

Recreational Use Attainability Analysis

RUAA

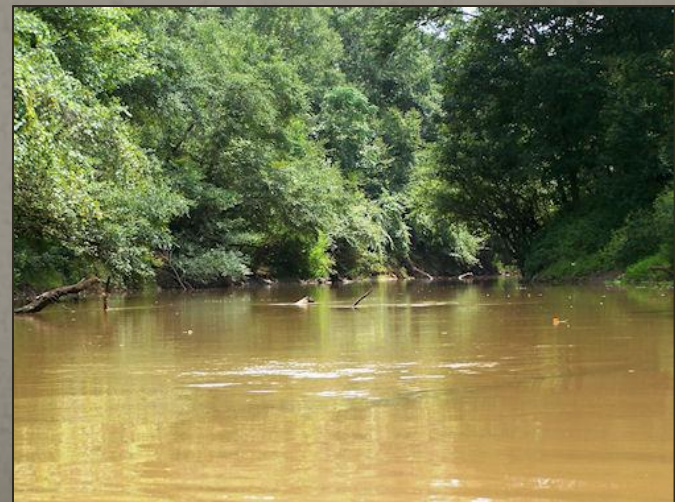
Attoyac Bayou Watershed Protection Plan

Sarah Fuller, SFASU

Arthur Temple College of Forestry

Attoyac Bayou Watershed

- Sub-watershed within Upper Neches River watershed
- Spans 82 miles through Nacogdoches, Rusk, San Augustine, and Shelby counties
 - Empties into Sam Rayburn Reservoir
- Watershed composed of rural communities
- Dominant land use within watershed is cattle and poultry operations, forestry, recreation and wildlife use



Attoyac Bayou Watershed

- Classified as an impaired water body on the Texas Water Quality Inventory and 303(d) List
 - Elevated levels of E.coli
- Collection of water quality and stream flow data as a part of the Attoyac Bayou Watershed Protection Plan will develop a greater understanding of the bacteria loading as well as its source
- Funding to support this work has been provided in part by a Clean Water Act Nonpoint Source grant from the Texas State Soil and Water Conservation Board and the U.S. Environmental Protection Agency

Attoyac Bayou

Watershed Protection Plan Goals

- Evaluate water quality conditions and impairments in the Attoyac Bayou watershed through water quality sampling and analysis
- Conduct a watershed source survey and develop a comprehensive GIS inventory
- Analyze water quality data using Load Duration Curves and spatially explicit modeling
- Conduct bacteria source tracking and evaluate the sources of E.coli in the watershed
- Conduct a Recreational Use Attainability Analysis to determine the most suitable water quality standard for the bayou

Use Attainability Analysis

- Used to assess the physical, chemical, biological, and economic factors affecting attainment of water body use
- Identify and assign attainable uses and criteria to water bodies
 - Defined by Texas Surface Water Quality Standards
- Ultimate purpose is to establish the most suitable water quality standard for individual bodies of water taking into consideration its unique features

Recreational Categories

(Pre 2010)

- Contact recreation
 - Recreational activities which involve a significant risk of ingestion of water.
 - Wading by children, swimming, water skiing, diving, surfing
- Non-contact recreation
 - Aquatic recreational pursuits not involving a significant risk of water ingestion
 - Fishing, commercial and recreational boating, incidental or shoreline activity with limited body contact

Quality standards

- Pre 2010 standards
 - All water bodies were considered contact recreation with very few exceptions (Houston Ship Channel)
 - Every water body must achieve a standard of 126
- 2010 water quality standard revisions
 - 4 categories of water quality contact and standards
 - Primary contact recreation - 126
 - Secondary contact recreation 1 - 630
 - Secondary contact recreation 2 - 1,030
 - Non-contact recreation - 2,060

Recreational Categories

- Primary contact recreation
 - Recreation involving a significant risk of ingestion of water
 - Wading by children, swimming, water skiing, diving, surfing



Recreational Categories

- Secondary contact recreation 1
 - Recreation with limited incidental body contact not involving a significant risk of water ingestion
 - Fishing, commercial and recreational boating, limited body contact with water incidental to shoreline activity not involving a significant risk of water ingestion



Recreational Categories

- Secondary contact recreation 2
 - Recreation activities with limited incidental body contact not involving a significant risk of water ingestion but that occur less frequently than for secondary contact recreation 1 due to (a) physical characteristics of the water body and/or (b) limited public access



Recreational Categories

- Non-contact recreation
 - Activities near a body of water not involving a significant risk of water ingestion, and where primary and secondary contact recreation should not occur because of unsafe conditions
 - Ship and barge traffic, birding, hiking and biking trails near a water body



Recreation in the Attoyac Bayou watershed

- Current water quality data does not sustain primary contact recreation
 - Does primary contact recreation occur on the Attoyac and its tributaries?
- RUAA will determine if primary contact does in fact take place
 - If it does not, a lesser water quality standard may be more appropriate for the watershed

RUAA Procedure

- Conducted during a warm season (temp $>70^{\circ}$), during dry weather flows
 - Typically May-September
- Two stream surveys per site
 - Spring and summer
- In the case of drought or wet weather
 - Additional information must be gathered from local entities as supporting documentation for the RUAA to describe conditions prior to the drought or period of rainfall
 - Additional sampling may be required once conditions return to normal

Site Selection

- Located in areas accessible to the public
 - Highway crossings, public land
 - Accessible to public with highest potential for use
- Private land
 - Landowners use water for recreation as well
 - Permission must be secured before accessing site
- Site selection completed with consultation with TCEQ Water Quality Standards Group prior to survey
- Map of selected sites reviewed and approved by TCEQ Water Quality Standards Group
- Ideally 3 survey sites for every 5 miles of stream

RUAA Components

- Historical use
 - Photographs, interviews, records
- In field interviews
 - Familiarity with water body
 - Use of water body
 - Their knowledge of other's use

Sherrie Adams and JoAnne Manning in Terrapin Creek near Martinsville School, early 1950s

Photo courtesy of Margaret Martin Hardy and Janet Lucas of Martinsville, Texas



RUAA Documentation

- Field data sheet
 - Completed for each site

Stream survey

- Width and depth of stream
- Flow status
 - Dry, no flow, low, normal, high, flooded
 - Flow rate
- Air, water temperature
- Riparian zone categories of left/right banks
 - Forest, shrub, urban, pasture, maintained corridor, etc.
 - Photos of up and downstream as well as left and right banks

RUAA Documentation

- Evidence or indicators of human use
 - Rope swings, litter, fishing equipment
- Ease of bank access
 - Easy, moderately easy, moderately difficult, difficult
- Primary substrate
 - Cobble, sand, silt, mud/clay, gravel, etc.

Primary Contact Water Recreation Evaluation

- Documentation of primary contact activities
 - Wading, swimming, tubing, etc.
 - Number of individuals at site and their proximity to the body of water
 - Physical characteristics of water which may hinder primary contact recreation
 - Depth, steep banks (documented with photos)

RUAA Documentation

Secondary contact recreation evaluation

- Observable secondary contact activities
 - Fishing, boating, canoeing
- Number of individuals at site
 - Proximity of individuals to body of water
- Description of characteristics that might hinder the frequency of secondary contact recreation
 - Depth, steep banks (document with photos)

RUAA Documentation

- Non-contact recreation
 - Site specific information and documentation (including photos) of unsafe conditions, recreation activities, and presence or absence of water recreation activities.

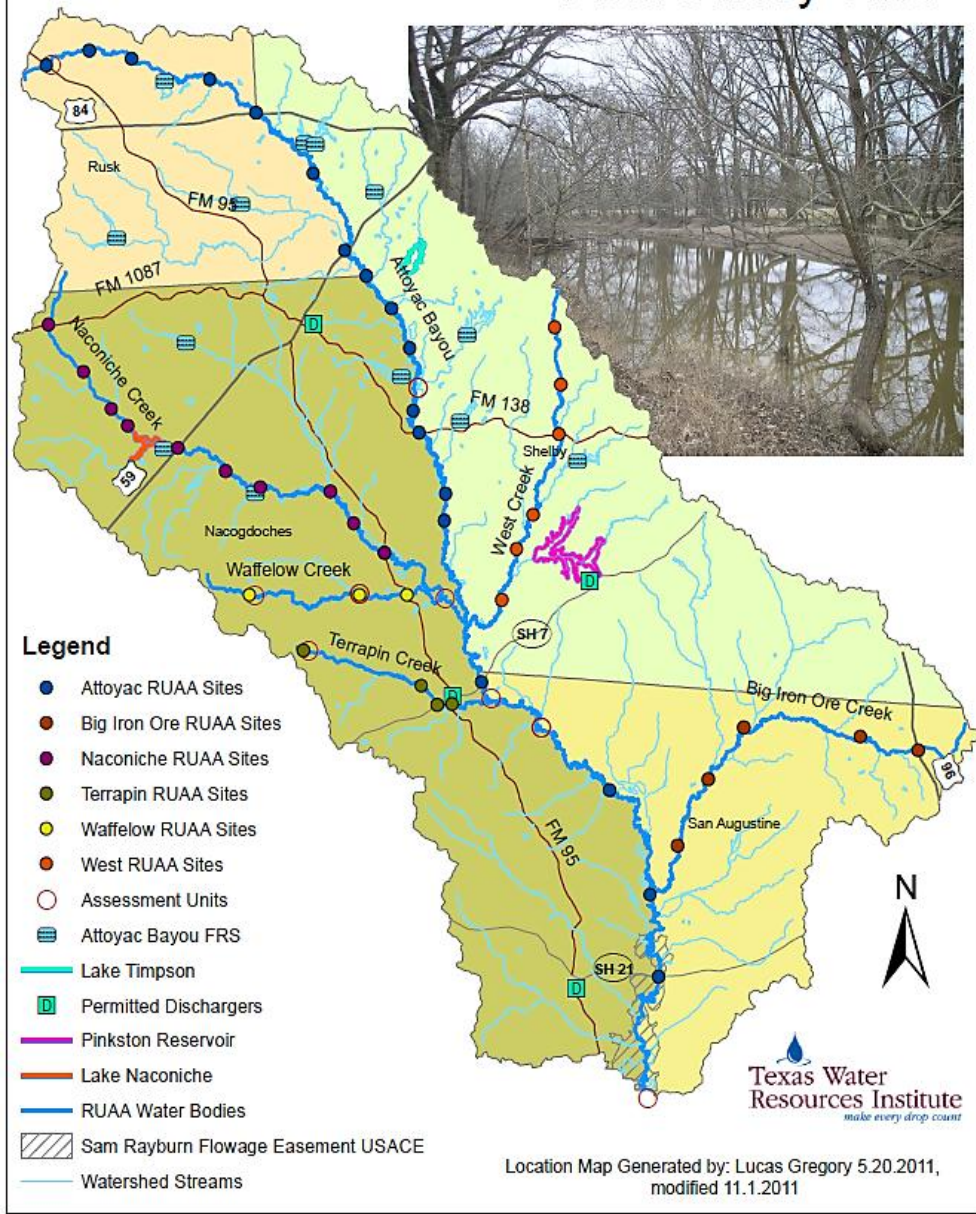
Proposed Sites

- Attoyac River
 - 18 total sites
 - 13 at road crossings, 5 on private property
- Big Iron Ore Creek
 - 5 total sites
 - All sites at road crossings
- Naconiche Creek – largest tributary of Attoyac Bayou
 - 11 total sites; 3 now encompassed by Lake Naconiche
 - 1 site located on private property

Proposed Sites

- Terrapin Creek
 - 4 total sites
 - 1 located on private property
- Waffelow Creek
 - 3 total sites
 - All sites at road crossings
- West Creek
 - 6 total sites
 - All sites at road crossings

Attoyac Bayou Watershed RUAA Field Survey Sites



RUAA dates

- Memorial Day weekend
 - May 28
- July 4th
 - Weekend of July 6



Questions?

*Sarah Fuller,
Graduate Research Assistant,
Arthur Temple College of Forestry and Agriculture
fullersa@titan.sfasu.edu*