



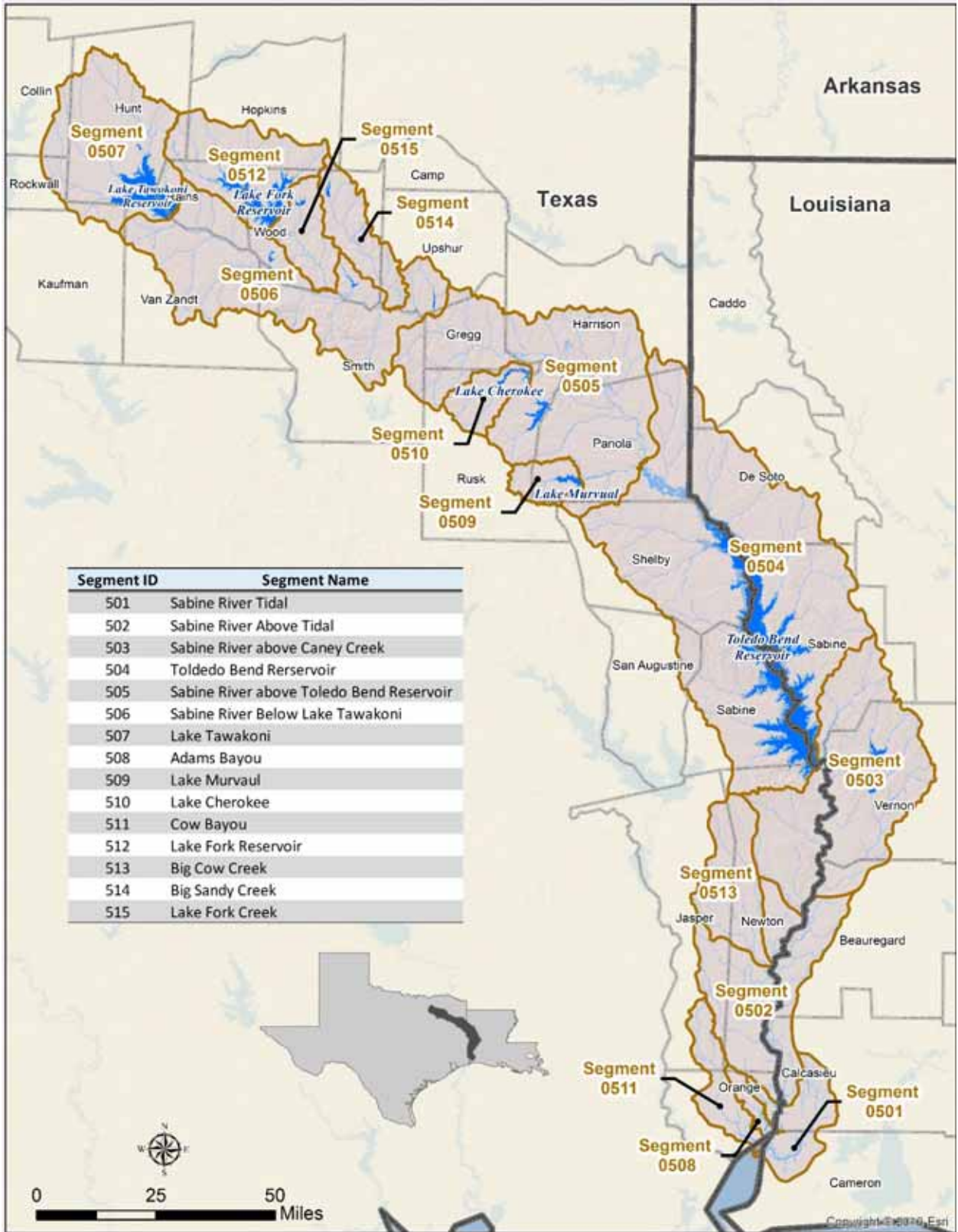
Executive Summary for the 2018 Sabine River Basin Summary Report



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Introduction

The Sabine River Authority of Texas (SRA-TX) Basin Summary Report is produced every third biennium to provide stakeholders with a greater understanding of basin water quality. This report provides an overview of water quality within the Sabine River Basin under the Texas Clean Rivers Program (TCRP). The collection, management, and analysis of water quality data is accomplished through an integrated approach that includes a comprehensive monitoring program, a data management plan, and statistical analyses of historical and current data.

The SRA-TX water quality monitoring program was established in 1972 and was reinforced by the development of the TCRP in 1991. Since its inception, the SRA-TX program has evolved and changed with the needs of the SRA-TX and the State of Texas. Under the TCRP, the Texas Commission on Environmental Quality (TCEQ) partners with regional water authorities to coordinate and conduct water quality monitoring assessments and promote stakeholder participation to improve the quality of surface water within each river basin in Texas. The SRA-TX monitors water quality in the Sabine River Basin to identify trends and prioritize water quality concerns. The SRA-TX is the planning agency for all TCRP activities in the Sabine River Basin.

Water quality information obtained through the TCRP is collected in accordance with a TCEQ-approved Quality Assurance Project Plan (QAPP). Data collected under the TCEQ QAPP is available for water utilities or other public uses. For example, Sabine Basin data collected through the TCRP was utilized for the renewal of the Toledo Bend Project's Federal Energy Regulatory Commission license and for documentation required for Texas and Louisiana Clean Water Act, Section 401 Water Quality Certifications.



Water Quality Monitoring

The TCRP and SRA-TX Objectives

- Identify and evaluate water quality issues.
- Provide quality-assured data to the TCEQ for use in decision-making.
- Maintain efficient use of public funds and promote cooperative watershed planning.
- Recommend water quality management strategies.
- Inform and engage stakeholders about local water quality.

Coordination / Cooperation

Coordination and cooperation with stakeholders are achieved through the Sabine Basin Steering Committee and Coordinated Monitoring Meetings. These meetings bring together SRA-TX, TCEQ, other state agencies, and entities with interests in the Sabine Basin to help reduce sampling duplication and maximize resources to assess water quality of the entire basin. Participants that contribute water quality data through the TCRP for the Sabine Basin include TCEQ, City of Longview, Texas Institute for Applied Environmental Research (TIAER) at Tarleton State University, and SRA-TX. All stakeholders collecting water quality data in the Sabine Basin for the TCRP are encouraged to coordinate their efforts with SRA-TX and participate under the SRA-TX QAPP. Collection of water quality data in accordance with a QAPP allows the data to be used by the TCEQ for assessments based on Texas Surface Water Quality Standards (TSWQS), updating wastewater permits, and various other purposes.

Sabine River Basin

Figure 1. Sabine River Basin



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The Sabine Basin (Figure 1) is roughly crescent-shaped, with a length of approximately 300 miles and a maximum width of approximately 48 miles. The Sabine River is approximately 580 river miles long from the basin divide in Hunt County near the City of Celeste, to its mouth at Sabine Lake. The watershed area in Texas includes all or part of twenty-one counties. It extends southeasterly for 165 miles from its source in Hunt County to the headwaters of Toledo Bend Reservoir at the Texas-Louisiana border. At the point where it becomes the state line, the Sabine River drains an area of approximately 4,846 square miles. The State of Texas has jurisdiction to the midstream boundary for the state line reach of the Sabine River, of which approximately 2,550 square miles lie within Texas and 2,360 square miles lie within Louisiana. The Texas portion of the watershed makes up approximately 76 percent of the total area of the basin.

Major tributaries to the Sabine River in Texas include Lake Fork Creek, Big Sandy Creek, Big Cow Creek, Adams Bayou, and Cow Bayou. Major tributaries from the State of Louisiana are Bayou Toro and Bayou Anacoco. The [Texas Water Development Board](#)¹ lists 3 major aquifers within the basin. These are the Carrizo-Wilcox (outcrop), Carrizo-Wilcox (subcrop), and Gulf Coast. Minor aquifers include the Nacatoch, Queen City (outcrop), Sparta (outcrop), Sparta (subcrop), and Queen City (outcrop).

The Sabine River flows through four major Ecoregions, which include the Texas Blackland Prairies, East Central Texas Plains, South Central Plains, and Western Gulf Coastal Plains (Figure 1). Regional geology, climate, topography, land use, and population density have a direct impact on water quality.



Sabine River Headwaters

¹ <https://www.twdb.texas.gov/groundwater/aquifer/major.asp>, assessed 3/7/19

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The upper portions of Lake Tawakoni and Lake Fork Creek watersheds are located in the Texas Blackland Prairies Ecoregion. The soils of this area are composed of calcareous clays which erode readily and have a tendency to remain suspended once they enter the water. Higher values for pH, conductivity, alkalinity, and total dissolved solids (TDS) are found in this region. Most of the Sabine Basin is located in the East Central Texas and South Central Plains ecoregions. Compared to the Texas Blackland Prairies, these ecoregions contain sand and clay loam soils and have surface waters with lower pH, TDS, conductivity, and alkalinity. Lake Fork and Toledo Bend Reservoirs are located in these ecoregions. The tidal portion of the Sabine Basin is located in the Western Gulf Coastal Plains Ecoregion and has soil that is comprised of calcareous clays and clay loams. The TDS, salinity, and conductivity values in this ecoregion are variable based on tide, wind, and rainfall.

Average annual rainfall ranges from 44 inches near the Sabine River headwaters to 56 inches at the mouth of the Sabine River. Land surface elevations across the basin vary from a few feet above sea level in the tidal region to approximately 700 feet above mean sea level (AMSL) at the headwaters. General topography varies from moderate to gently sloping hills. Sabine Basin land use includes mineral production, silviculture, agriculture, manufacturing, shipping, recreation and tourism. The majority of the population is in the upper basin above the headwaters of Toledo Bend Reservoir.



Lake Fork Creek below Lake Fork Reservoir

Public Involvement

Stakeholders have an active role in planning water quality monitoring in the Sabine River Basin. The Steering Committee Meetings are held yearly at multiple locations within the basin to encourage participation from all stakeholders. Water supply corporations, permitted dischargers, councils of government, municipalities, county officials, and local citizens are part of the diverse group of people invited to attend these meetings. Topics include an overview of TCRP, review of the Basin Summary/Highlights Report, water quality objectives and priorities, work plans and allocation of resources, and public participation. For more information about participating in the Sabine Basin Steering Committee meetings, please contact Terry Wilson, at (903) 878-2420 or twilson@sratx.org.

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The SRA-TX assists the [Texas Stream Team](#)², a citizen monitoring program of The Meadows Center for Water and the Environment at Texas State University. This group is a cooperative partnership of TCEQ, Texas State University, the United States Environmental Protection Agency (USEPA), and citizen volunteers. SRA-TX provides sampling kits and supplies to volunteers within the Sabine Basin.

The Orange County Total Maximum Daily Load (OCTMDL) Project was initiated in 2002 to address low dissolved oxygen and elevated bacteria in Adams Bayou (Segment 0508) as well as to address low dissolved oxygen, low pH, and elevated bacteria in Cow Bayou (Segment 0511). On August 5, 2015, the TCEQ Commissioners approved the OCTMDL Implementation Plan (I-Plan). Stakeholders now meet annually to review and evaluate I-Plan management measure activities conducted during the previous year. Currently, TCEQ is in the process of updating the TMDL for Adams Bayou and will present its findings to the stakeholders when complete.

[SRA-TX Water Quality Reports](#)³ provide current and historical monitoring data to the public. These reports provide monthly water quality updates from SRA-TX's routine monitoring activities. The [SRA-TX's website](#)⁴ provides access to information related to water resource issues within the Sabine River Basin and the [State of the Basin page](#)⁵ is a portal to the latest water quality information. Available documents include Monthly Water Quality Monitoring Reports, Sabine Basin Highlights Reports, and Summary Reports.

Additional public outreach includes providing presentations at area schools, civic groups, and environmental events as well as tours of SRA-TX facilities. Examples include Sabine County Ag Day, March for Parks, information booths at Shangri-La Botanical Garden's Eco-Fest, Career Day at Stephen F. Austin State University, and the City of Longview's East Texas Outdoor Expo.



Steering Committee Meeting

² <https://www.meadowscenter.txstate.edu/Service/TexasStreamTeam.html>, accessed 3/7/2019

³ http://www.sratx.org/srwmp/tcrp/state_of_the_basin/monthly_wqmp_reports/default.asp, accessed 3/7/2019

⁴ <http://www.sratx.org/>, accessed 3/7/2019

⁵ http://www.sratx.org/srwmp/tcrp/state_of_the_basin/monthly_wqmp_reports/default.asp, accessed 2/28/2019

Water Quality Review

The SRA-TX maintains Texas laboratory accreditation from The NELAC⁶ Institute (TNI) and evaluates water quality in accordance with a TCEQ approved QAPP. The purpose of the TCRP QAPP is to clearly delineate SRA-TX's quality assurance policy, management structure, and procedures which will be used to implement the QA requirements necessary to help ensure that data is of known and documented quality, deemed acceptable for its intended use. Field sampling is conducted in accordance with the latest versions of the TCEQ Surface Water Quality Monitoring Procedures Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415), and Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data (RG-416).

Conclusions

Since the 2013 Summary Report, the most significant factor affecting water quality within the Sabine Basin was the end of drought and abnormally dry conditions. During 2016, precipitation totals in the upper Sabine Basin ranged from 70 inches to 80 inches, with some areas exceeding 80 inches of rain. In the lower Sabine Basin, precipitation amounts ranged from 80 to 100 inches with some areas receiving in excess of 100 inches of rainfall⁷. In August 2017, Tropical Storm Harvey hit the Orange area and produced record breaking amounts of rainfall. Over a six-day period, 36.47 inches fell at the Orange County Airport and a new tropical cyclone rainfall record of 64.58 inches fell in Nederland, Texas, twenty-two miles southwest of Orange. Average annual rainfall in the basin ranges from 40 to 60 inches⁸.

The majority of water quality data continues to meet TSWQS and screening criteria. The most frequently exceeded TSWQS parameter within the basin was bacteria, *Enterococcus* or *E. coli*. During periods of significant rainfall and increased stream turbidity, elevated levels of bacteria continued to be measured. Elevated levels of bacteria are attributed primarily to wildlife and non-point sources, but additional sources may include industrial and municipal point source discharges, on-site treatment systems, sanitary sewer overflow discharges, and package plant or other permitted small flow discharges⁹. Of the 37 SRA-TX sites assessed, 32 fully supported their designated uses. Five classified assessment units (AUs) and 10 unclassified AUs are on the Draft 2016 Texas Integrated Report 303d List for bacteria and are not meeting their designated recreational uses. Although five additional assessed sites supported their designated uses, they are listed as a concern for near non-attainment for bacteria, depressed dissolved oxygen, lead in water, or chlorophyll-a.

New listings on the Draft 2016 Texas Integrated Report 303(d) List include Segment 0512_05 for elevated pH and Segment 0505_04 List for bacteria. The following segments were removed from the Draft 2016 Texas Integrated Report 303(d) List: 0501B_02 for impaired fish community; 0504_08, 0504_09, 0504_10, and 0504_13 for mercury in edible tissue; 0505B_02 for depressed dissolved oxygen; 0507_04 for elevated pH.

⁶ National Environmental Laboratory Accreditation Conference

⁷ [National Weather Service](https://water.weather.gov/precip/) accessed 1/8/2019, <https://water.weather.gov/precip/>

⁸ [National Weather Service](https://water.weather.gov/precip/) accessed 3/12/2019, <https://water.weather.gov/precip/>

⁹ [TCEQ Potential Sources of Impairments and Concerns](https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/16txir/2016_sources.pdf) ,

https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/16txir/2016_sources.pdf

Recommendations

The SRA-TX will continue to advance the knowledge and understanding of water quality in the Sabine Basin through:

- involvement in the Texas Stream Team, public presentations, and facility tours;
- participation in the TCEQ-facilitated Surface Water Quality Standards Workgroup, which provides input into nutrient and toxic criteria, recreational indicators and uses, and site-specific criteria changes;
- continue to provide sampling in areas to support effective permit requirements, as well as provide input to assist the TCEQ in the development of attainable water quality standards;
- providing web-based monthly SRA-TX Water Quality Monitoring Reports, which benefit stakeholders;
- coordination and support of the TCRP activities within the Sabine Basin with other agencies and interested entities to identify and prioritize water quality concerns;
- hosting the TCRP Basin Steering Committee and Coordinated Monitoring meetings to promote and engage public involvement.

Stakeholders Input

The SRA-TX presented the 2018 Sabine Basin Summary Report at three Steering Committee meetings held in Emory, Longview, and Orange, Texas. Water supply corporations, permitted dischargers, Texas Department of Agriculture, Texas Parks and Wildlife, TCEQ, SRA-TX Board members, industry representatives, Texas Railroad Commission, Sabine River Compact Commissioner, consulting firm, and city and county officials, and members of the public were present at the meetings. Steering Committee discussions included the Draft 2016 Texas Integrated Report, water quality updates and concerns, the SRA-TX Water Conservation and Contingency Plan, the SRA-TX Community Assistance Program, the SRA-TX Hazard Mitigation Plan, future monitoring needs, and updates on invasive species. Stakeholder comments and questions involved bacteria impairments and non-point sources, differences between primary and secondary contact recreation, mercury impairments in fish tissue, and Texas river basin impairment similarities.



Toledo Bend Reservoir