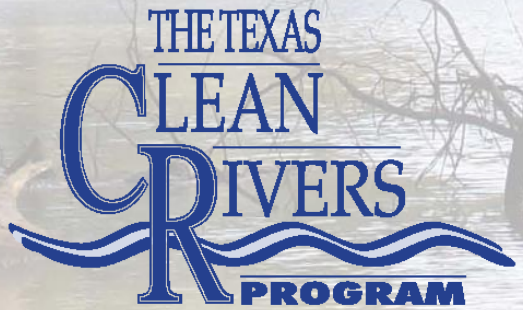
Upper Neches Basin
Steering Committee Meeting

May 30, 2018



ANGELINA & NECHES RIVER AUTHORITY

Agenda

Welcome and Introductions

Jeremiah Poling, Angelina & Neches River Authority

Overview of the Clean Rivers Program

Jeremiah Poling, Angelina & Neches River Authority

Updates to ANRA's Water Quality Monitoring Program and The 2018 Basin Highlights Report

Jeremiah Poling, Angelina & Neches River Authority

Updates on Nonpoint Source Grant Projects in the Neches River Basin

Attoyac Bayou Projects Update– Amy Truong, Texas Water Resources Institute

Attoyac Bayou Presentation – Cheryl Scott, Stephen F. Austin State University

Angelina River Project Update – Kirby Young, Texas Water Resources Institute

La Nana Bayou Project Update – Ed Rhodes, Texas Water Resources Institute

Overview of upcoming projects – Dr. Lucas Gregory, Texas Water Resources Institute

Texas Stream Team Program

Michael Jones, Texas Stream Team

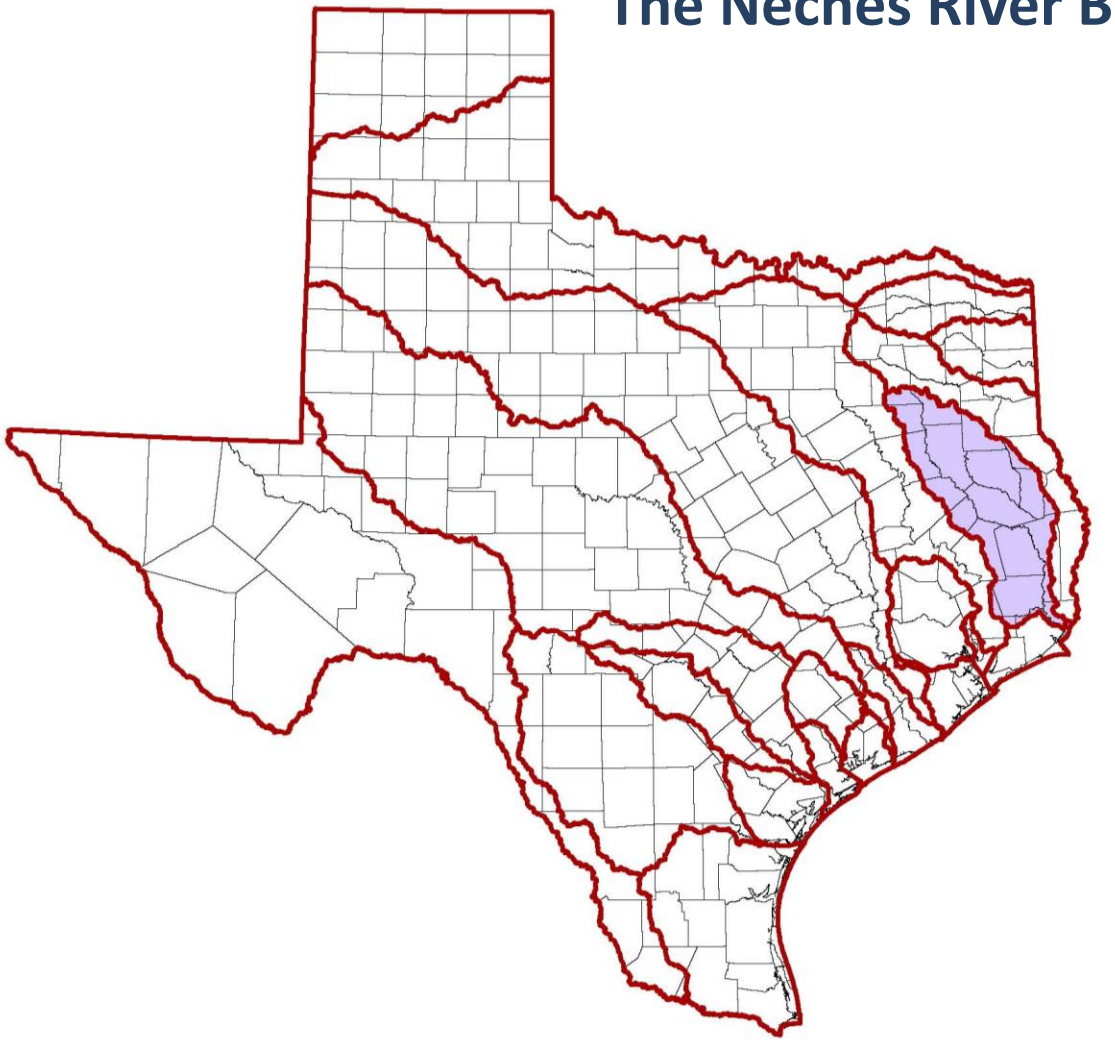
Open Discussion for Steering Committee Member Recommendations and Concerns

Angelina River at FM 1798

ANRA's Functions in the Neches Basin

ANGELINA & NECHES RIVER AUTHORITY

The Neches River Basin



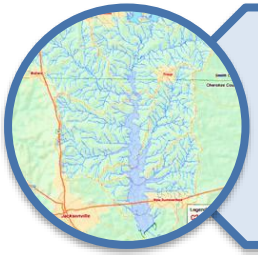
ANRA's Jurisdictional Service Area includes all or a portion of the following counties:

Van Zandt	San Augustine
Smith	Shelby
Henderson	Angelina
Newton	Trinity
Cherokee	Sabine
Anderson	Polk
Rusk	Jasper
Houston	Orange
Nacogdoches	

ANRA's General Administration

Coordinate with

Governments/Entities



Water Resource Planning and Development

Economic Development

Bond Issuance

ANRA's Field Operations Division

Regional Wastewater Treatment Facilities and Contract Operations

Drinking Water Utilities

Biosolids Composting

Neches Compost Facility

ANRA's Environmental Division

Clean Rivers Program

Water Quality Monitoring

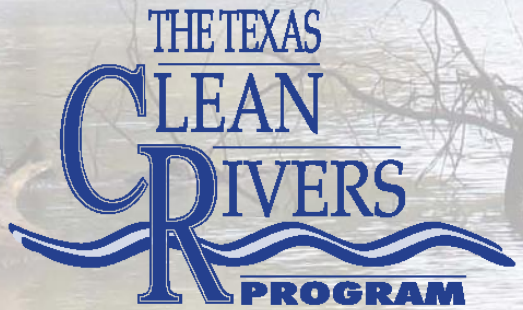
Environmental Laboratory

Drinking Water, Surface Water, and Wastewater Testing

On-Site Sewage Facilities Program

OSSF Permitting & Investigations

An Overview of the Texas Clean Rivers Program



ANGELINA & NECHES RIVER AUTHORITY

The Texas Clean Rivers Program (CRP)

- Established in 1991 by the 72nd Texas Legislative Session (SB 818)
- Purpose is to monitor the waters of the state and maintain and/or improve water quality
- Partially funded by fees on wastewater discharge and water rights permits
- Collaboration of the Texas Commission on Environmental Quality (TCEQ) and 15 partner agencies
- Emphasis on the collection of water quality data for assessment and regulatory purposes

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

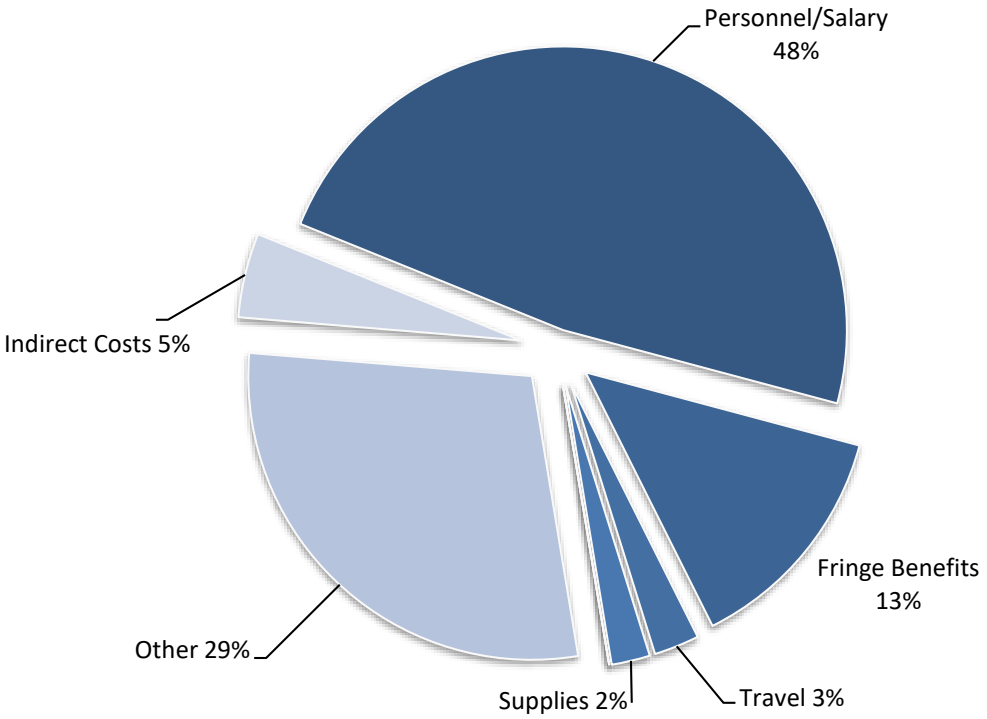
Angelina River upstream of SH 204

FY 2018 - 2019 Budget Allocations

Planning Agency	FY 2018	FY 2019	Total Allocation
BRA (12)	$3,981,590.00	$398,159.00	$796,318.00
GBRA (17 & 18)	$1,353,781.00	$135,378.00	$270,756.00
HGAC (9, 10, 11, 13)	$965,615.00	$965,615.00	$1,931,230.00
IBWC (23)	$267,252.00	$267,252.00	$534,504.00
LNRA (16)	$99,298.00	$99,298.00	$198,596.00
LCRA (14 & 15)	$381,797.00	$381,797.00	$763,594.00
ANRA & LNVA (6 & 7)	$329,766.00	$329,766.00	$659,532.00
NETMWD (4)	$99,298.00	$99,298.00	$198,596.00
NRA (20, 21, & 22)	$258,906.00	$258,906.00	$517,812.00
RRA (1 & 2)	$311,118.00	$311,118.00	$622,236.00
SARA (19)	$197,770.00	$197,770.00	$395,540.00
SRA (5)	$313,074.00	$313,074.00	$626,148.00
SRBA (3)	$99,297.00	$99,297.00	$198,594.00
TRA (8)	$393,272.00	$393,272.00	$786,544.00
TOTALS	**$4,250,000.00**	**$4,250,000.00**	**$8,500,000.00**

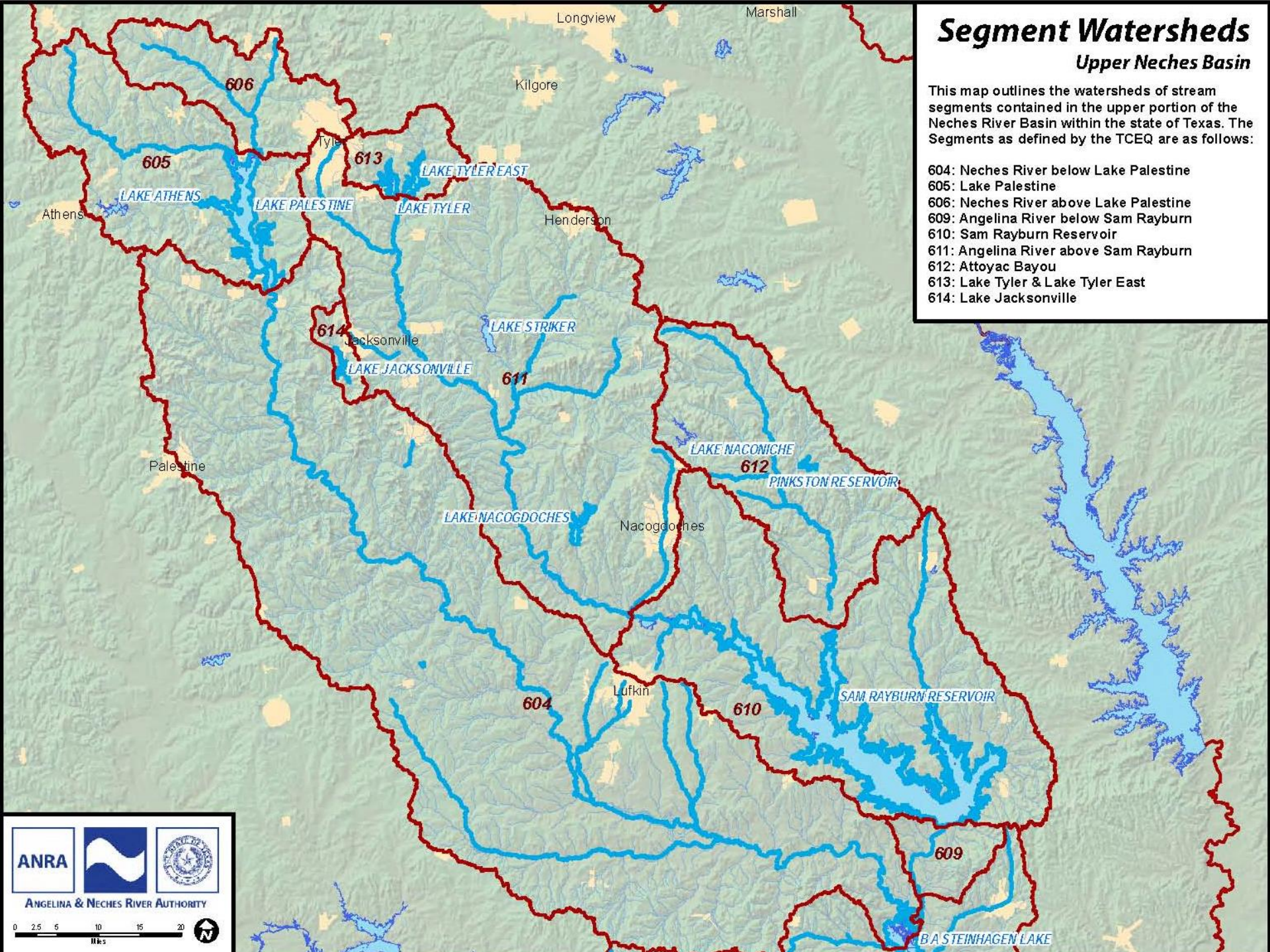
ANRA Clean Rivers Program Budget by Category

FY 2018 – FY 2019 Clean Rivers Program Budget	
Budget Category	**Approved Budget**
Personnel/Salary	$158,437.50
Fringe Benefits	$44,362.50
Travel	$8,520.00
Supplies	$7,242.24
Equipment	$0.00
Contractual	$0.00
Construction	$0.00
Other	$95,360.00
Indirect Costs	$15,843.76
Total Reimbursable Costs	**$329,766.00**



ANRA's Water Quality Monitoring Activities in the Upper Neches Basin

ANGELINA & NECHES RIVER AUTHORITY


Segment Watersheds
Upper Neches Basin
This map outlines the watersheds of stream segments contained in the upper portion of the Neches River Basin within the state of Texas. The Segments as defined by the TCEQ are as follows:
604: Neches River below Lake Palestine
605: Lake Palestine
606: Neches River above Lake Palestine
609: Angelina River below Sam Rayburn
610: Sam Rayburn Reservoir
611: Angelina River above Sam Rayburn
612: Attoyac Bayou
613: Lake Tyler & Lake Tyler East
614: Lake Jacksonville
Longview
Marshall
Kilgore
Tyler
Athens
Henderson
Jacksonville
Palestine
Nacogdoches
Lufkin
606
605
613
614
611
612
604
610
609
LAKE TYLER EAST
LAKE ATHENS
LAKE PALESTINE
LAKE TYLER
LAKE STRIKER
LAKE JACKSONVILLE
LAKE NACONICHE
PINKSTON RESERVOIR
LAKE NACOGDOCHES
SAM RAYBURN RESERVOIR
B A STEINHAGEN LAKE
ANRA
Angelina & Neches River Authority
0 2.5 5 10 15 20
Miles

FY 2018 Water Quality Monitoring in the Neches Basin

- Currently, ANRA monitors 40 sites quarterly for field parameters, conventional parameters, and bacteria, and one site for field parameters and bacteria only.

- Additional monitoring in the Upper Neches Basin is performed by TCEQ (Region 5 in Tyler and Region 10 in Beaumont), as well as the Lower Neches Valley Authority (LNVA).

FY 2018 Number of Monitoring Stations in the Neches Basin				
Sampling Entity	**Field**	**Conventional**	**Bacteria**	**Flow**
ANRA	41	40	41	32
TCEQ – Region 5	25	21	25	15
TCEQ – Region 10	26	20	23	8
LNVA	25	25	25	20

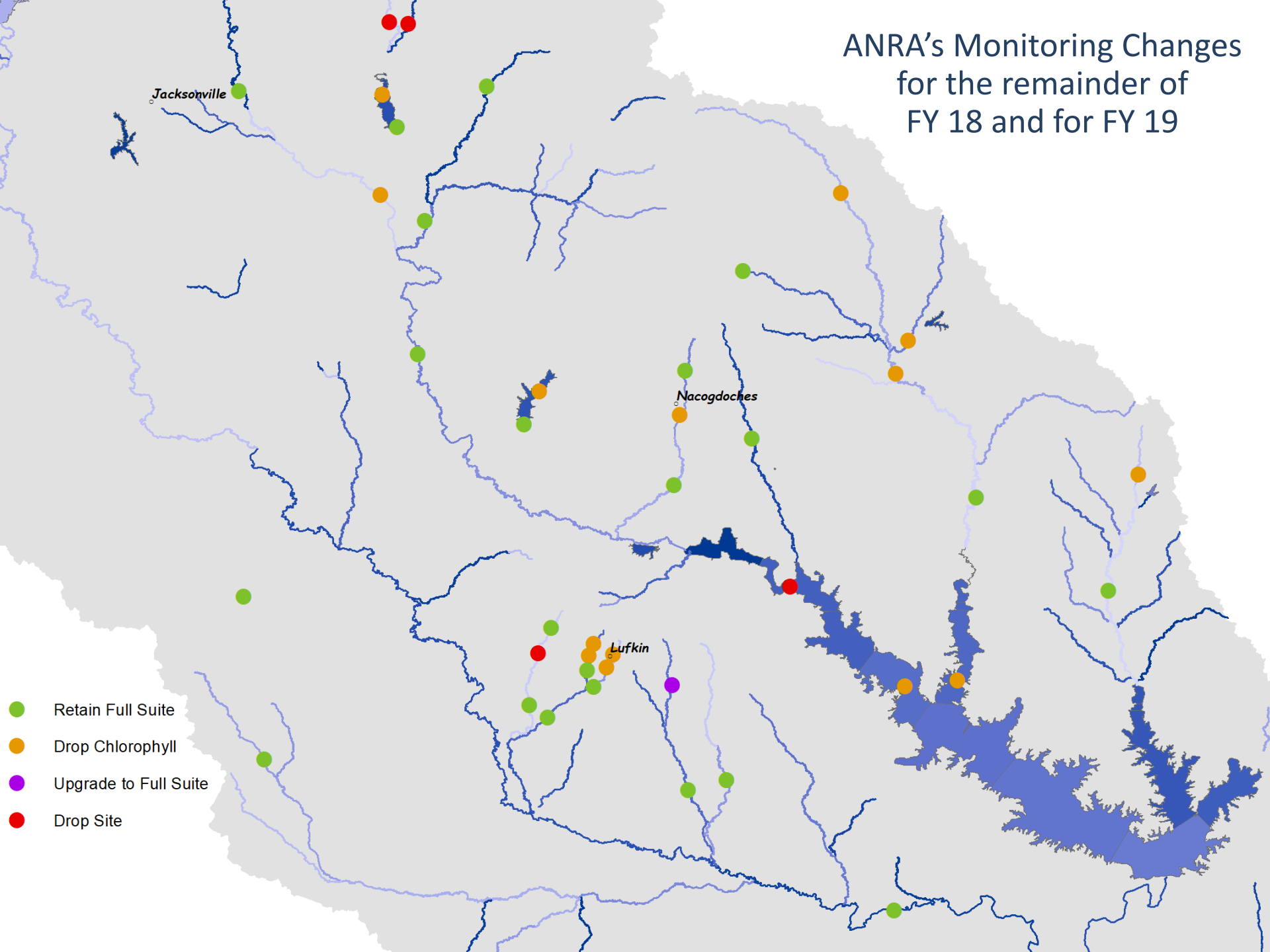
FY 2019 Water Quality Monitoring Changes

- Due to significant cost increases, for the remainder of FY 18 and for FY 19, ANRA will discontinue the collection of Chlorophyll-a and Pheophytin samples for 19 of the 41 sites that we monitor.
- For FY 19 ANRA, will discontinue monitoring on four sites. Two have achieved their monitoring goals, and the other two were determined to be redundant.
- ANRA will begin monitoring conventional parameters at the site that had previously been field parameters and bacteria only.

FY 2019 Number of Monitoring Stations in the Neches Basin				
Sampling Entity	**Field**	**Conventional**	**Bacteria**	**Flow**
ANRA	37	37	37	29
TCEQ – Region 5	24	20	24	14
TCEQ – Region 10	26	20	23	8
LNVA	23	23	23	20

The Coordinated Monitoring Schedule (CMS) is available online at cms.lcra.org

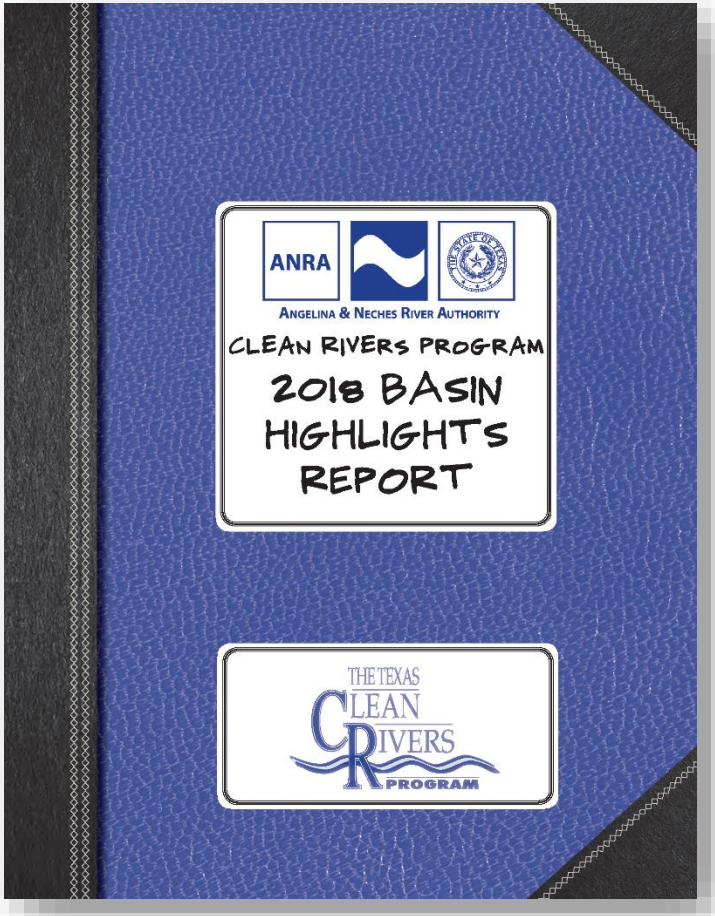
ANRA's Monitoring Changes for the remainder of FY 18 and for FY 19

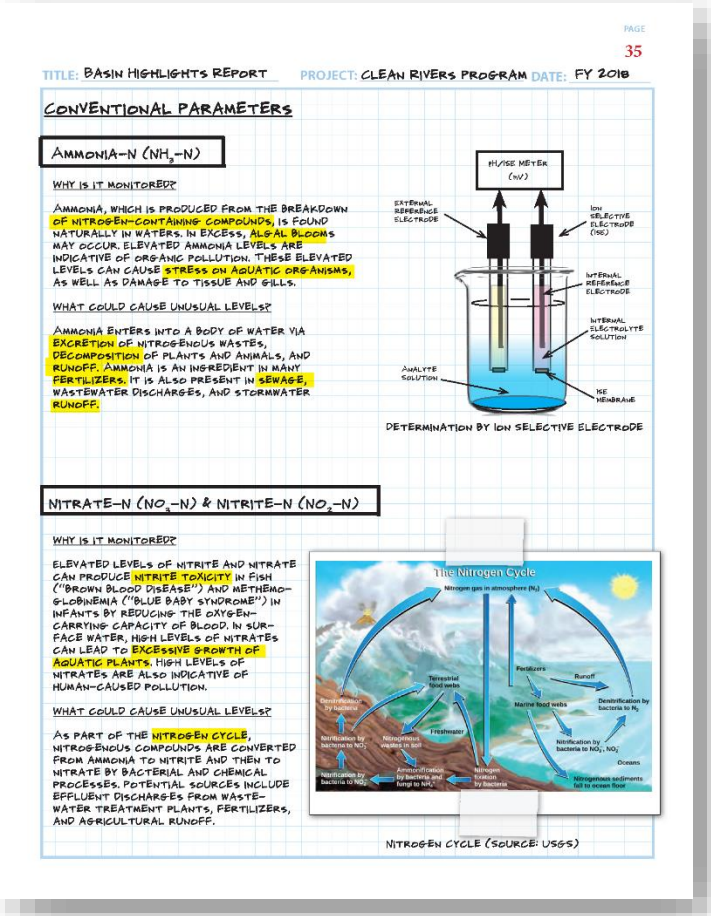


ANRA's Water Quality Monitoring in the Neches Basin for the remainder of FY 18 & for FY 19

Site Description	AU	Station ID	Chlorophyll-a /Pheophytin	Changes for FY 2019
Neches at US 69	0604_01	10585		
Cedar at FM 2497	0604A_02	10478		
Cedar at FM 1336	0604A_02	13528		
Cedar at Loop 287	0604A_03	10479	DROP	
Cedar at Ellis	0604A_03	21434	DROP	
Hurricane at Loop 287	0604B_01	10487	DROP	
Hurricane at SH 324	0604B_01	13529		
Hurricane below Kiwanis Park	0604B_02	21433	DROP	
Jack at FM 2497	0604C_01	10492		
Jack at SH 94	0604C_01	10493	DROP	Site to be dropped. Same AU as Jack at 3150
Jack at FM 3150	0604C_01	10494		
Piney at FM 358	0604D_02	16096		
Biloxi at FM 1818	0604M_02	16097		
Biloxi at CR 216	0604M_03	10499	DROP	Was E. coli and Field params only. Adding conventionals
Buck at FM 1818	0604N_01	16098		
Lake Ratcliff	0604T_01	17339		
Sam Rayburn near Shirley Creek	0610_04	15524	DROP	
Sam Rayburn at Alligator Cove	0610_05	15523	DROP	
Sam Rayburn near Marion's Ferry	0610_07	21100	DROP	Site to be dropped. Same AU as Sam Rayburn at 103
Ayish at SH 103	0610A_01	15361		
Ayish at Columbia St	0610A_02	21431	DROP	
Carrizo at SH 21	0610P_01	21432		
Angelina at SH 21	0611_02	10630		
Angelina at SH 204	0611_03	10633		
Angelina at FM 1798	0611_04	10635		
La Nana at CR 526	0611B_01	10474		
La Nana at East Main	0611B_02	20792	DROP	
La Nana at Loop 224 North	0611B_03	16301		
Mud at US 84	0611C_01	10532	DROP	
Mud at US 79	0611C_02	14477		
Lake Nacogdoches Main Pool	0611Q_01	15801		
Lake Nacogdoches Upper Lake	0611Q_01	21021	DROP	
Lake Striker Upper Lake	0611R_01	17822	DROP	
Lake Striker Main Pool	0611R_01	17824		
Bowles at CR 4194 (above Striker)	0611V_01	21429	DROP	Site to be dropped. Monitoring Objective Achieved
Johnson at CR 476 (above Striker)	0611W_01	21430	DROP	Site to be dropped. Monitoring Objective Achieved
Attoyac at SH 21	0612_01	10636		
Attoyac at SH 7	0612_02	15253	DROP	
Attoyac at US 59	0612_03	16076	DROP	
West Creek	0612F_01	20845	DROP	
Lake Naconiche Main Pool	0612G_01	21435		

2018 Upper Neches Basin Highlights Report





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TITLE: BASIN HIGHLIGHTS REPORT PROJECT: CLEAN RIVERS PROGRAM DATE: FY 2018

CONVENTIONAL PARAMETERS

AMMONIA-N (NH_3-N)

WHY IS IT MONITORED?

AMMONIA, WHICH IS PRODUCED FROM THE BREAKDOWN OF NITROGEN-CONTAINING COMPOUNDS, IS FOUND NATURALLY IN WATERS. IN EXCESS, ALGAL BLOOMS MAY OCCUR. ELEVATED AMMONIA LEVELS ARE INDICATIVE OF ORGANIC POLLUTION. THESE ELEVATED LEVELS CAN CAUSE STRESS ON AQUATIC ORGANISMS, AS WELL AS DAMAGE TO TISSUE AND GILLS.

WHAT COULD CAUSE UNUSUAL LEVELS?

AMMONIA ENTERS INTO A BODY OF WATER VIA EXCRETION OF NITROGENOUS WASTES, DECOMPOSITION OF PLANTS AND ANIMALS, AND RUNOFF. AMMONIA IS AN INGREDIENT IN MANY FERTILIZERS. IT IS ALSO PRESENT IN SEWAGE, WASTEWATER DISCHARGES, AND STORMWATER RUNOFF.

DETERMINATION BY ION SELECTIVE ELECTRODE

NITRATE-N (NO_3-N) & NITRITE-N (NO_2-N)

WHY IS IT MONITORED?

ELEVATED LEVELS OF NITRITE AND NITRATE CAN PRODUCE NITRITE TOXICITY IN FISH ("BROWN BLOOD DISEASE") AND METHEMOGLOBINEMIA ("BLUE BABY SYNDROME") IN INFANTS BY REDUCING THE OXYGEN-CARRYING CAPACITY OF BLOOD. IN SURFACE WATER, HIGH LEVELS OF NITRATES CAN LEAD TO EXCESSIVE GROWTH OF AQUATIC PLANTS. HIGH LEVELS OF NITRATES ARE ALSO INDICATIVE OF HUMAN-CAUSED POLLUTION.

WHAT COULD CAUSE UNUSUAL LEVELS?

AS PART OF THE NITROGEN CYCLE, NITROGENOUS COMPOUNDS ARE CONVERTED FROM AMMONIA TO NITRITE AND THEN TO NITRATE BY BACTERIAL AND CHEMICAL PROCESSES. POTENTIAL SOURCES INCLUDE EFFLUENT DISCHARGES FROM WASTEWATER TREATMENT PLANTS, FERTILIZERS, AND AGRICULTURAL RUNOFF.

NITROGEN CYCLE (SOURCE: USGS)

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
- Upper Neches Basin Quality Assurance Project Plan (QAPP)
  - http://www.anra.org/divisions/water_quality/crp/pdfs/QAPP/ANRA_CRP_QAPP_FY_16-17.pdf
- ANRA CRP Monitoring Activities
  - http://www.anra.org/divisions/water_quality/crp/monitoring.html
- Coordinated Monitoring Schedule
  - http://cms.lcra.org

Comments or Questions?

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

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