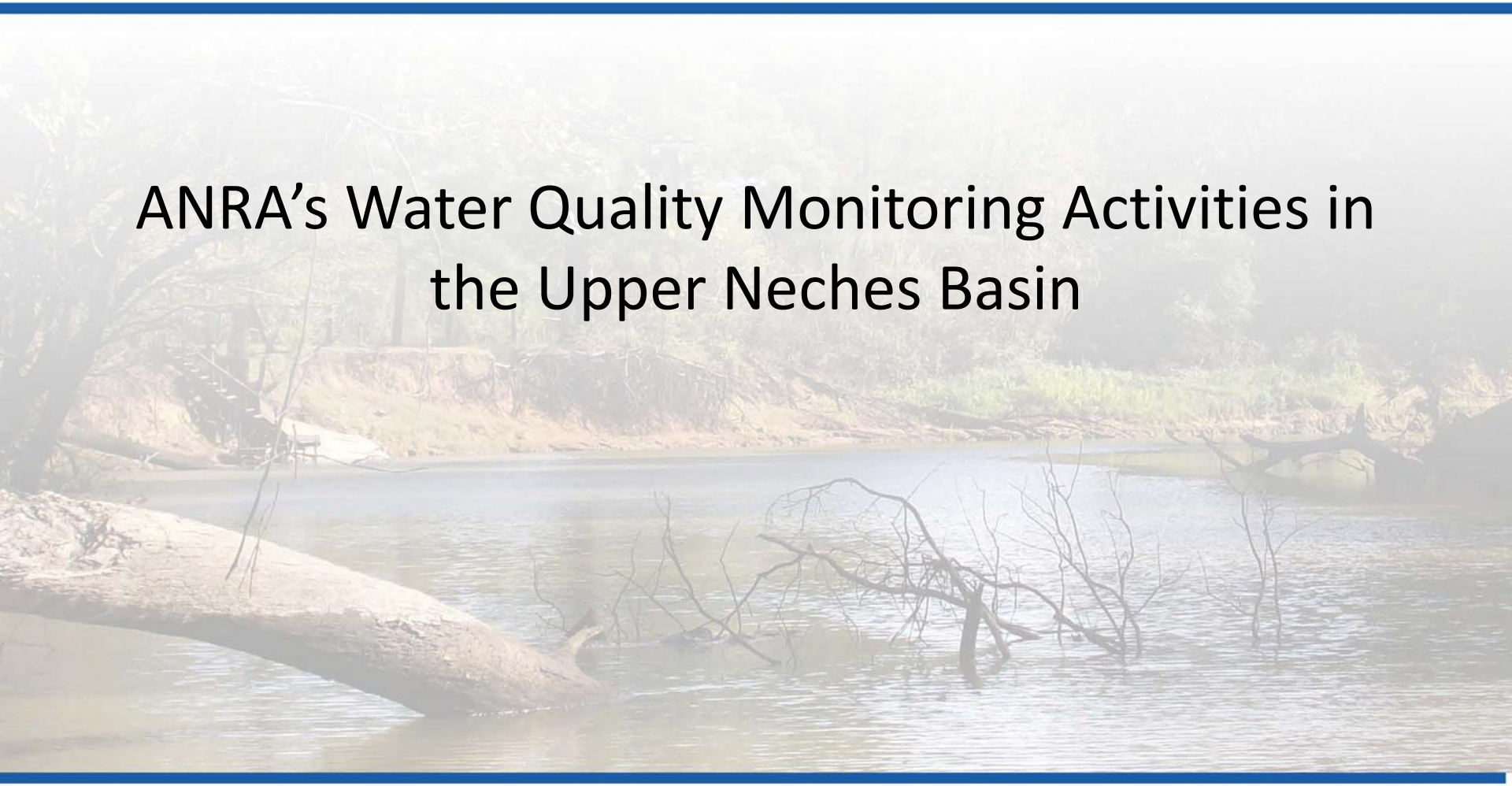
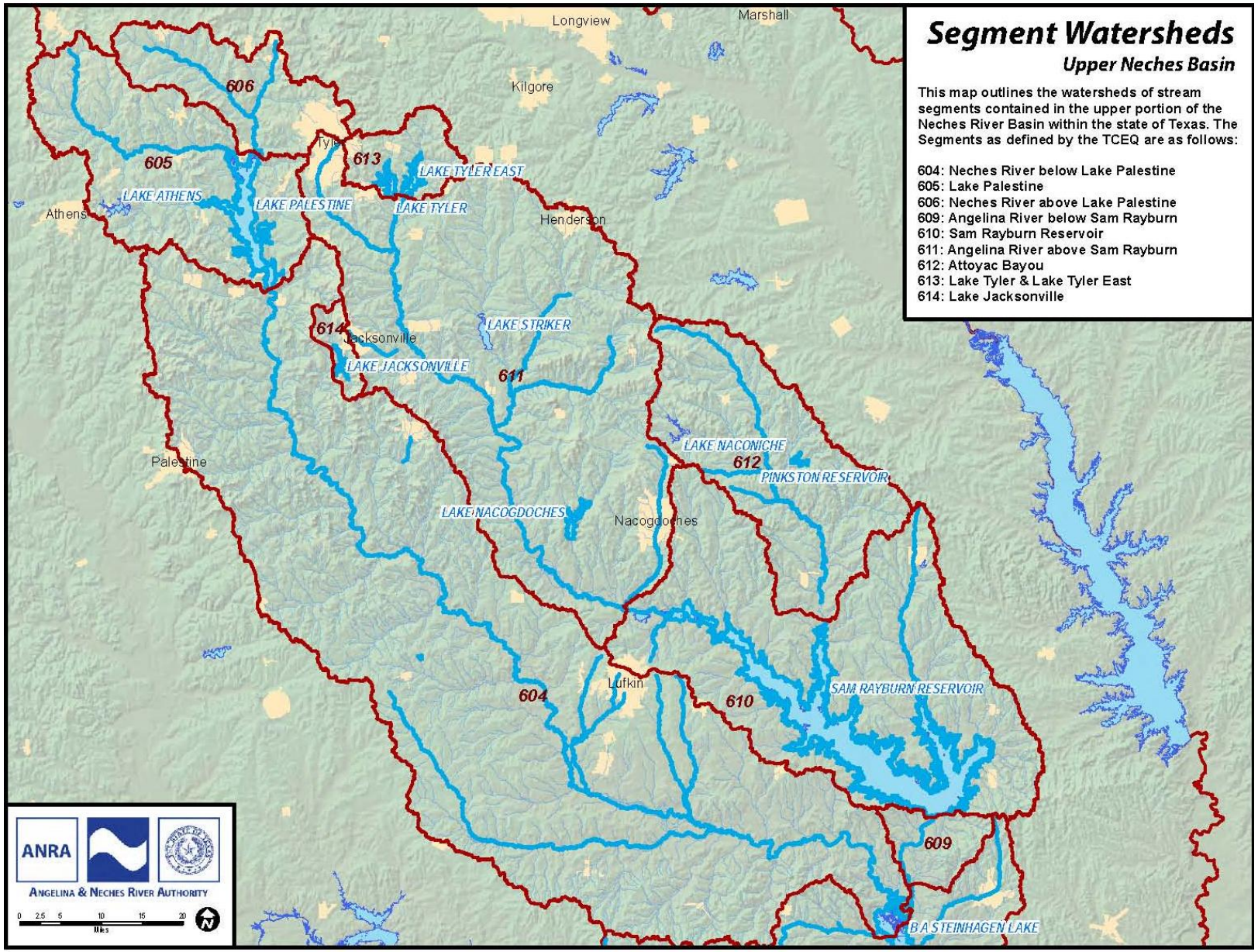
ANRA's Water Quality Monitoring Activities in the Upper Neches Basin



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 ATHENS
LAKE PALESTINE
LAKE TYLER
LAKE TYLER EAST
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

Water Quality Monitoring in the Upper Neches Basin

- In FY 2012, ANRA monitors 26 sites quarterly for field, conventional parameters and bacteria, with an additional site being monitored bimonthly for bacteria.
- The City of Tyler has 4 monitoring stations within the Upper Neches Basin.
- The Texas Commission on Environmental Quality (TCEQ) also has a robust sampling program in the basin, with monitoring being conducted by both Region 5 (Tyler) and Region 10 (Beaumont) staff.

Number of Sites Monitored in the Upper Neches River Basin for FY12						
Sampling Entity	**Field Parameters**	**Conventional Parameters**	**Bacteria**	**Metals in Water**	**Metals in Sediment**	**Organics in Water**
ANRA	26 quarterly		26 quarterly 1 bimonthly			
City of Tyler	4 quarterly		4 quarterly			
TCEQ	42 quarterly			5 quarterly 1 5X/year	8 quarterly 4 annually	2 quarterly

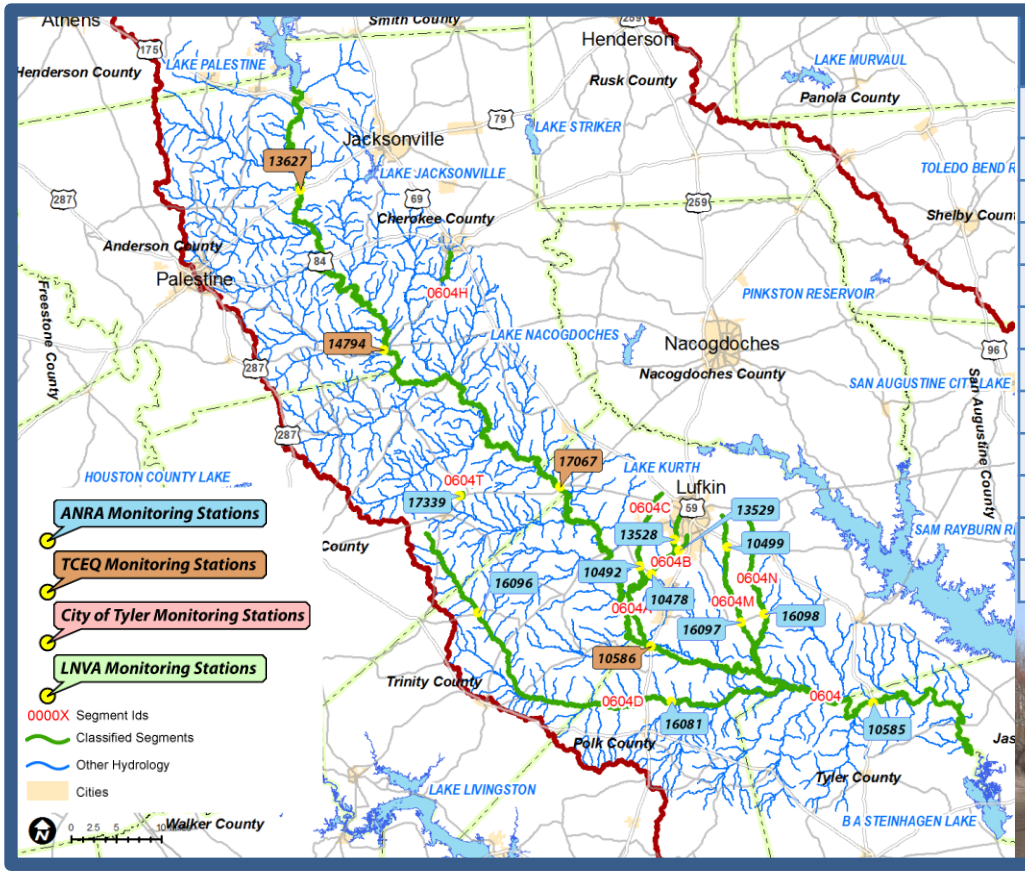
Water Quality Monitoring in the Upper Neches Basin

Parameters for Quarterly Monitoring			
Field Parameters	**Conventional Parameters**	**Bacteria**	**Drought Parameters**
Dissolved Oxygen Days Since Last Significant Rainfall Flow Severity Instantaneous Stream Flow pH Present Weather Secchi Transparency Specific Conductance Total Water Depth Water Temperature	Ammonia-N Chloride Chlorophyll-*a* Pheophytin-*a* Sulfate Total Dissolved Solids (TDS) Total Suspended Solids (TSS) Nitrate+Nitrite-N Total Phosphorus	*E. coli*	**These parameters are collected in drought situations.** *If sampling from an isolated pool:* Max Pool Width Max Pool Depth Pool Length Percent Pool Coverage *If sampling in a reservoir:* Reservoir Not Accessible Reservoir Stage Reservoir Percent Full

Impairments in the Upper Neches Basin (As listed in the 2010 Texas integrated Report)

Segment	Segment Name	Impairments	Concerns
0604	Neches River Below Lake Palestine	mercury in edible tissue	ammonia, chlorophyll-a
0604A	Cedar Creek (unclassified water body)	bacteria	ammonia, nitrate, orthophosphorus, total phosphorus
0604B	Hurricane Creek (unclassified water body)	bacteria	ammonia
0604C	Jack Creek (unclassified water body)	bacteria	ammonia, depressed dissolved oxygen, nitrate, orthophosphorus, total phosphorus
0604D	Piney Creek (unclassified water body)	depressed dissolved oxygen	ammonia, depressed dissolved oxygen
0604M	Biloxi Creek (unclassified water body)	bacteria, depressed dissolved oxygen	ammonia, bacteria, depressed dissolved oxygen
0604N	Buck Creek (unclassified water body)		ammonia
0604T	Lake Ratcliff (unclassified water body)	mercury in edible tissue	
0605	Lake Palestine	pH	chlorophyll-a, depressed dissolved oxygen, manganese in sediment
0605A	Kickapoo Creek in Henderson County (unclassified water body)	bacteria, depressed dissolved oxygen	ammonia, chlorophyll-a, depressed dissolved oxygen, orthophosphorus, total phosphorus
0606	Neches River Above Lake Palestine	bacteria, depressed dissolved oxygen, pH, zinc in water	depressed dissolved oxygen, nitrate, orthophosphorus
0606A	Prairie Creek (unclassified water body)	bacteria	ammonia
0606D	Black Fork Creek (unclassified water body)		ammonia
0610	Sam Rayburn Reservoir	mercury in edible tissue	ammonia, arsenic in sediment, iron in sediment, manganese in sediment, mercury in edible tissue, nitrate
0610A	Ayish Bayou (unclassified water body)	bacteria	ammonia, depressed dissolved oxygen
0611	Angelina River Above Sam Rayburn Reservoir	bacteria	ammonia, depressed dissolved oxygen
0611A	East Fork Angelina River (unclassified water body)	bacteria	
0611B	La Nana Bayou (unclassified water body)	bacteria	ammonia, nitrate, orthophosphorus, total phosphorus
0611C	Mud Creek (unclassified water body)	bacteria	ammonia, depressed dissolved oxygen
0611D	West Mud Creek (unclassified water body)	bacteria	ammonia, nitrate, orthophosphorus, total phosphorus
0611Q	Lake Nacogdoches (unclassified water body)		ammonia
0611R	Lake Striker (unclassified water body)		ammonia
0612	Attoyac Bayou	bacteria	ammonia, bacteria
0615	Angelina River/Sam Rayburn Reservoir	bacteria, depressed dissolved oxygen, impaired fish community, mercury in edible tissue	depressed dissolved oxygen, orthophosphorus, total phosphorus
0615A	Paper Mill Creek (unclassified water body)	bacteria	depressed dissolved oxygen

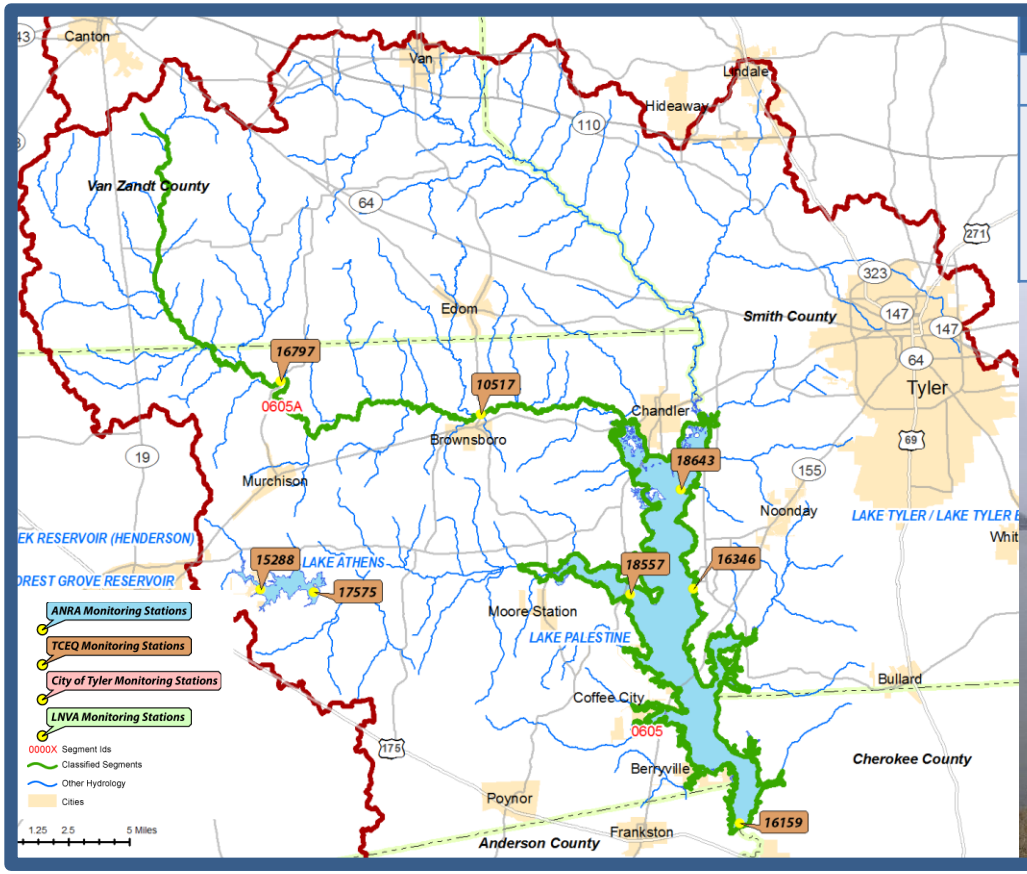
Segment 0604 Neches River below Lake Palestine



ANRA Monitoring Stations

Station	Description
10478	Cedar Creek at FM 2497
10492	Jack Creek at FM 2497
10499	Biloxi Creek at Angelina CR 216
10585	Neches River at US 69
13528	Cedar Creek at CR 1336
13529	Hurricane Creek at SH 324
16081	Piney Creek at FM1987
16096	Piney Creek at FM358
16097	Biloxi Creek at FM1818
16098	Buck Creek at FM1818
17339	Lake Ratcliff

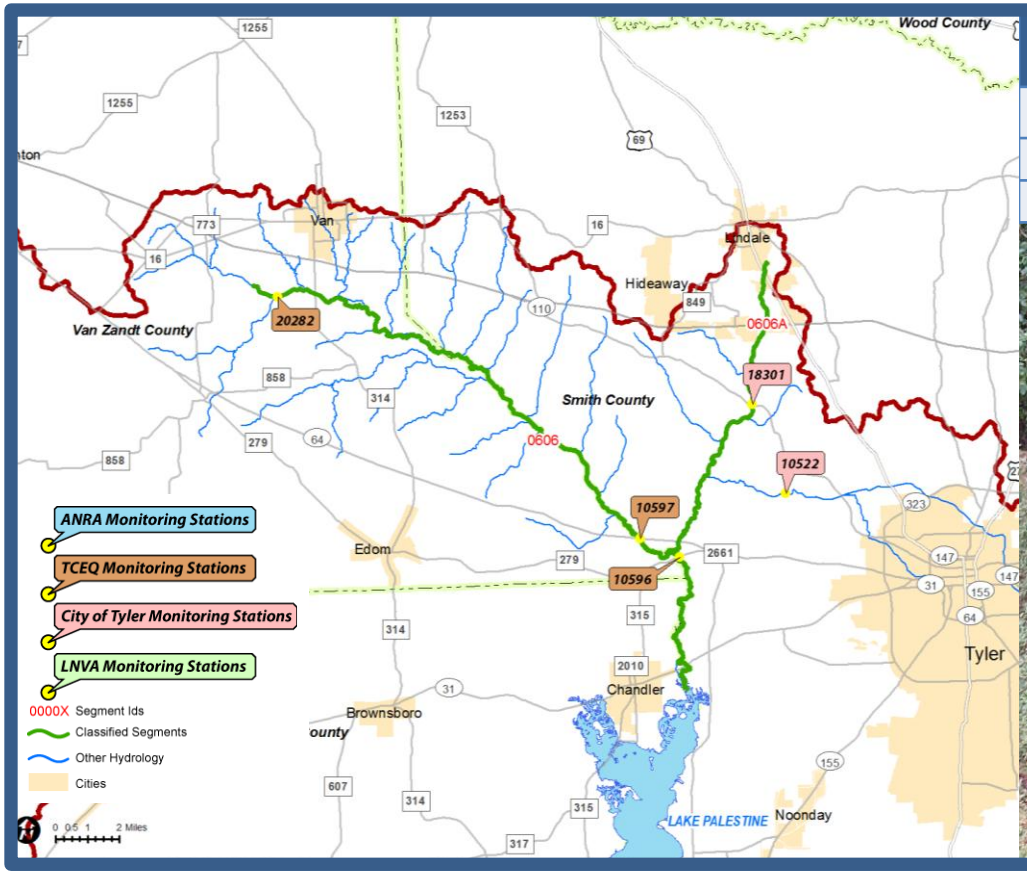
Segment 0605 Lake Palestine



ANRA Monitoring Stations

Station	Description
No ANRA Monitoring Stations on Segment 0605 Monitoring of Lake Palestine is conducted by TCEQ Region 5 - Tyler	

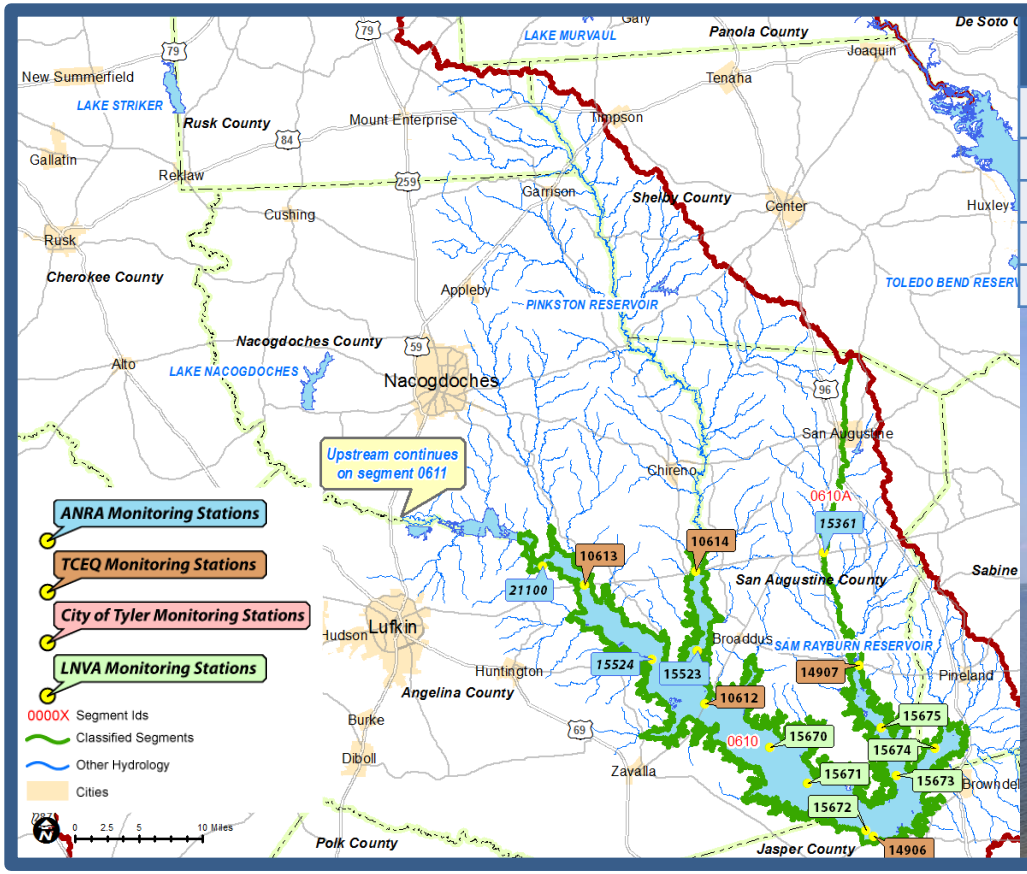
Segment 0606 Neches River Above Lake Palestine



City of Tyler Monitoring Stations

Station	Description
18301	Prairie Creek at SH 110
10522	Black Fork Creek CR 46

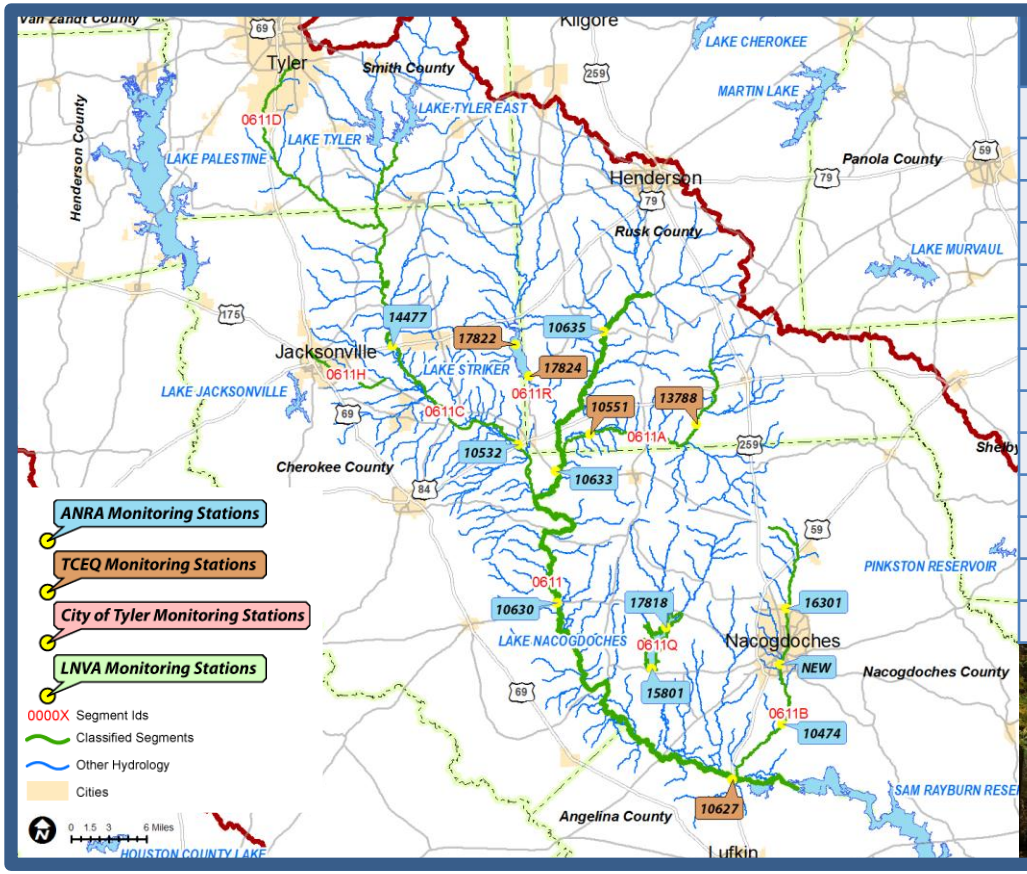
Segment 0610 Sam Rayburn Reservoir



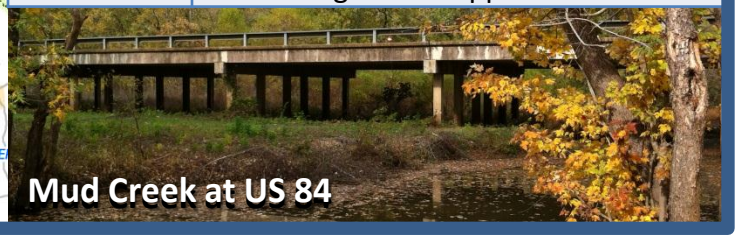
ANRA Monitoring Stations

Station	Description
21100	Sam Rayburn at Marion's Ferry
15523	Sam Rayburn at Alligator Cove
15524	Sam Rayburn near Shirley Creek
15361	Ayish Bayou at SH 103

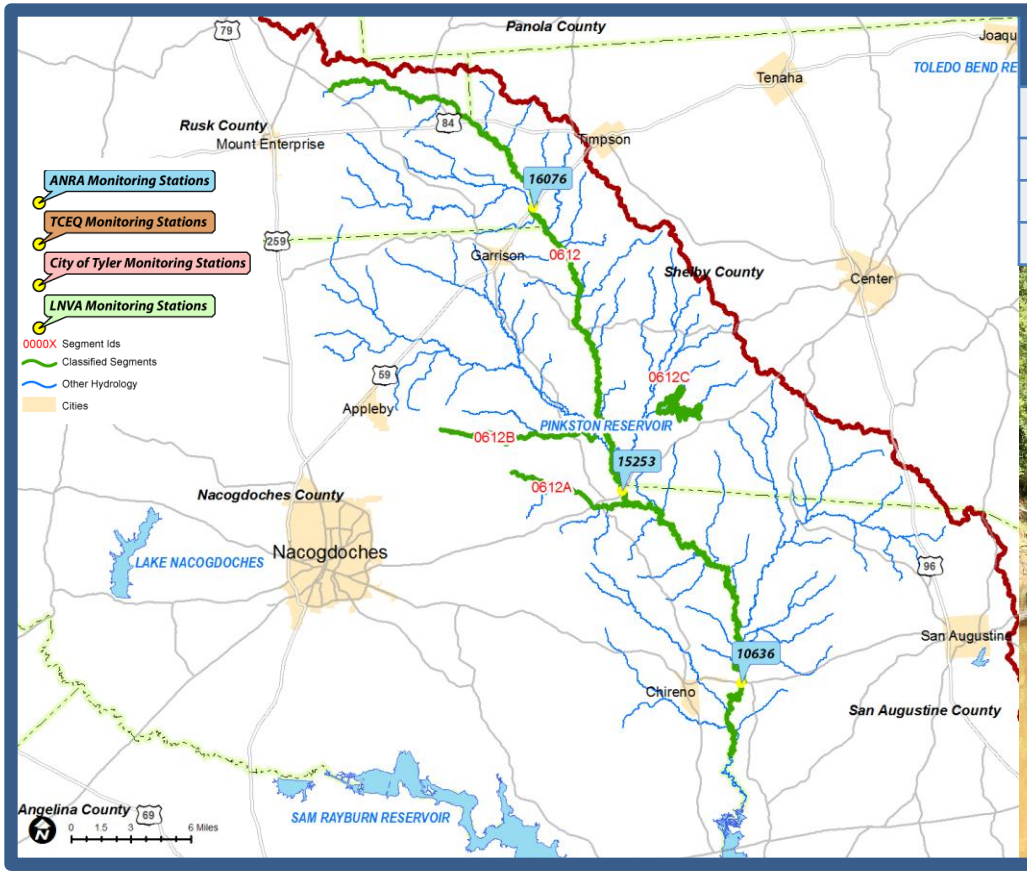
Segment 0611 Angelina River above Sam Rayburn Reservoir



ANRA Monitoring Stations	
Station	**Description**
10630	Angelina River at SH 21
10633	Angelina River at SH 204
10635	Angelina River at FM 1798
10474	La Nana Bayou at CR 526
16301	La Nana Bayou at Loop 224
20792	La Nana Bayou at East Main Street
10532	Mud Creek at US 84
14477	Mud Creek at US 79
10542	West Mud Creek upstream of SSTP (TY)
18302	West Mud Creek at US 69 (TY)
15801	Lake Nacogdoches Main Pool
17818	Lake Nacogdoches Upper Lake

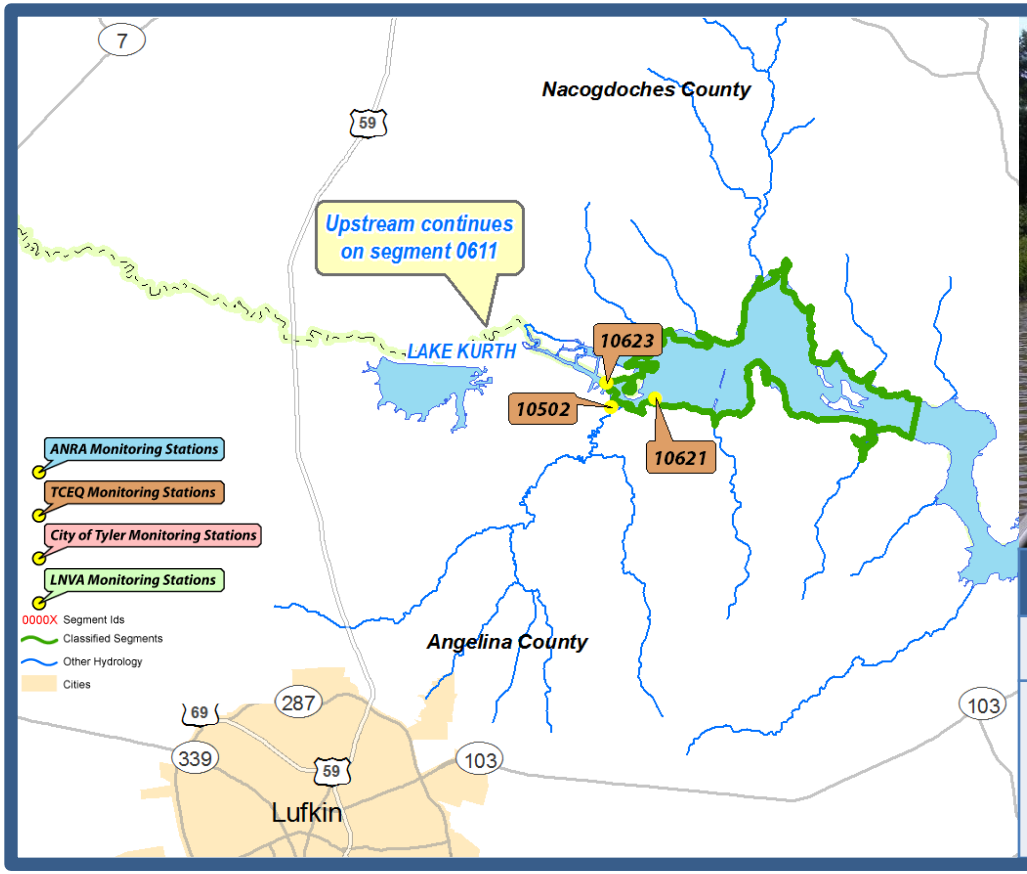

Mud Creek at US 84

Segment 0612 Attoyac Bayou



ANRA Monitoring Stations	
Station	**Description**
10636	Attoyac Bayou at SH 21
15253	Attoyac Bayou at SH 7
16076	Attoyac Bayou at US 59

Segment 0615 Angelina River/Sam Rayburn Reservoir



ANRA Monitoring Stations

Station	Description
No ANRA Monitoring Stations on Segment 0615 Monitoring of this segment is conducted by TCEQ Region 10 - Beaumont	

Updates from the Coordinated Monitoring Meeting

- The Coordinated Monitoring Meeting for the Neches Basin was held on 4/11/12.
- No changes were made to ANRA's monitoring schedule for 2013 in regards to the number of sampling sites or sampling frequency.
- The monitoring schedule will be updated to reflect changes to three monitoring station IDs and/or descriptions.
- The Coordinated Monitoring Schedule can be viewed online at:

http://cms.lcra.org

  - Select Basin 6 to view the schedule for the Neches Basin.

Monitoring Station Updates

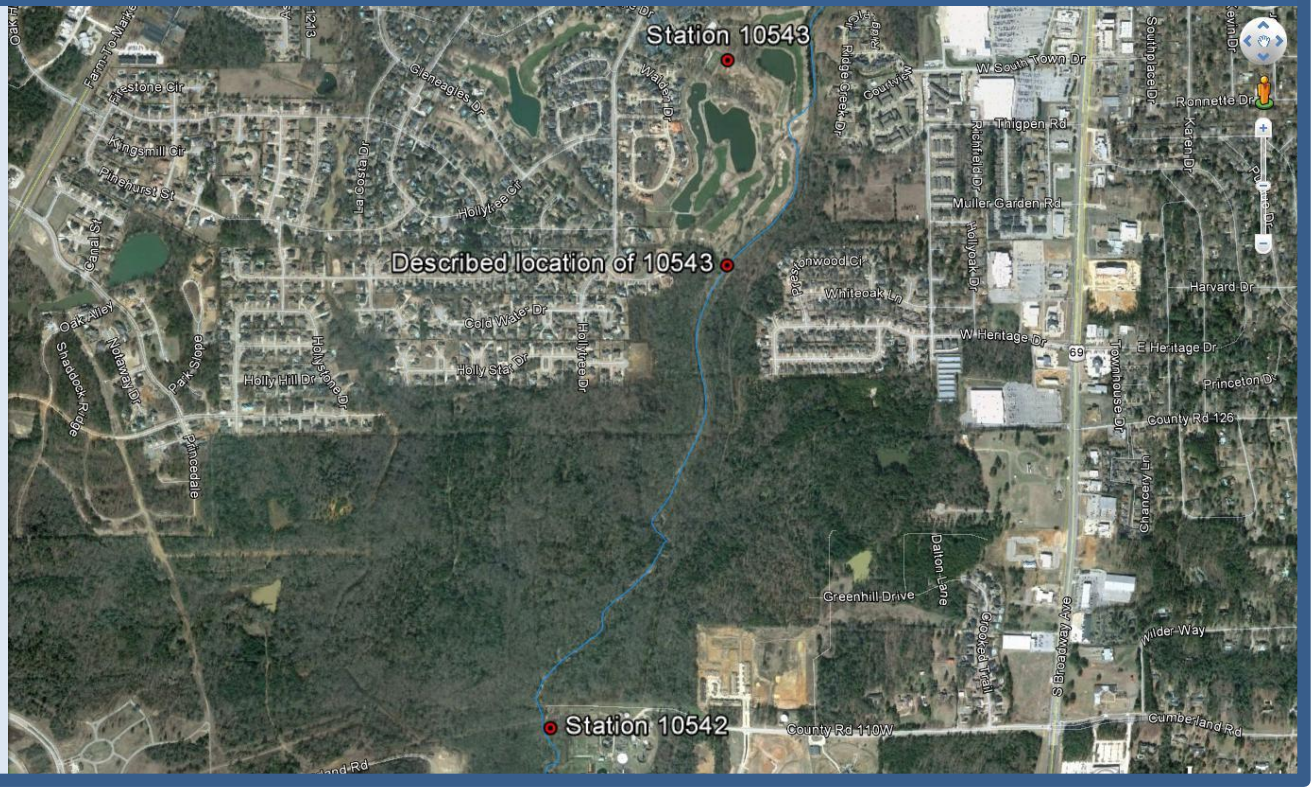
Station 10633 - Angelina River at SH 204

- Relocated due to proximity to the recently installed Nacogdoches Power effluent discharge.
- The new location is close enough to the original location that it is not necessary to change the Monitoring Station ID.
- The Monitoring Station description has been updated to reflect the change.

Monitoring Station Updates

Station 10542 – West Mud Creek Upstream of City of Tyler SSTP

- Historically, sampling has been performed at station 10542, located approximately 380 ft upstream of the City of Tyler Southside Treatment Plant discharge. However, this data was incorrectly reported as monitoring station 10543, which is located approximately 1.25 miles upstream.
- Sampling will continue at 10542, and a data correction was submitted to move historical data from 10543 to 10542.

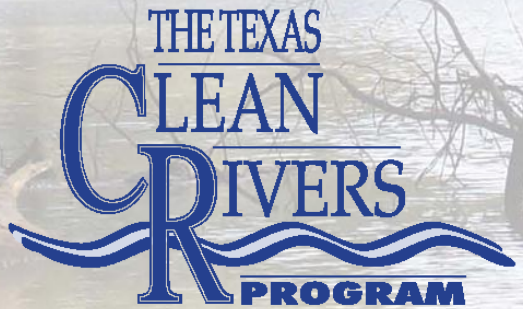


Monitoring Station Updates

Station 21100 – Sam Rayburn Reservoir near Marion's Ferry

- Historically, Sam Rayburn Reservoir at Marion's Ferry was sampled at Station 10615.
- During the 2011 drought, it was not possible to sample from this location.
- The sampling site was relocated to station 21100.
- Station 21100 is located on the river channel, so it should be possible to sample during drought conditions

Watershed Action Planning (WAP)



ANGELINA & NECHES RIVER AUTHORITY

Watershed Action Planning (WAP) Process

- Watershed Action Planning (WAP) is the state's coordinated approach to develop, coordinate, and track actions taken to address water quality issues.
  - coordinates planning and activities among the TCEQ, the Texas State Soil and Water Conservation Board (TSSWCB), the Texas Clean Rivers Program partners, and stakeholders at the watershed level.
  - a flexible approach that utilizes a range of strategy options for addressing impaired water bodies on the 303(d) List and other water quality issues.
- The WAP database can be queried to identify current and planned activities to address water quality issues in the state.
- The WAP process provides a framework that each program area, partner agency, and stakeholder can use for planning, budgeting, and implementing activities as they relate to addressing water quality issues.

Watershed Action Planning Strategy Table

- A major product of the WAP process is a comprehensive strategy for protecting streams, lakes, or estuaries of special interest and improving the quality of impaired waterways.
- That strategy is summarized in a **Watershed Action Planning Strategy Table** that lists:
  - impaired and special-interest water bodies
  - the recommended strategies to improve water quality in impaired segments or to protect water bodies of special interest
  - the status of each strategy
  - the lead agency and program for tracking each strategy.
- The Watershed Action Planning Strategy Table can be located at:

  http://www.tceq.texas.gov/assets/public/implementation/water/wap/wap_allbasins.pdf

Excerpt from the Watershed Action Planning Strategy Table

Watershed Action Planning Strategy Table, December 2011
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SEGMENT and ASSSESSMENT UNIT	SEGMENT NAME	IMPAIRMENT	IMPAIRMENT CATEGORY	STRATEGY	STATUS	LEAD
0611A_01	East Fork Angelina River (unclassified water body)	bacteria	5b	Evaluation	Underway	TCEQ - WQS
0612_01	Attoyac Bayou	bacteria	5b	WPP	Underway	TSSWCB - SRM
0612_02	Attoyac Bayou	bacteria	5b	WPP	Underway	TSSWCB - SRM
0612_03	Attoyac Bayou	bacteria	5b	WPP	Underway	TSSWCB - SRM
0615_01	Angelina River/Sam Rayburn Reservoir	mercury in edible tissue	5c	Other	Consulting	TCEQ - WAP
0615A_01	Paper Mill Creek (unclassified water body)	bacteria	5b	Evaluation	Underway	TCEQ - WQS

Input from Stakeholders in the Watershed Action Planning Process

The type of data and information to be gathered through local watershed discussions may include:

- **Watershed Evaluation** - Watershed maps, land use classifications, models, identify data gaps and data acquisition projects
- **Pollution Sources** - Identify potential point and nonpoint sources of pollution, evaluate pollution sources, identify pollution control practices, identify data gaps and data acquisition projects
- **Water Quality Monitoring** - Identify water quality monitoring sites, identify water quality indicators, identify data gaps and data acquisition projects
- **Watershed Stakeholders** - Identify key stakeholders, characterize stakeholder support, identify issues of concern and watershed goals.
- **Public** – Characterize public support, identify issues of concern and watershed goals.
- **Watershed Planning Strategy** – Identify what option(s) (e.g. Use Attainability Analysis, Total Maximum Daily Load, Watershed Protection Plan, etc.) the public and local stakeholders recommend be considered to address each water quality issue.

Additional Resources

- Surface Water Quality Monitoring Procedures Manual
  - Volume 1: Physical and Chemical Monitoring Methods
    - http://www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg415/rg-415.pdf
- Upper Neches Basins Quality Assurance Project Plan (QAPP)
    - http://www.anra.org/divisions/water_quality/crp/pdfs/QAPP/ANRA_FY2010-11_QAPP.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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