The Texas Department of State Health Services (DSHS) fish consumption advisory is still in effect for largemouth bass and freshwater drum in Toledo Bend Reservoir due to elevated levels of mercury in fish tissue. Two years of bimonthly diel monitoring of dissolved oxygen in the Tenaha Creek arm of the reservoir was completed with no problems found. Elevated pH values were observed at sites in the reservoir, but these conditions do not indicate impairments to the designated uses of the reservoir.

2009 Sabine Basin Highlights



## Summary of Current Water Quality Conditions for FY2009 Continued

### Segment 0505 - Sabine River Above Toledo Bend Reservoir

**Water Quality:** Elevated bacterial counts were observed at varying frequencies during the past year and one main-stem site has been included on the 303(d) List for bacteria levels. The elevated counts were generally associated with significant rainfall events and elevated turbidity levels suggesting runoff as the probable reason for these elevated counts.

### Segment 0506 - Sabine River Below Lake Tawakoni

**Water Quality:** Elevated bacterial counts were measured in this segment during the past year and these events correlated with significant rainfall events.

### Segment 0507 - Lake Tawakoni Reservoir

**Water Quality:** One main-stem site has been included on the 303(d) List for elevated pH. The elevated pH values increased in frequency during drought conditions and record low reservoir levels. Subsequent monitoring has shown a return to pH values within acceptable ranges. Remaining regulatory and non regulatory water quality parameters measured were within acceptable stream standards.

### Segment 0508 – Adams Bayou Tidal

**Water Quality:** Adams Bayou was added to the 1996 Texas 303(d) list because it did not support the aquatic life use due to low dissolved oxygen concentrations, or the contact recreation use due to elevated fecal coliform concentrations. The Orange County TMDL project was initiated in August 2001 and the TCEQ adopted the TMDL on June 13, 2007. The EPA approved the TMDL on August 28, 2007, at which time it became part of the state's Water Quality Management Plan.

### Segment 0509 – Murvaul Lake

**Water Quality:** Concerns have been shown for chlorophyll a. Possible sources for these concerns may be related to agricultural and residential non point sources.

### Segment 0510 – Lake Cherokee Reservoir

**Water Quality:** The water quality conditions fully support all designated uses in Lake Cherokee with the exception of pH. Depressed pH values have been recorded at both sites on the reservoir following periods of extended drought. These depressed values in Lake Cherokee and Tiawichi Creek have been investigated by SRA-TX, TCEQ, and City of Longview personnel and appear to be related to local geology.

### Segment 0511 – Cow Bayou Tidal

**Water Quality:** Cow Bayou was added to the 1996 Texas 303(d) list because it did not support the aquatic life use due to low dissolved oxygen concentrations, or the contact recreation use due to elevated fecal coliform concentrations. The Orange County TMDL project was initiated in August 2001 and the TCEQ adopted the TMDL on June 13, 2007. The EPA approved the TMDL on August 28, 2007, at which time it became part of the state's Water Quality Management Plan.

### Segment 0512 - Lake Fork Reservoir

**Water Quality:** No impairments in water quality were found. Elevated bacteria levels have been detected in this segment. A Use Attainability Analysis (UAA), is currently underway on two streams to address these elevated bacterial levels. Remaining regulatory and non regulatory water quality parameters measured were within acceptable stream standards and screening criteria.

### Segment 0513 - Big Cow Creek

**Water Quality:** Elevated bacterial counts were measured in this segment during the past year, but each of these sampling events closely followed a significant rainfall event. This suggests the runoff from these events was the major cause of the elevated results.

### Segment 0514 - Big Sandy Creek

**Water Quality:** This segment has been included on the 303(d) List for bacteria levels. The conditions appear to be the result of non-point source pollution or natural conditions. Elevated bacteria levels appear to be improving following the completion of major road and bridge construction.

### Segment 0515 - Lake Fork Creek

**Water Quality:** No impairments in water quality were found. Elevated bacteria levels have been detected in this segment. Regulatory and non regulatory water quality parameters measured were within acceptable stream standards and screening criteria.

## **Sabine River Watershed Management Program**

The Sabine River Authority of Texas (SRA-TX) takes a holistic approach to water management and recognizes that quality and quantity are inherently interdependent. SRA-TX has maintained a proactive role in water quantity and quality matters since initial operational activities began in 1954 and has expanded its services to meet increasing needs throughout the Sabine River Basin. The SRA-TX water quality management program was established in 1972 and is reviewed annually to help protect and manage the essential water resources in the Sabine Basin.

The Texas Clean Rivers Program (TCRP) is a collaborative effort between Texas Commission on Environmental Quality (TCEQ), Texas Parks & Wildlife Department (TPWD), the TCRP Partners, agencies, local entities, and the public. This integrated approach to water quality management reduces duplication of effort and provides for the best use of limited resources. The goal is to maintain and improve the quality of water resources within each river basin in Texas through regional assessments of watersheds. The SRA-TX collects and analyzes water quality data in the Sabine Basin to identify and prioritize water quality concerns and the causes of pollution. The SRA-TX is the planning agency for all TCRP activities in the Sabine Basin.

The fixed monitoring program for 2009 included 42 sampling sites that were monitored monthly for routine physical and chemical parameters. Selected sites are also monitored annually for metals in water. Monthly water quality reports, Basin Highlights and Basin Summary reports are available at [www.sratx.org](http://www.sratx.org). Water quality data for all parameters measured is also available from the web site. In addition to the routine fixed monitoring, future SRA-TX water quality monitoring will include a focus on flow measurements to support permitting, a special study to address pH in Lake Tawakoni, and biological monitoring below Toledo Bend Reservoir.

For this Sabine Basin Highlights Report, water quality conditions from the long-term, routine monitoring sites were summarized for the past year and compared to the previous five years of water quality data. The data summaries were also compared to the Texas Surface Water Quality Standards established by the TCEQ (Stream Standards). The Clean Water Act in Section 303(d) requires that water bodies not meeting established water quality standards be listed as impaired. Support for the designated uses of the water bodies was determined by examining minimum and maximum values and calculating the percent of compliance with the Stream Standards for the parameters of pH, dissolved oxygen, *E. coli*, and *Enterococci*. A minimum of ten samples for a parameter is required to perform the comparison. Numeric criteria have also been established for total dissolved solids, chloride, and sulfate. These parameters are examined as annual averages.

TCEQ has proposed significant changes to the Stream Standards that could impact several water bodies in the Sabine Basin currently listed for concerns or as impaired. The changes include basing the allowable levels of bacteria on recreational use categories as well as setting nutrient limits in selected reservoirs.

Overall water quality in the Sabine Basin continues to remain high, predominantly meeting Stream Standards. The primary water quality issues identified in the Sabine Basin are elevated bacteria levels and a few isolated sites of elevated pH values. The elevated bacterial counts were generally associated with significant rainfall events with elevated turbidity levels suggesting run off as the probable reason for these elevated counts and do not appear to significantly impact the designated use of the water body. Isolated sites of elevated pH values appear to be due to natural conditions that exist in reservoirs in the late summer or late fall. Depressed dissolved oxygen values have historically been observed in some small tributary streams and these continue to be listed as impaired. Remaining regulatory and non regulatory water quality parameters measured were within acceptable stream standards.

### **Toledo Bend Hydroelectric Operations**

The Toledo Bend's existing Federal Energy Regulatory Commission (FERC) license for the hydroelectric operations expires in September 2013. The SRA-TX and Sabine River Authority of Louisiana (SRA-LA) are utilizing the Integrated Licensing Process (ILP). The Pre-application Document (PAD) provides FERC and interested parties with substantial existing information relevant to the Project; including project background, relicensing process and schedule, operations, engineering, environmental and natural resources, recreation, cultural resources, and socioeconomics. For more information on this process please see: [www.tbjpo.org/PublicRelicensing](http://www.tbjpo.org/PublicRelicensing)

### **Orange County TMDL Project**

The Orange County Total Maximum Daily Load (TMDL) Project is addressing the water quality impairments in the Adams Bayou (Segment 0508) and the Cow Bayou (Segment 0511). The impairments included low dissolved oxygen, elevated bacteria, and high nutrients from point and non-point sources. In response to these conditions, a TMDL project was initiated to determine the measures necessary to restore water quality in these bayous. The non-point sources include large populated areas using on-site sewage treatment systems that have historically functioned poorly in this area.

The TCEQ adopted the TMDL Reports on June 13, 2007. The EPA approved the TMDL Reports on August 28, 2007, at which time they became part of the state's Water Quality Management Plan. An implementation plan is now being developed to restore the water quality of these water bodies. More information can be found at [www.sratx.org](http://www.sratx.org).

## **Sabine River Watershed Management Program**

### **Water Quality**

#### ➤ **Public Participation and the Basin Steering Committee**

The Sabine Basin Steering Committee allows stakeholders to have an active role in addressing water quality issues in the Sabine Basin. The Basin Steering Committee meetings are held throughout the Basin to encourage participation from all of the stakeholders.

#### ➤ **Quality Assurance Project Plan (QAPP)**

This document includes the details about the SRA-TX monitoring programs, the project definition and background, and the quality assurance requirements to ensure the data collected are accurate. The QAPP also ensures that the data collected are representative of the water body being sampled.

#### ➤ **Data Collection, Management, and Analysis**

The collection, management, and analysis of water quality data is accomplished through an integrated program that includes a comprehensive monitoring program, a data management plan, and statistical analyses of historical and current data. Historical monitoring reports are available at [www.sratx.org](http://www.sratx.org).

#### ➤ **Geographic Information System (GIS)**

The SRA GIS provides analysis and spatial representation of the factors that influence water quality, such as point source locations, land use, and watershed characteristics. Inventories of factors that can impact water quality for the Sabine Basin are incorporated as GIS layers as they become available. Water quality monitoring data from each watershed are interpreted using GIS. New monitoring is prioritized based on the specific factors within the watershed.

### **Water Quantity**

#### ➤ **Water Supply Planning**

Management of the Basin's water resources is part of SRA-TX's responsibility to ensure that water is available to meet the Basin needs and to protect the value of the resource. After meeting the long-term needs of the Basin, the SRA is responsible to provide water for broader use by the State of Texas.

#### ➤ **Water Conservation and Drought Contingency Planning**

SRA-TX views water conservation and drought contingency planning is an integral part of meeting near-term and long-term water supply needs. Water conservation and drought contingency planning is necessary to extend existing supplies and ensure the wise use of available resources.

#### ➤ **Environmental Flows**

Environmental flows encompass instream flows and estuarine freshwater needs. The SRA-TX has assumed a leadership role in water management planning efforts in Texas through participation in water-related committees, workshops, and development and implementation of water quality monitoring programs within the watersheds of the Sabine River. SRA-TX is confident the balance between man's water supply needs and those of the environment can be achieved and that we have an opportunity for a win/win long-term solution in meeting those needs.