

# Angelina & Neches River Authority

Providing water resource solutions and protecting the waterways of the Neches River Basin since 1935.



## Upper & Middle Neches Basin Steering Committee Meeting



ANGELINA & NECHES RIVER AUTHORITY

*July 30<sup>th</sup>, 2024*



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## Agenda

### Welcome and Introductions

Jeremiah Poling, Angelina & Neches River Authority

### Overview of the Clean Rivers Program

Andrew Henry, Angelina & Neches River Authority

### Updates to ANRA's Water Quality Monitoring Program and The 2024 Basin Highlights Report

Andrew Henry, Angelina & Neches River Authority

### TMDL and Clean Water Act Project Updates

**Middle Neches Tributaries TMDL** – Texas Water Resources Institute

**La Nana Bayou Watershed Protection Plan** – Texas Water Resources Institute

**Attoyac Bayou Watershed Protection Plan** – Texas Water Resources Institute

**Ayish Bayou Water Quality** – Texas Water Resources Institute

### Recreation, Education, and Outreach Updates

Kimberly Wagner, Angelina & Neches River Authority

### Guest Speakers

Ashley Villarreal, Keep Nacogdoches Beautiful

Sam Hernandez, Citizen Nac

Jose Lopez, Texas Conservation Alliance

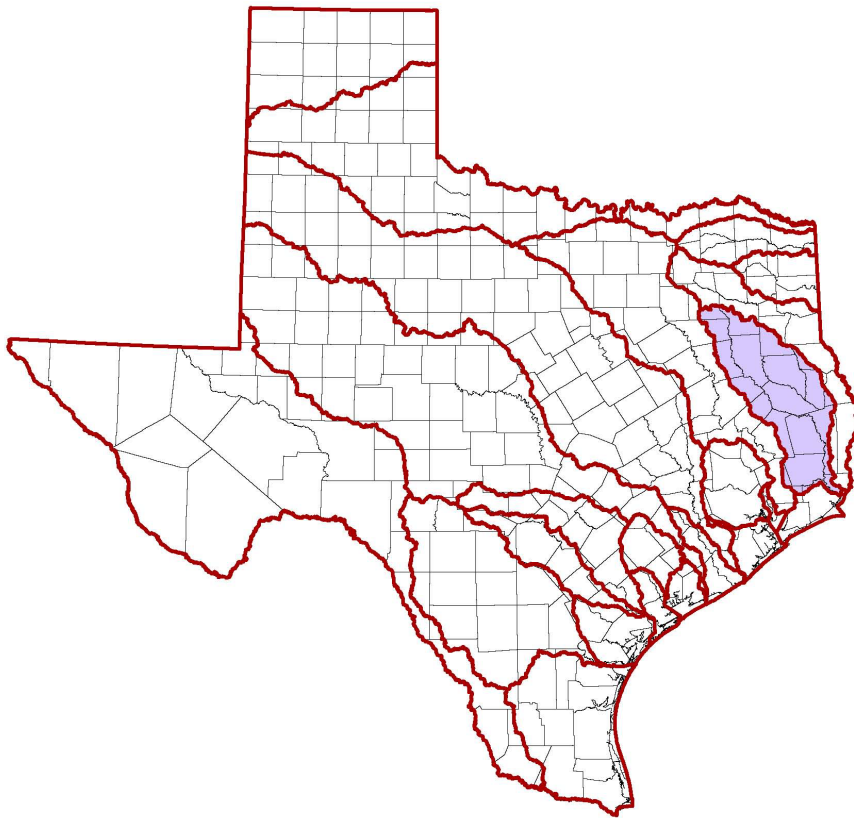
### Open Discussion for Steering Committee Member Recommendations and Concerns

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## The Neches River Basin



**ANRA's Jurisdictional Service Area includes all or a portion of the following 17 counties:**

Van Zandt  
Smith  
Henderson  
Newton  
Cherokee  
Anderson  
Rusk  
Houston  
Nacogdoches

San Augustine  
Shelby  
Angelina  
Trinity  
Sabine  
Polk  
Jasper  
Orange



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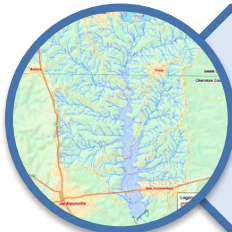
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## ANRA's General Administration



**Coordinate with  
Governments/Entities**



**Water Resource Planning and  
Development**



**Economic Development  
Bond Issuance**



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## ANRA's Field Operations Division



**Regional Wastewater Treatment Facilities  
and Contract Operations**



**Drinking Water Utilities**



**Biosolids Composting  
Neches Compost Facility**



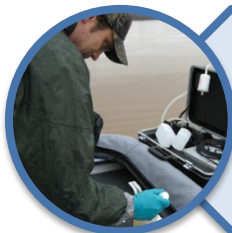
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## ANRA's Field Environmental Division



**Clean Rivers Program**  
Water Quality Monitoring



**Environmental Laboratory**  
Drinking Water, Surface Water, and  
Wastewater Testing



**On-Site Sewage Facilities Program**  
OSSF Permitting & Investigations



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## The Texas Clean Rivers Program (CRP)



Water Hyacinth Downstream of Marion's Ferry, Sam Rayburn Reservoir

Established in 1991 by the 72<sup>nd</sup> Texas Legislative Session (SB 818)

- Purpose is to monitor the waters of the state and maintain and/or improve water quality
- Emphasis on the collection of water quality data for assessment and regulatory purposes
- Funded by state fees
- Collaboration of the Texas Commission on Environmental Quality (TCEQ) and 15 partner agencies

<http://www.tceq.texas.gov/waterquality/clean-rivers>



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## Budget Allocations for the CRP Program

FY 2024 - 2025 Budget Allocations			
Planning Agency	FY 2024	FY 2025	Total Allocation
Brazos River Authority (12)	\$474,088.00	\$474,088.00	\$948,176.00
Guadalupe-Blanco River Authority (17 & 18)	\$161,195.00	\$161,195.00	\$322,390.00
Houston-Galveston Area Council (9, 10, 11, 13)	\$1,149,758.00	\$1,149,758.00	\$2,299,516.00
International Boundary & Water Commission (23)	\$318,217.00	\$318,217.00	\$636,434.00
Lavaca-Navidad River Authority (16)	\$118,234.00	\$118,234.00	\$236,468.00
Lower Colorado River Authority (14 & 15)	\$454,606.00	\$454,606.00	\$909,212.00
<b>Angelina &amp; Neches River Authority and Lower Neches Valley Authority (6 &amp; 7)</b>	<b>\$392,652.00</b>	<b>\$392,652.00</b>	<b>\$785,304.00</b>
Northeast Texas Municipal Water District (4)	\$118,234.00	\$118,234.00	\$236,468.00
Nueces River Authority (20, 21, & 22)	\$308,279.00	\$308,279.00	\$616,558.00
Red River Authority of Texas (1 & 2)	\$370,448.00	\$370,448.00	\$740,896.00
San Antonio River Authority (19)	\$235,485.00	\$235,485.00	\$470,970.00
Sabine River Authority (5)	\$372,777.00	\$372,777.00	\$745,554.00
Sulphur River Basin Authority (3)	\$118,233.00	\$118,233.00	\$236,466.00
Trinity River Authority (8)	\$468,269.00	\$468,269.00	\$936,538.00
<b>TOTALS</b>	<b>\$5,060,475.00</b>	<b>\$5,060,475.00</b>	<b>\$10,120,950.00</b>



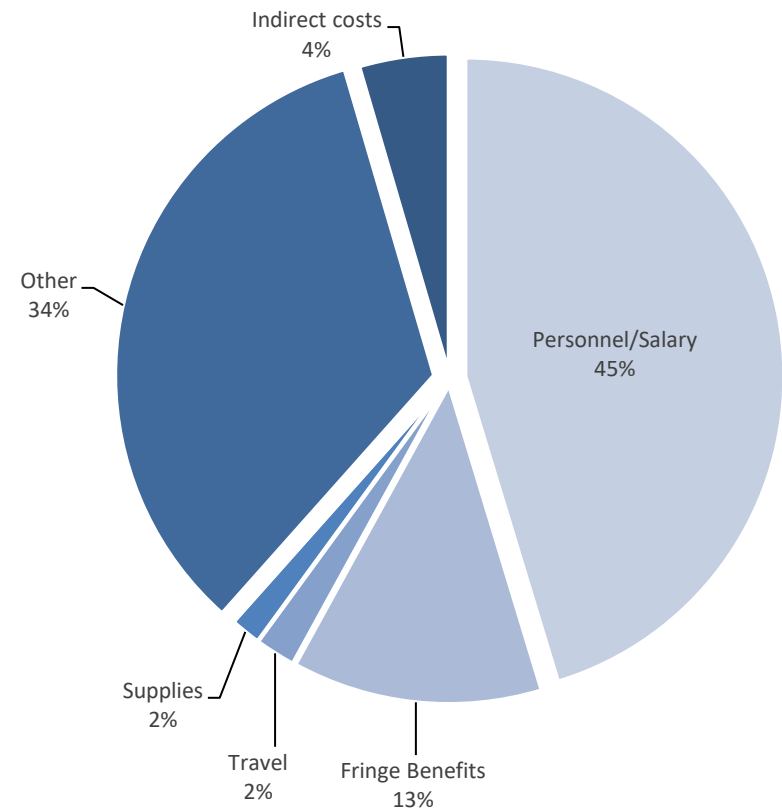
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## ANRA's CRP Budget Breakdown

FY 2024 - FY 2025 Clean River Program Budget	
Budget Category	Approved Budget
Personnel/Salary	\$177,903.72
Fringe Benefits	\$49,813.04
Travel	\$8,033.52
Supplies	\$6,035.35
Equipment	\$0.00
Contractual	\$0.00
Construction	\$0.00
Other	\$133,076.00
Total Direct Costs	\$374,861.63
Indirect Costs	\$17,790.37
<b>Total Project Costs</b>	<b>\$392,652.00</b>



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## FY 2024 Neches Basin Water Quality Monitoring Schedule

ANRA continues to monitor 37 sites quarterly for field parameters, conventional parameters, and bacteria. Additionally, there are two 24-hour Dissolved Oxygen monitoring sites: one on Cedar Creek in Lufkin, one on the Riverine Portion of Sam Rayburn Reservoir.

### Changes

- Ayish Bayou sampling was completed at the end of FY 2023. By the start of FY 2025, it should begin again.
- In March of 2024, sampling began for the La Nana Bayou WPP. Sampling is on a monthly basis at two sites (one new for ANRA) in addition to twenty bacteria only sites collected by SFASU.
- The five sites on Attoyac Bayou collected by SFA for the Attoyac WPP will be discontinued by the end of this FY.

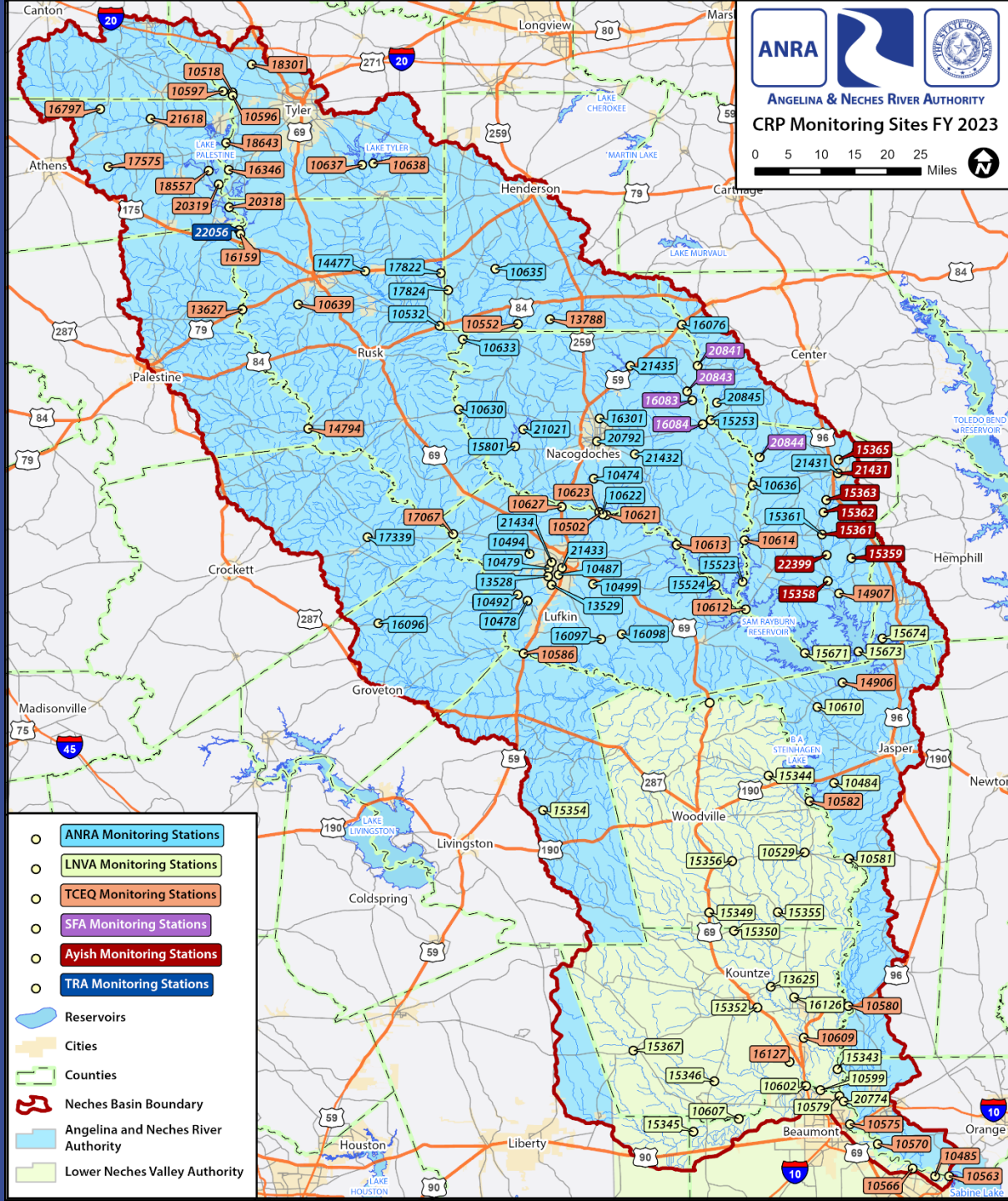
### FY 2024 Monitoring Stations in the Neches Basin

<i>Sampling Entity</i>	<i>Number of Monitoring Sites</i>
Angelina & Neches River Authority	37 (+2 24hr DO sites)
TCEQ Region 5 (Tyler)	19
TCEQ Region 10 (Beaumont)	20 (+2 fish tissue sites)
Lower Neches Valley Authority	26
Stephen F. Austin State University	5 (+20 Bacteria only sites)
Tarrant Regional Water District	1



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## Water Quality Monitoring in the Neches Basin

Parameters Collected		
Field	Conventional	Bacteriological
Dissolved Oxygen	Ammonia-N	<i>Escherichia Coli</i> (E.coli)
pH	Nitrate-N	
Conductivity	Nitrite-N	
Instantaneous Stream Flow	Total Kjeldhal Nitrogen	
Water Temperature	Chlorophyll-a	
Secchi Depth (Transparency)	Pheophytin-a	
Total Water Depth	Chloride	
Present Weather	Sulfate	
Days Since Last Significant Rainfall	Total Phosphorus	
Flow Severity	Total Suspended Solids	



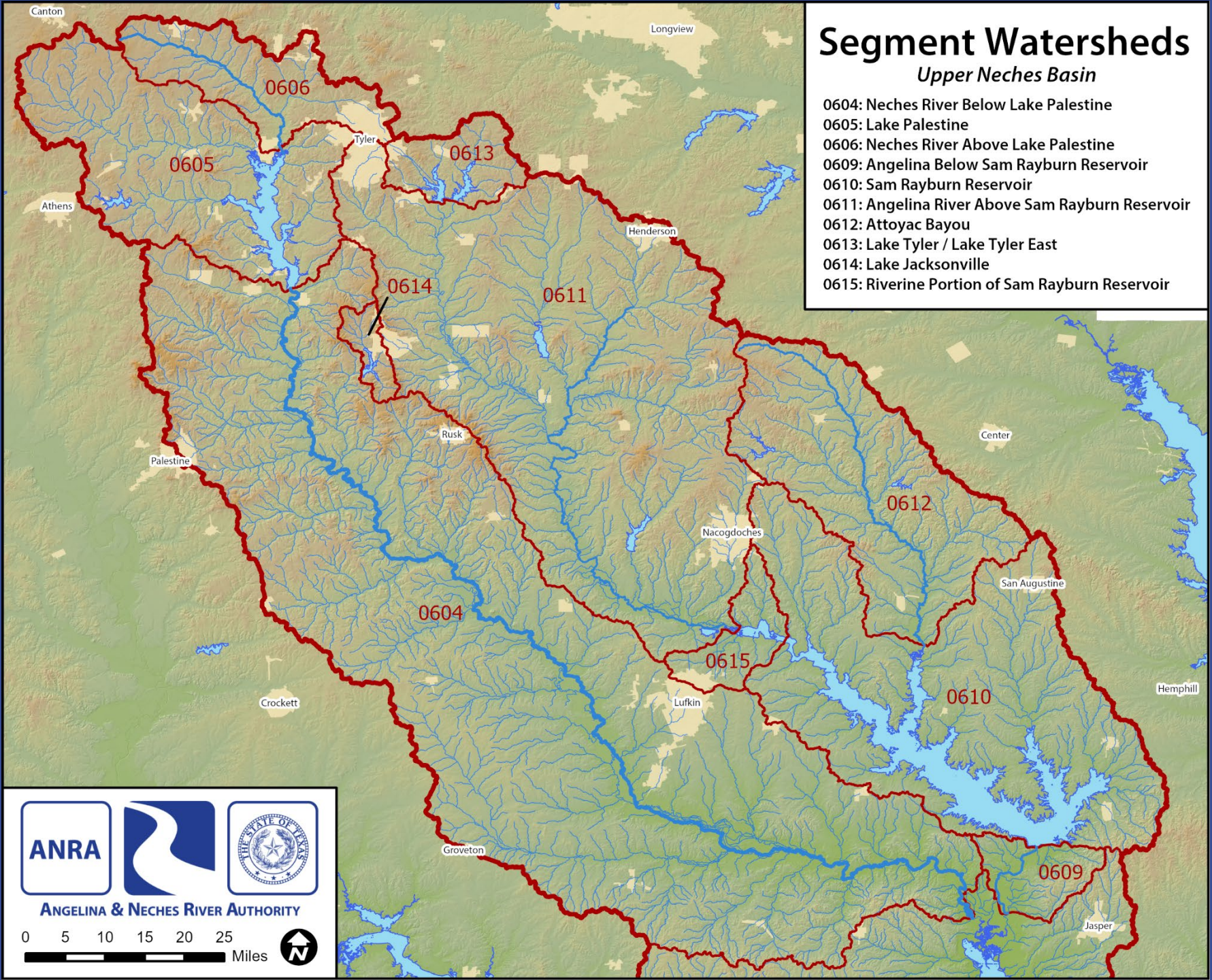
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# Segment Watersheds

## Upper Neches Basin

- 0604: Neches River Below Lake Palestine
- 0605: Lake Palestine
- 0606: Neches River Above Lake Palestine
- 0609: Angelina Below Sam Rayburn Reservoir
- 0610: Sam Rayburn Reservoir
- 0611: Angelina River Above Sam Rayburn Reservoir
- 0612: Attoyac Bayou
- 0613: Lake Tyler / Lake Tyler East
- 0614: Lake Jacksonville
- 0615: Riverine Portion of Sam Rayburn Reservoir



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0 5 10 15 20 25 Miles





# Upper Neches Basin Sites in the Draft 2024 Texas Integrated Report 303(d) List

SEGMENT ID	SEGMENT NAME	IMPAIRMENTS	CATEGORY (AU ID)
604	Neches River Below Lake Palestine	Dioxin in edible tissue Mercury in edible tissue	5c (01, 02, 03) 5c (01, 02, 03)
0604A	Cedar Creek	Bacteria in water (Recreation Use) Depressed dissolved oxygen in water	5c (03) 5c (03)
0604B	Hurricane Creek	Bacteria in water (Recreation Use)	5a (02)
0604C	Jack Creek	Bacteria in water (Recreation Use)	5a (01)
0604D	Piney Creek	Depressed dissolved oxygen in water	5b (01)
0604M	Biloxi Creek	Bacteria in water (Recreation Use) Depressed dissolved oxygen in water	5a (02) 5c (03)
0604T	Lake Ratcliff	Mercury in edible tissue	5c (01)
605	Lake Palestine	pH	5b (01, 02, 03, 09, 10, 11)
0605A	Kickapoo Creek in Henderson County	Bacteria in water (Recreation Use) Depressed dissolved oxygen in water	5r (01, 02) 5r (01)
606	Neches River Above Lake Palestine	Bacteria in water (Recreation Use) Depressed dissolved oxygen in water	5c (01, 02) 5b (02)
0606A	Prairie Creek	Bacteria in water (Recreation Use)	5b (01, 03)
0606D	Black Fork Creek	Bacteria in water (Recreation Use)	5b (02)
609	Angelina River Below Sam Rayburn Reservoir	Dioxin in edible tissue Mercury in edible tissue	5a (01) 5c (01)

SEGMENT ID	SEGMENT NAME	IMPAIRMENTS	CATEGORY (AU ID)
610	Sam Rayburn Reservoir	Dioxin in edible tissue Excessive algal growth in water Mercury in edible tissue pH	5c (01 - 10) 5c (01 - 10) 5c (01 - 10) 5c (05)
0610A	Ayish Bayou	Bacteria in water (Recreation Use)	5a (01, 02)
0610P	Bayou Carrizo	Bacteria in water (Recreation Use)	5c (01)
611	Angelina River Above Sam Rayburn Reservoir	Bacteria in water (Recreation Use)	5c (01, 03, 04)
0611A	East Fork Angelina River	Bacteria in water (Recreation Use)	5c (01, 02)
0611B	La Nana Bayou	Bacteria in water (Recreation Use)	5r (01, 02, 03)
0611C	Mud Creek	Bacteria in water (Recreation Use)	5b (01, 02)
0611D	West Mud Creek	Bacteria in water (Recreation Use)	5c (01)
612	Attoyac Bayou	Bacteria in water (Recreation Use)	5r (01, 02, 03)
0612F	West Creek	Bacteria in water (Recreation Use)	5b (01)
613	Lake Tyler/Lake Tyler East	Excessive algal growth in water	5c (02, 03, 04)
615	Riverine Portion of Sam Rayburn Reservoir	Bacteria in water Depressed dissolved oxygen in water Dioxin in edible tissue Mercury in edible tissue pH (low)	5c (01) 5c (01) 5c (01) 5c (01) 5c (01)
615A	Paper Mill Creek	Bacteria in water	5b (01)



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## Reclassifications and Delistings from the Draft 2024 IR

Segment ID	Name	Impairment	AU ID	Previous Category	New Category
0604A	Cedar Creek	Bacteria in Water	02	5a	4a
0604B	Hurricane Creek	Bacteria in Water	01	5a	4a
0604C	Jack Creek	Bacteria in Water	01	5a	4a
0604D	Piney Creek	Bacteria in Water	02	5b	-
0604M	Biloxi Creek	Bacteria in Water	03	5a	4a
0605A	Kickapoo Creek	Bacteria in Water Depressed Dissolved Oxygen in Water	01, 02 01	5c	5r 5r
0611B	La Nana Bayou	Bacteria in Water	01, 02, 03	5b	5r
0612	Attoyac Bayou	Bacteria in Water	01, 02, 03	5c	5r



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## 2024 Upper Neches Basin Highlights Report



The Basin Highlights Report is produced annually by ANRA and typically provides an overview of previous years events and ongoing programs in the upper and middle portions of the Neches River Basin that are relevant to the Clean Rivers Program.

Designed to inform and educate stakeholders about water quality monitoring, known issues and efforts to address them. The report provides information on education and outreach activities, and ways that you can get involved in preserving and improving water quality in places that are important to you.

This report is in the watershed characterization format, and it covers the characterization of the Sam Rayburn Reservoir and Lake Palestine. This format is to reduce redundancy of reports while furthering the knowledge of water quality issues in the basin.



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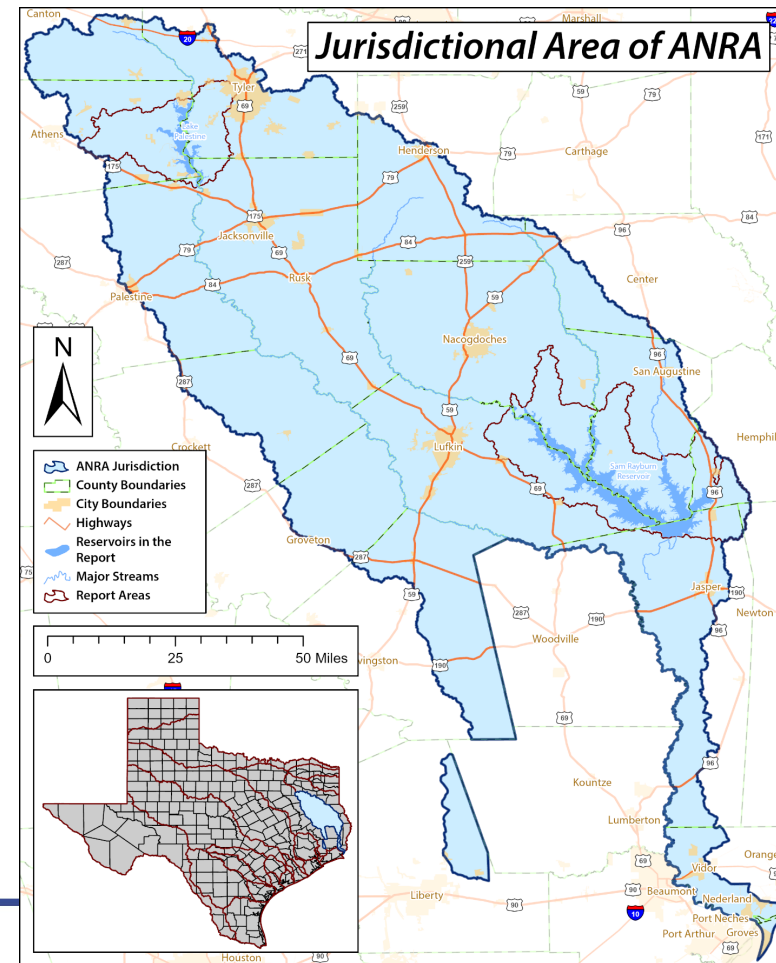


## 2024 Upper Neches Basin Highlights Report

This report focused on the Sam Rayburn Reservoir and Lake Palestine Watersheds due to the fact that they face similar water quality issues despite being in two completely different environments.

These water quality issues are:

- High pH
- Manganese and Iron in Sediment
- Excessive Algal Growth



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## 2024 Upper Neches Basin Highlights Report

This report studied:

### Geography

Population Density

Land Use/Land Cover

Watershed Inputs

Climate

Reservoir Capacities

Hydrologic Soil Groups

Active Monitoring Sites

Water Quality Projects in the Area

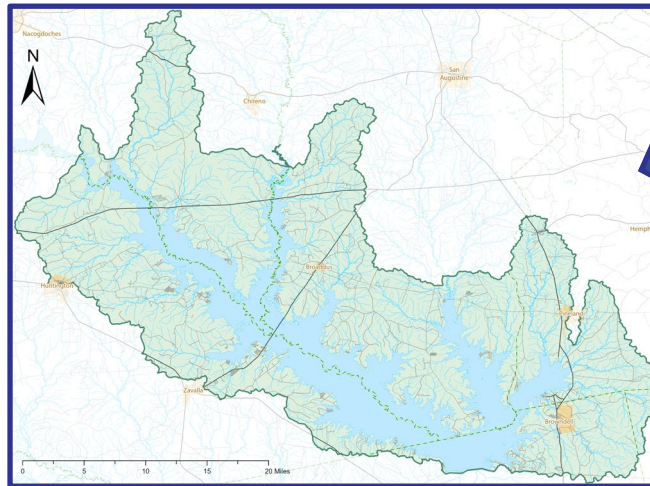
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The Science Behind the WQ Issues

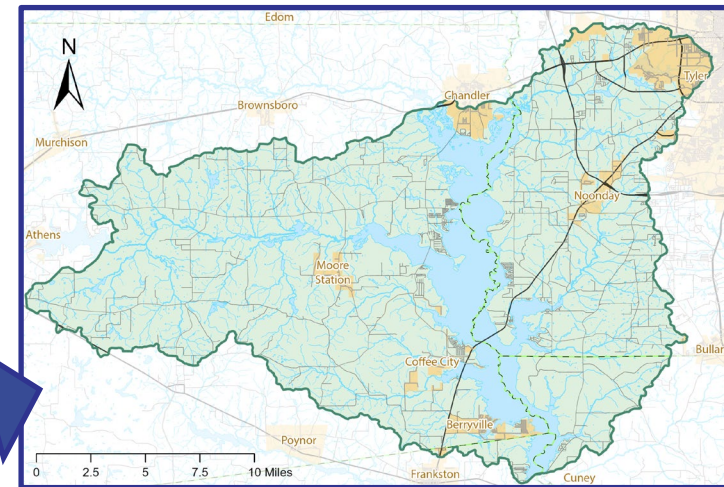
Trophic States of the Reservoirs

Major Watershed Events

And More!



### Sam Rayburn Reservoir Watershed



### Lake Palestine Watershed



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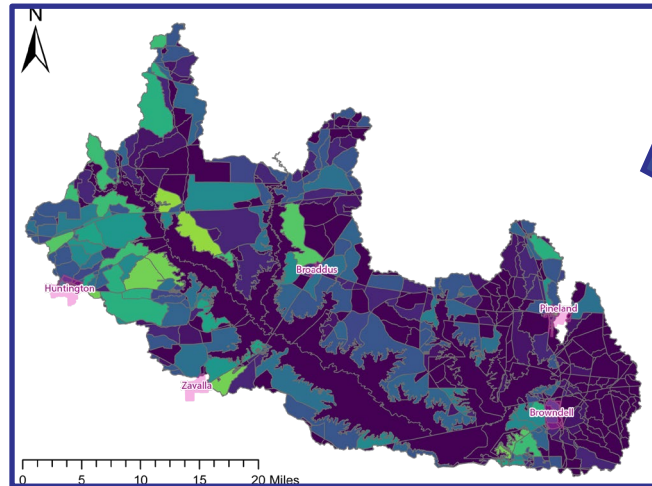
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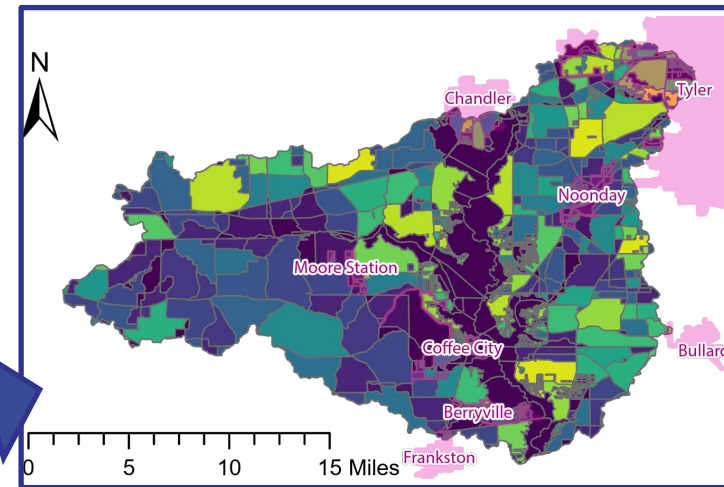
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**Sam Rayburn Reservoir  
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**Lake Palestine  
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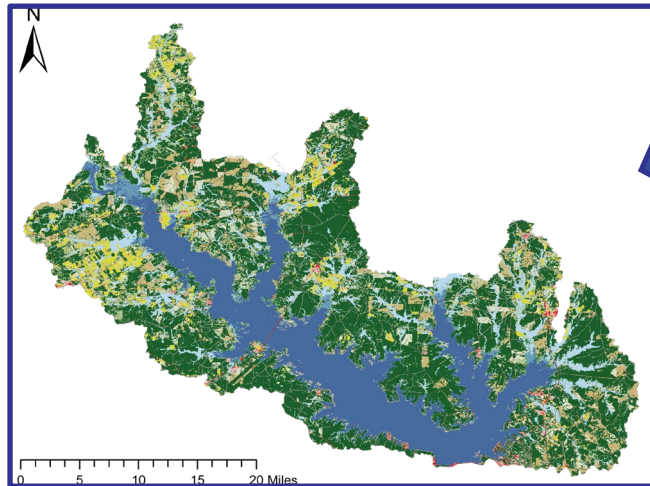
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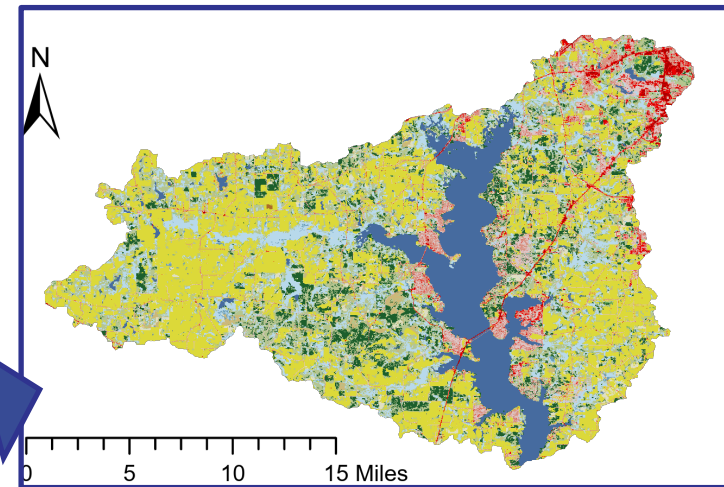
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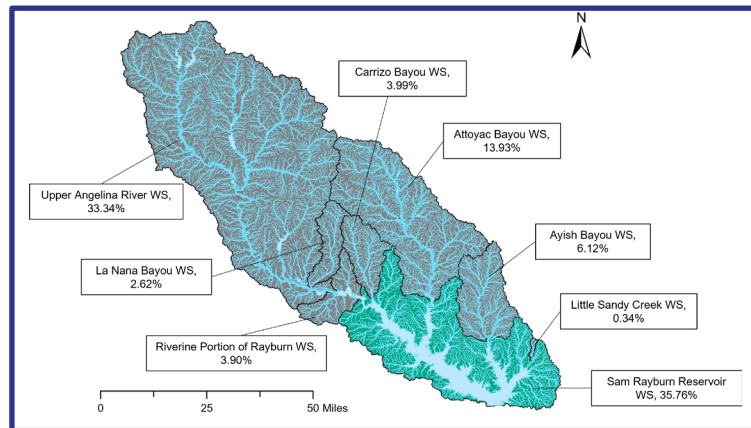
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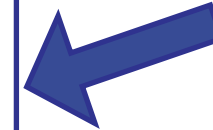
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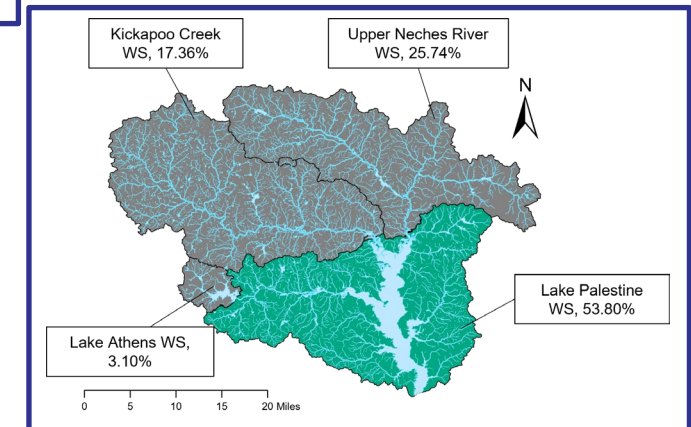
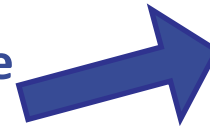
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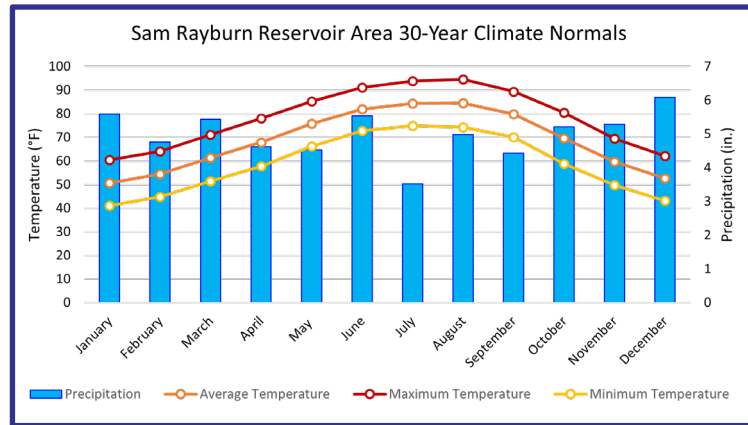
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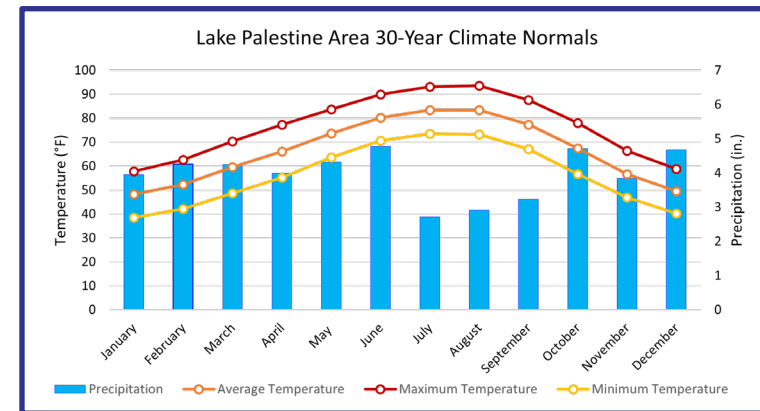
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ANRA



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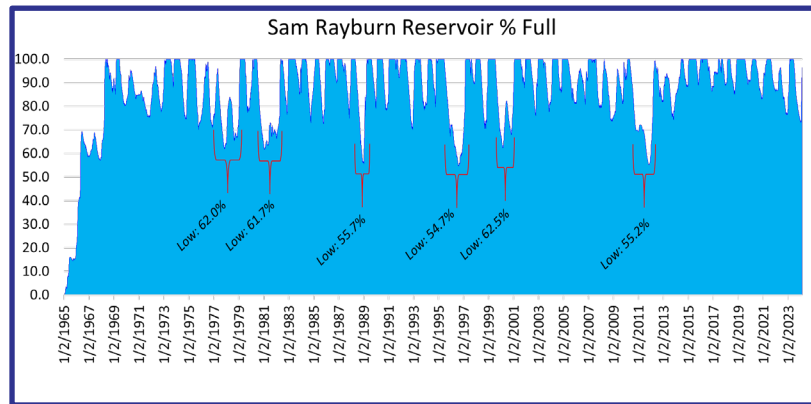
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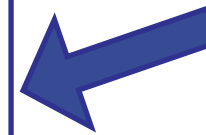
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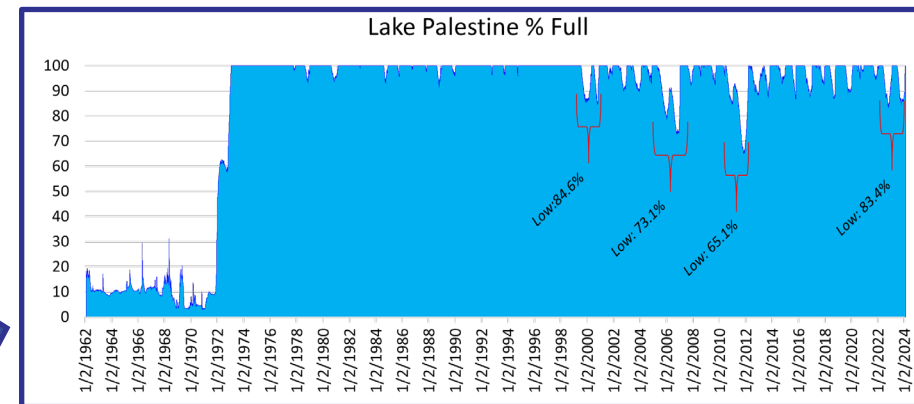
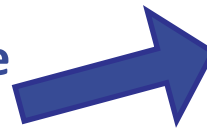
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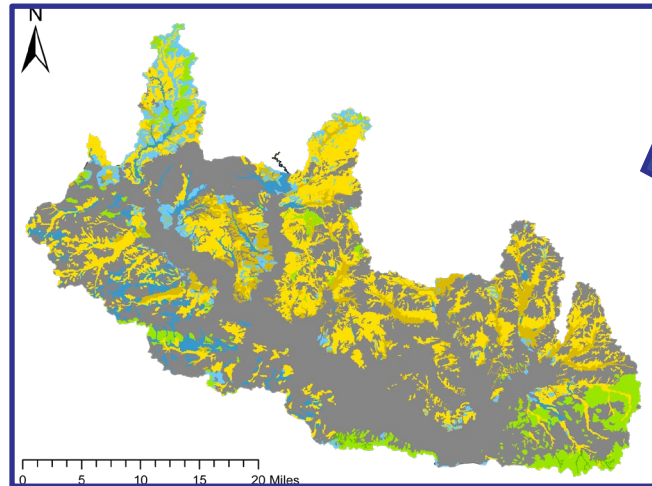
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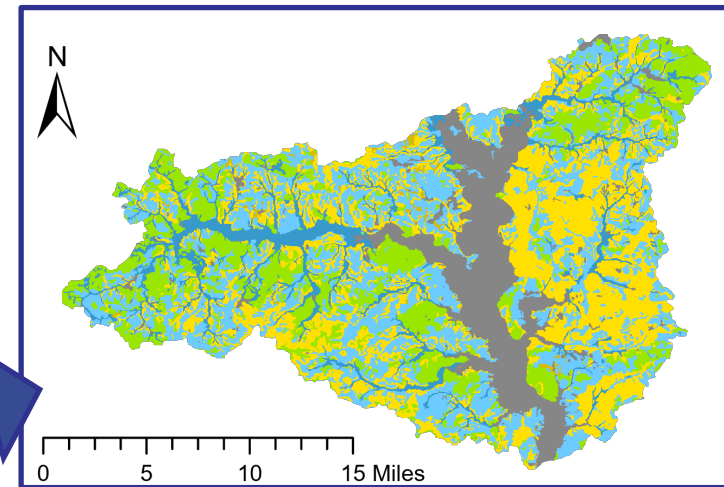
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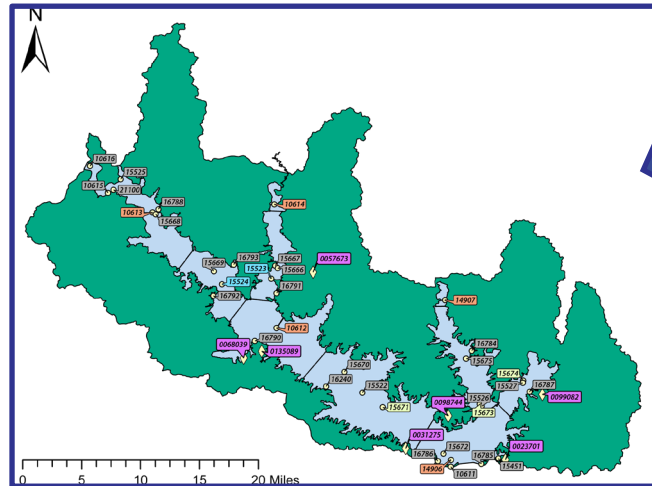
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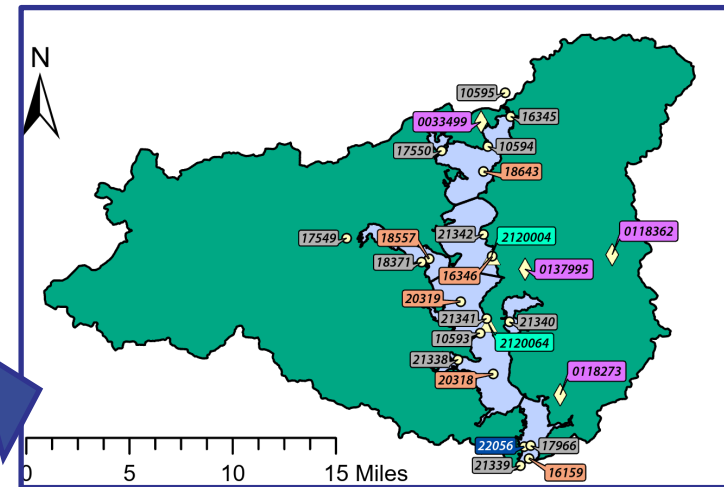
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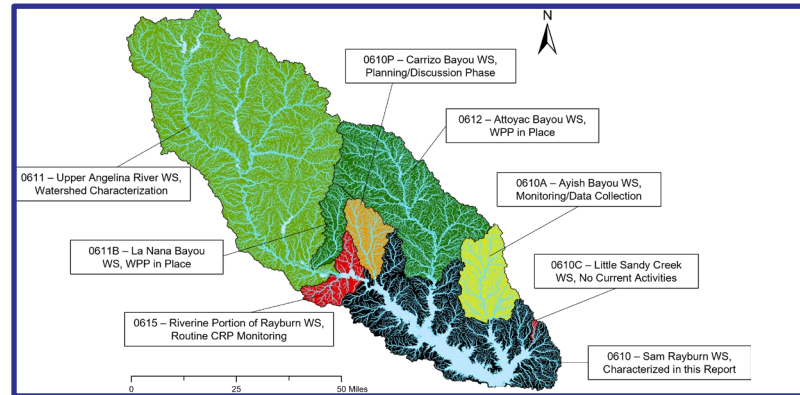
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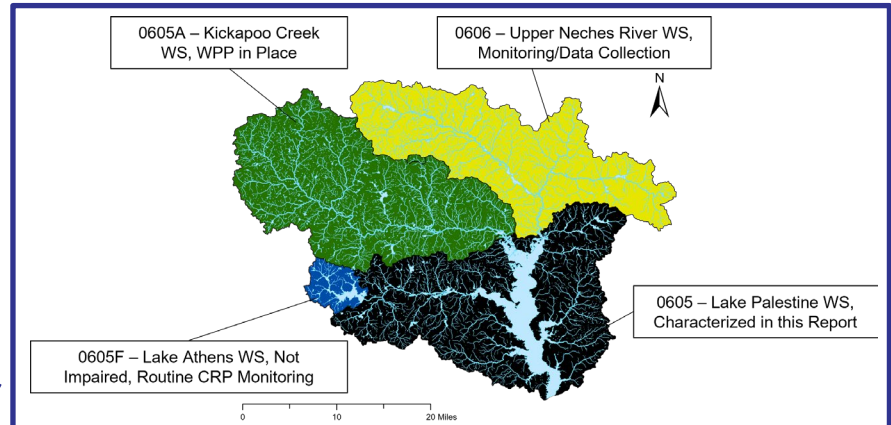
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Water Quality Projects in the Area

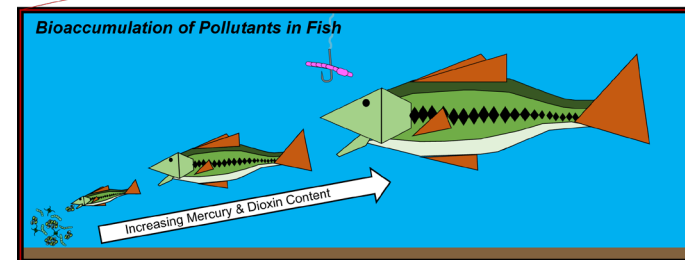
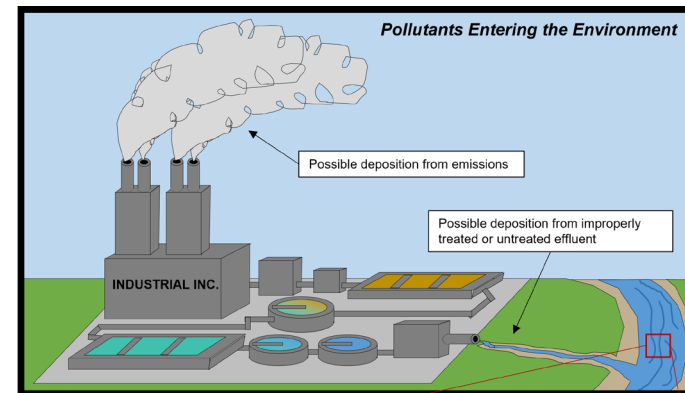
**Potential Sources of Impairments and Concerns**

The Science Behind the WQ Issues

Trophic States of the Reservoirs

Major Watershed Events

And More!



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Providing water resource solutions and protecting the waterways of the Neches River Basin since 1935.



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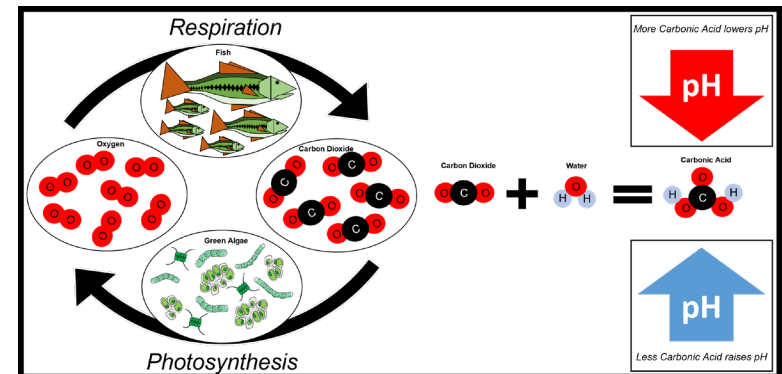
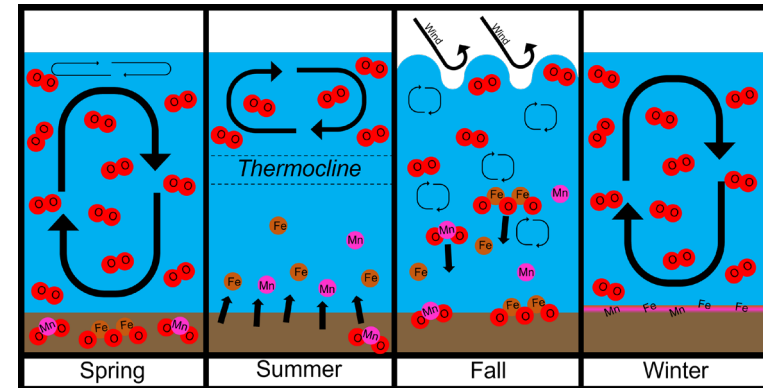
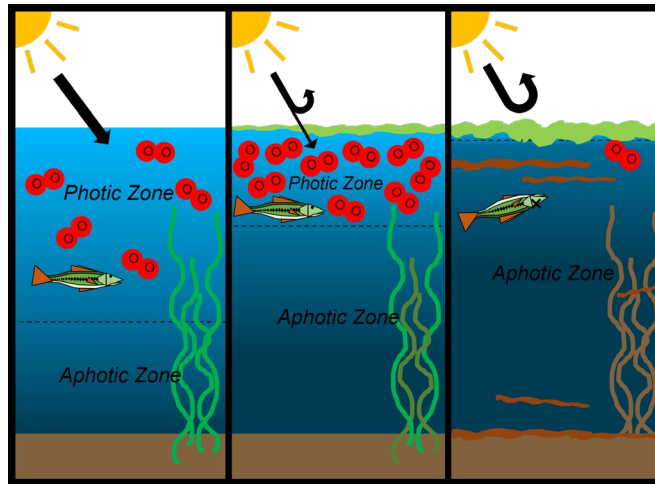
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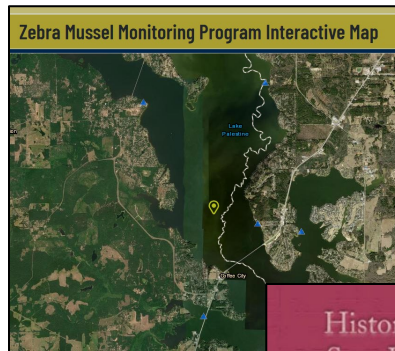
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CESWF-PEC

21 June 2017

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers (USACE), Fort Worth District (SWF)

SUBJECT: Sam Rayburn Dam and Reservoir

Historical Data Review for the  
Sam Rayburn Reservoir, Texas

Prepared for:  
Texas Commission on Environmental Quality

Prepared by:  
Tetra Tech, Inc.

DEPARTMENT OF THE ARMY  
FORT WORTH DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 17300  
FORT WORTH, TEXAS 76102-0300

### VOLUMETRIC SURVEY OF LAKE PALESTINE

JUNE 2003 SURVEY

Prepared by the:

TEXAS WATER DEVELOPMENT BOARD

### The Water Quality of Sam Rayburn Reservoir, Eastern Texas

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1999-J

Prepared in cooperation with the  
U.S. Army Corps of Engineers

U.S. ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL EUTROPHICATION SURVEY  
WORKING PAPER SERIES



REPORT  
ON  
SAMI RAYBURN RESERVOIR  
ANGELINA, JASPER, MOOREHEADS,  
SABINE, and SAN AUGUSTINE COUNTIES  
TEXAS  
EPA REGION VI

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-4

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2013 Fisheries Management Survey Report

Lake Palestine

Prepared by:

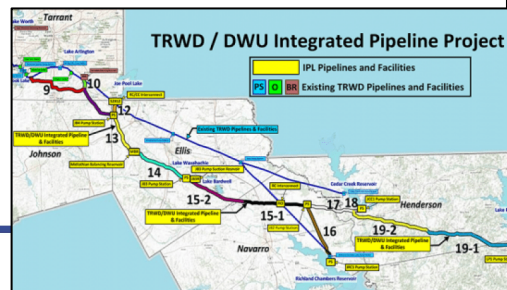
Richard A. Ott, District Management Supervisor  
and  
Jacob D. Norman, Assistant District Management Supervisor  
Inland Fisheries Division  
District 3-C, Tyler, Texas



Carter Smith  
Executive Director

Gary Saul  
Director, Inland Fisheries

July 31, 2014



ANGELINA & NECHES RIVER AUTHORITY



# Angelina & Neches River Authority

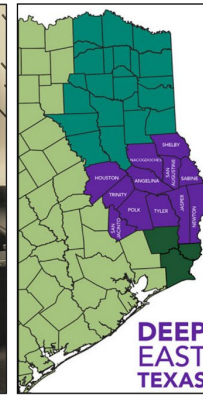
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CENTER FOR APPLIED RESEARCH AND RURAL INNOVATION



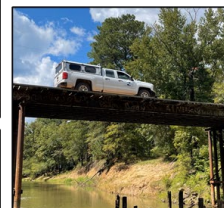
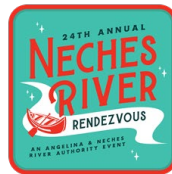
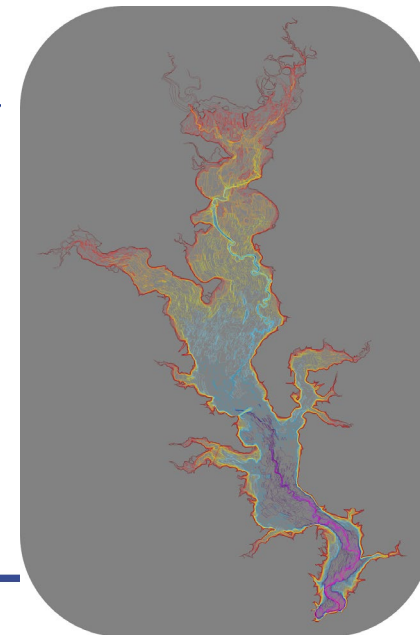
2023 - Full



2009 - Low



2011 - Extremely Low



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## Additional Resources

- Texas Commission on Environmental Quality Clean Rivers Program
  - <http://www.texascleanrivers.org>
- Surface Water Quality Monitoring Procedures Manual
  - [http://www.tceq.texas.gov/assets/public/comm\\_exec/pubs/rg/rg415/rg-415.pdf](http://www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg415/rg-415.pdf)
- Upper Neches Basin Quality Assurance Project Plan (QAPP)
  - [https://www.anra.org/wp-content/uploads/ANRA\\_FY2425CRPQAPP\\_Executed.pdf](https://www.anra.org/wp-content/uploads/ANRA_FY2425CRPQAPP_Executed.pdf)
- ANRA CRP Monitoring Activities
  - <https://www.anra.org/conservation-recreation/water-quality-activities/clean-rivers-program/monitoring-activities/>
- Coordinated Monitoring Schedule
  - <http://cms.lcra.org>
- ANRA Education and Outreach Materials
  - <https://www.anra.org/conservation-recreation/water-quality-activities/water-quality-education-outreach/>
- ANRA 2024 Basin Highlights Report
  - <https://www.anra.org/wp-content/uploads/2024-BHR-Final.pdf>



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## Comments or Questions?

Please direct inquiries regarding ANRA's Clean Rivers Program to:

**Andrew Henry**

*Clean Rivers Program Coordinator*

Angelina & Neches River Authority

2901 N John Redditt Dr.

Lufkin, TX 75904

Phone: 936-632-7527

Email: [ahenry@anra.org](mailto:ahenry@anra.org)



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