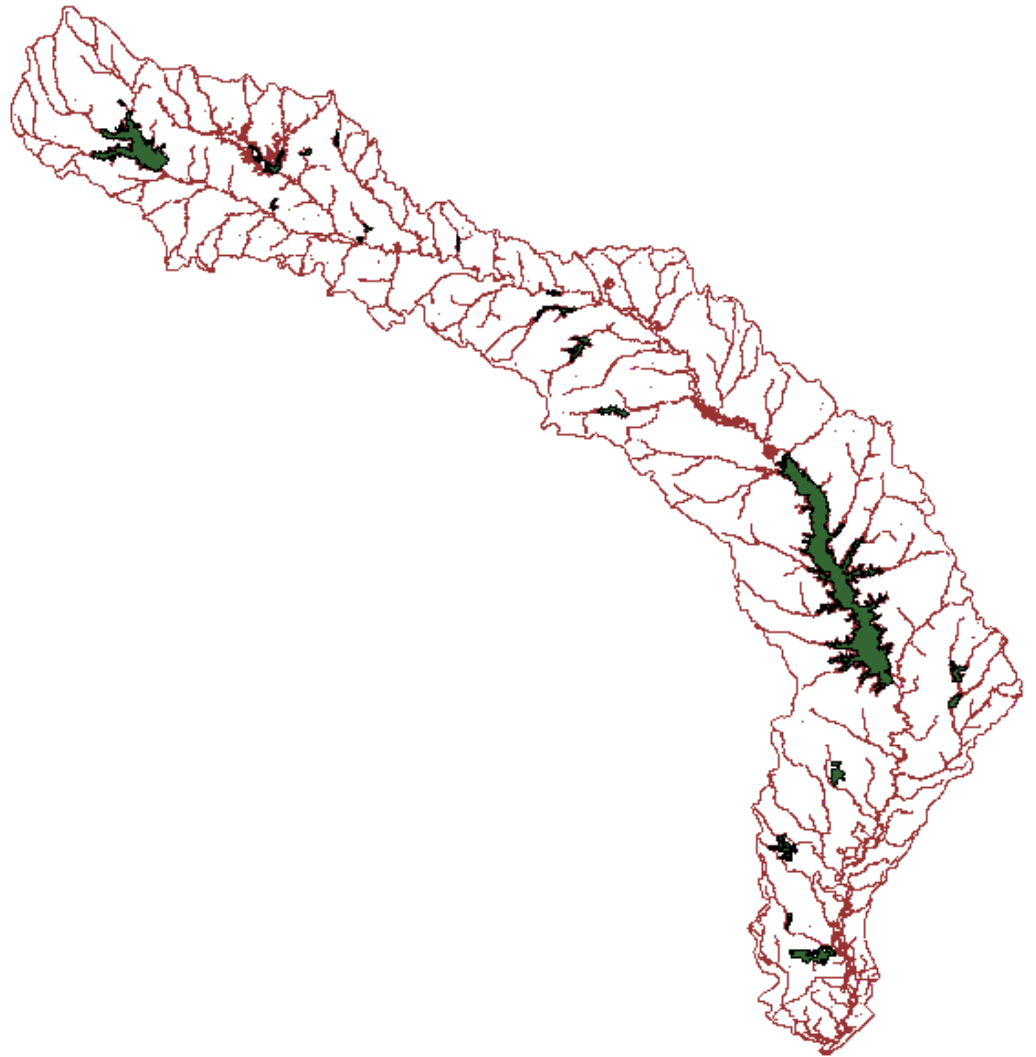


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# 1996 REGIONAL ASSESSMENT OF WATER QUALITY

## EXECUTIVE SUMMARY

**SABINE RIVER BASIN, TEXAS**  
Sabine River Authority of Texas



*Prepared in Cooperation with the*  
Texas Natural Resource Conservation Commission  
*Under the Authorization of the*  
Texas Clean Rivers Act

October 1, 1996

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## EXECUTIVE SUMMARY

**SABINE RIVER BASIN, TEXAS**  
Sabine River Authority of Texas

This is the third in an ongoing series of biennial water quality assessment reports in the Sabine River Basin, Texas.

*Prepared in Cooperation with the  
Texas Natural Resource Conservation Commission  
Under the Authorization of the  
Texas Clean Rivers Act*

This report is also available on the Sabine River Authority of Texas World Wide Web homepage at:  
<http://www.sra.dst.tx.us/>

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October 1, 1996

## **EXECUTIVE SUMMARY**

### ***Introduction***

The *1996 Regional Assessment of Water Quality* for the Sabine River Basin, Texas, is the third assessment since the Texas Clean Rivers Program (TCRP) was initiated in 1991. The Sabine River Authority of Texas (SRA) is the basinwide planning agency for all Texas Clean Rivers Program (TCRP) activities in the Sabine Basin.

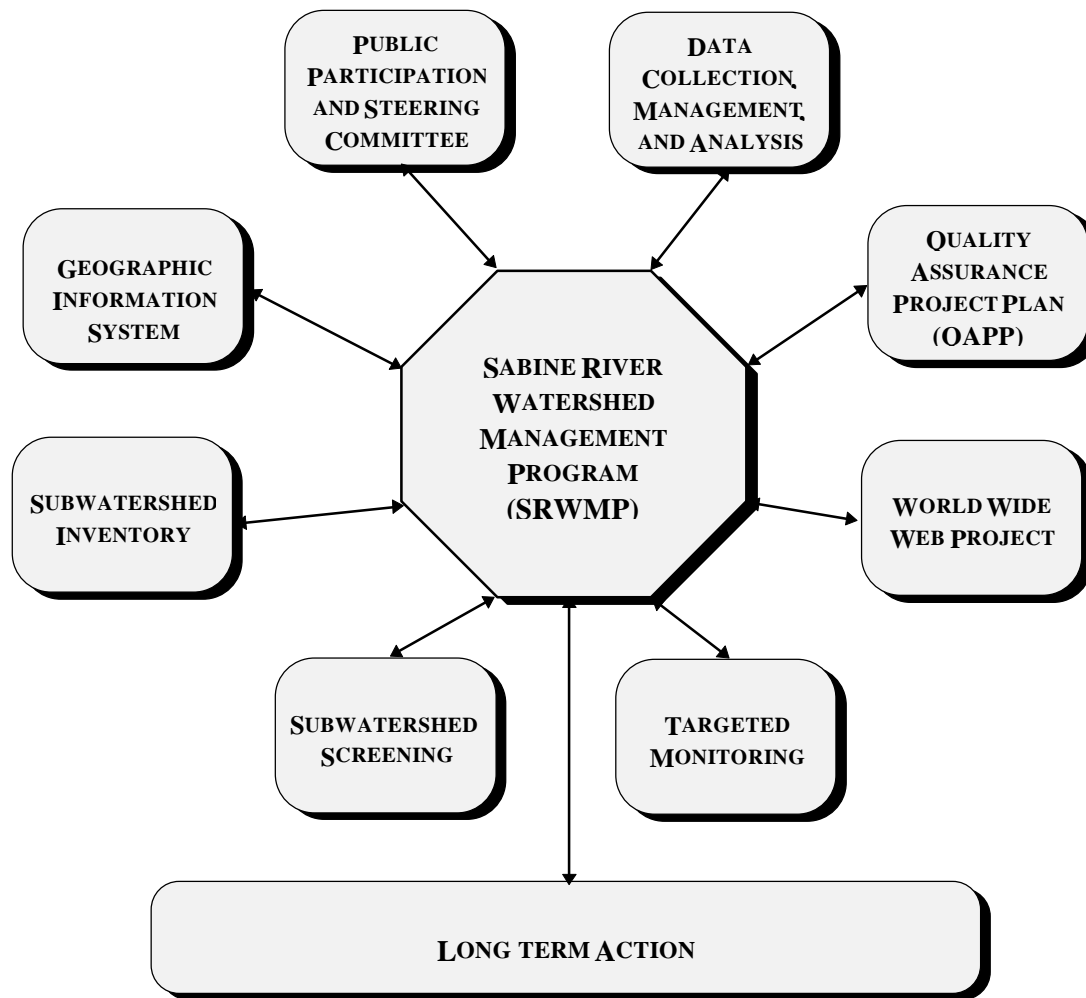
The assessment approach has progressed from the initial 'fact gathering' necessary during the previous assessment periods toward an integrated and systematic approach to protect the water resources in the Sabine Basin. The development of an Internet connection has enhanced the ability to share the SRA water quality data repository with the TNRCC and other interested parties. Results from the analyses of the current and historical water quality data have been used to identify and prioritize the water quality issues in the Basin. This process has allowed the SRA to focus on problem areas, identify the causes, and work toward solutions.

The SRA Water Quality Monitoring Program and the SRA Subwatershed Screening Studies have been coordinated with other agencies to reduce duplication of effort and provide the most effective coverage of water quality monitoring for the Sabine Basin. These monitoring programs have been augmented by the development of a subwatershed inventory of all available water quality information for each subwatershed in the Sabine Basin. The SRA Geographic Information System utilizes the subwatershed inventory and the monitoring data to allow SRA to analyze the impact on water quality.

Public involvement in the TCRP has been increased through the expansion of the Steering Committee for the Sabine Basin. The SRA is also continuing to increase public participation through the Texas Watch program, the development of a water quality newsletter, and presentations at schools, various groups, and organizations.

### ***Assessment Focus***

The Sabine River Authority of Texas, through the TCRP, has developed an integrated and systematic infrastructure to facilitate the decision making process for water quality and water quantity issues throughout the Sabine Basin. SRA's TCRP approach consists of several key components integrated within the Sabine River Watershed Management Program (SRWMP) as shown in the following diagram:



This systematic approach to water resource management enables the SRA to make the most efficient use of available resources for water quality monitoring and protection. The program utilizes existing water quality data to identify problem areas and prioritize areas which need additional monitoring efforts. The SRA SRWMP has determined potential threats to water quality and is working toward solutions by coordinating efforts among state, regional, and local entities. Public participation in water resource issues in the Sabine Basin has also been enhanced through the TCRP.

The SRA Geographic Information System (GIS) component of the SRWMP brings together all of the data and information available on the various factors which can influence water quality. This allows the relationships of several factors to be examined together. For example the spatial relationships of the permitted discharges, the concentrations of septic tank systems, as well as the locations of solid waste sites within a subwatershed can be determined. This information, along with data from the subwatershed screening program, enables water resource managers to determine how these factors are influencing the water quality of the subwatershed.

SRA has established a World Wide Web (WWW) site (<http://www.sra.dst.tx.us/>) on the Internet to provide better access to water resource issues for the TCRP stakeholders. With the implementation of the Web server, the cities, industries, legislators, private organizations, and

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## EXECUTIVE SUMMARY

citizens can receive immediate benefits from TCRP information and data services. The Internet connection allows for information to be shared between the SRA and any other Internet-capable entity, company, or individual with an interest in water resources. The Web site serves as a cost-effective means to disseminate information and receive input from other sources.

The SRA has developed an inventory of the various factors in the Sabine Basin which can influence water quality. These inventories have been developed on a subwatershed basis and added to the GIS system. This system allows SRA to query the database by subwatershed and make informed decisions about each subwatershed. These data sets have been obtained from several sources including municipalities, government agencies (local, state, and federal), and universities. Data sets received from sources outside the SRA must be reviewed to ensure that the quality assurance associated with the data meets the criteria stated in the SRA Quality Assurance Project Plan (QAPP). These data sets are also reviewed in accordance with the SRA Data Management Plan.

### ***Significant Findings***

The systematic approach of the SRA SRWMP has arranged the Sabine Basin into 110 subwatersheds. This approach includes the SRA TCRP Subwatershed Screening Program which uses biological screening tests in combination with physical and chemical water quality parameters. The biological screening tests consist of Ambient Toxicity tests and Rapid Bioassessments. The Ambient Toxicity tests use a fish species (fathead minnow or sheepshead minnow) and a species of crustacean (water flea or mysid shrimp) as indicator organisms to determine the presence of toxic substances. The Rapid Bioassessments relates the organisms living in a stream to the habitat available in the stream. The results are compared to a reference site located in an unimpacted stream. This SRA TCRP Subwatershed Screening Program was developed to complement the basin-wide SRA Water Quality Monitoring Program (WQMP), which is contributed as an "in-kind" service. These programs have sampled 44 out of the 110 subwatersheds since the TCRP was begun in 1991. An additional six subwatersheds are being monitored this year along with nine sites where monitoring is being continued from last year.

All of the available surface water quality data from 1985 to 1995 were analyzed according to TCRP guidance. The data was compared to the Texas Surface Water Quality Standards to ascertain the existence of water quality concerns. The concern or possible concern was determined on a parameter-by-parameter and site-by-site basis. In general, a possible concern was defined as 10 - 25% of the values exceeding the criteria and a concern was defined as more than 25 - 50% of the values exceeding the criteria. Results from the TCRP data analyses and the SRA TCRP Subwatershed Screening Program have detected water quality concerns or possible concerns in the following subwatersheds:

#### ***Subwatershed 1.02 Cow Bayou (Segment 0511)***

This is a tidal waterbody with limited assimilative capacity. Water quality concerns or possible concerns in this subwatershed include dissolved oxygen, ammonia nitrogen, fecal coliform, and sublethal toxicity. Probable sources of the problems include natural conditions exacerbated by runoff from septic tanks and other nonpoint pollution sources.

**Subwatershed 1.03 Adams Bayou (Segment 0508)**

The concerns or possible concerns in this subwatershed include dissolved oxygen, fecal coliform, nutrients, and lethal and sublethal toxicity. The problems in this subwatershed appear to be due to the impacts from the large human population in the drainage area and are a combined influence resulting from point and nonpoint sources on a tidal waterbody with limited assimilative capacity.

**Subwatershed 1.10 Little Cypress Bayou**

The SRA TCRP Subwatershed Screening tests conducted in this subwatershed indicated lethality on one test and sublethal toxicity on two of the tests conducted on the test organisms. This small subwatershed exhibits low assimilative capacity and naturally limited water quality which stems from very little base flow, tidal affects, and high organic input from natural detrital material, nonpoint sources, and point sources from five domestic discharges.

**Subwatershed 2.05 Big Cow Creek (Segment 0513)**

Concerns and possible concerns in this subwatershed include fecal coliform and sublethal toxicity. The problems in this subwatershed are most likely from nonpoint pollution such as runoff from septic tank systems.

**Subwatershed 3.03 Bayou Anacoco (Beauregard-Vernon Parish) - LA.**

The data analyses showed concerns or possible concerns for chlorides, sulfates, total dissolved solids, fecal coliform, nutrients, and slight biological impairment. Detailed land use information is not yet available for this subwatershed located in Louisiana, however a paper mill is located in this subwatershed and the River is significantly discolored below this stream.

**Subwatershed 4.00 Toledo Bend Reservoir**

The concerns or possible concerns in this subwatershed include total dissolved solids, total phosphorus, sulfate, and dissolved oxygen. The only area of concern was in the Tenaha Creek Arm. This area receives flow from Tenaha Creek which contains runoff from the largest city in the reach and six other permitted discharges. This area is subject to shallow water conditions in the summer months due to lower reservoir levels.

**Subwatershed 5.00 Main-stem of the Sabine River (Segment 0505)**

The results of the data analyses indicated concerns or possible concerns for nutrients, dissolved oxygen, fecal coliform, and metals. This area of the Sabine Basin has the largest population and receives discharges directly or indirectly from numerous entities and companies. This area has also been the site of several spills from oil production related activities.

**Subwatershed 6.04 *Harris Creek***

Results from ambient toxicity tests indicated sublethality and lethality. Test results were similar both above and below the major discharges in this stream. A special investigation by the TNRCC did not find elevated levels of priority pollutants in water, sediment, or fish tissue samples.

**Subwatershed 7.00 *Lake Tawakoni (Segment 507)***

Extensive monitoring of Lake Tawakoni by SRA has shown the pH to be higher than the range listed in the Texas Water Quality Standards (TSWQS), which should be changed to reflect the actual ambient conditions.

**Subwatershed 7.03 *South Fork of the Sabine River***

The data analyses showed concerns or possible concerns for chlorides, sulfates, nutrients, fecal coliform, and ambient toxicity. Testing is continuing to determine whether the pollution is from point or nonpoint sources.

**Subwatershed 7.07 *Cowleech Fork***

Water quality concerns and possible concerns in this subwatershed include dissolved oxygen, chlorides, sulfates, total dissolved solids, nutrients, fecal coliform and ambient toxicity. Preliminary results indicate the cause of toxicity to be organic chemicals (possibly pesticides). Additional tests should verify the exact chemicals involved.

***Long-term Planning***

The 1995-1996 assessment process has allowed the SRA SRWMP to focus on identified problem areas and provided for a systematic method for effectively monitoring the Sabine Basin with limited resources. Through input by and coordination with the Steering Committee, the SRA will continue to evaluate both the WQMP and the SRA TCRP Subwatershed Screening Program and adjust the programs as necessary to respond to changing conditions which can affect water quality. Other long-term plans for the SRA assessment process are discussed below.

**Enhance Public Participation and Education**

The SRA will continue to develop its public outreach and involvement programs. The Steering Committee has been expanded from 25 original members to over 65 current members. The Steering Committee has been divided into three subcommittees, based on geography, to enable participants to have input on water quality issues in their respective areas.

**Encourage Comprehensive Watershed Planning**

The SRA, through the TCRP, has developed cooperative partnerships to address water quality issues with other state and local government agencies as well as private

businesses. This effort has included a waste load evaluation for Segment 0505 and receiving water assessments for permitted dischargers.

Future plans include cooperative monitoring with the State of Louisiana to more adequately cover that part of the Basin outside of Texas.

### **Identify Pollutant Sources**

The SRA WQMP and the SRA TCRP Subwatershed Monitoring Program have identified areas where problems exist and efforts are now focused to determine the causes and find solutions. The SRA Subwatershed Inventories will continue to be developed to assist with this effort.

### **Provide a Scientific Approach to Water Quality Issues**

The SRA WQMP and SRA TCRP Subwatershed monitoring programs provide a comprehensive, scientific approach to water quality issues. The SRA Quality Assurance Project Plan (QAPP) ensures that the data produced is reliable and scientifically sound. The QAPP also provides a means for data collected by other entities in the Sabine Basin to be included in the SRA data repository. The SRA data repository will be utilized by the TNRCC in its water quality management functions to base permit limits and requirements, receiving stream water quality modeling, and TSWQS on sound scientific data.

### **Focus on Priority Issues**

The Reaches in the Sabine Basin will continue to be prioritized through the SRA SRWMP. This enables the SRA to focus resources on the areas with the most serious existing water quality problems.

### **Prevent and Reduce Pollution at the Source**

The SRA monitoring programs will continue to be used to demonstrate where current regulatory programs have been effective and identify areas where additional measures should be implemented.

### **Ensure Better Use of Public Funds**

The SRA will continue to encourage cooperative efforts with other agencies to reduce any duplication of effort. This will provide for more efficient use of TCRP funds and other resources of the State by minimizing overall costs in protecting the environment.

### **Promote Water Conservation**

The SRA will continue to update and promote its *Water Conservation and Drought Contingency Plan*. SRA will continue to determine how this plan can be expanded to all water users in the Basin and will also evaluate alternatives for enhancement of water conservation practices to meet future needs.

### **Provide Assistance for Local Initiatives**

The SRA will continue working with other entities to include data from other monitoring programs in the SRA data repository. The SRA will continue the performance of Receiving Water Assessments for permitted dischargers and will continue to collect water quality data on unclassified streams so future decisions by TNRCC, in its water quality management functions, can be based on good scientific real-time information.

### ***Conclusion***

The results of this Assessment indicate acceptable water quality throughout most of the Sabine Basin. The few parameters of concern or possible concern were mainly limited to areas within individual subwatersheds. The TCRP data analysis could not be performed on many of the monitoring sites which had routine monitoring data due to insufficient flow measurement data. The SRA subwatershed approach did allow conclusions to be made about the water quality in many of these subwatersheds.

### ***Recommendations***

The SRA WQMP and the SRA TCRP Subwatershed Screening Program should be continued over time in order to systematically cover the Basin and identify problem areas. The SRA Subwatershed Inventory also should continue collecting additional information on land use and other activities which can influence water quality. More fully developed databases of water quality-related information within the Subwatershed Inventory will allow for development of a comprehensive "Subwatershed Report Card" that describes the condition of water quality throughout the Basin on a subwatershed basis. This subwatershed approach allows the SRA to focus limited available resources to identify the sources of water quality impairments.

The TCRP as established by Senate Bill 818 requires the river basin water quality assessments to be a 'continuing duty' and 'be revised as necessary to show changes in the factors subject to assessment.' Funding for the TCRP program should be continued to allow the program to move forward in solving water quality problems and protecting the water resources of Texas. Public involvement and cooperation between cities and various state agencies through the TCRP allows for more resources to be directed toward solving water quality problems than could be addressed by government agencies alone. However, the TCRP should increase its responsiveness toward the needs of TCRP feepayers.

The TCRP as it has evolved and now stands is a win/win situation for everyone at the local, regional, and state levels. However, it needs to be recognized that significant water quality problems identified through this program will require other resources in order to solve these problems.