



Water Quality in the Headwaters

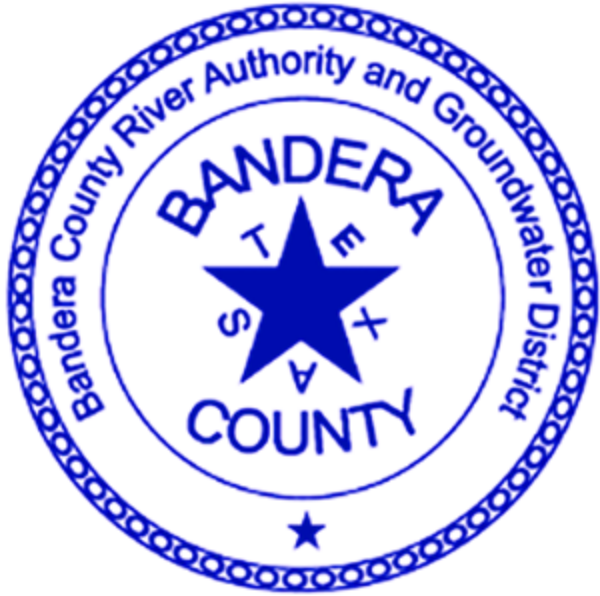
A Clean Rivers Program Update of the Upper Medina River Watershed

Presented by

Dave Mauk, General Manager

Clinton Carter, Field Operations Manager

Bandera County River Authority and Groundwater District



Bandera County

River Authority & Groundwater District

Protecting & Preserving our Natural Resources

“The principle mission of the Bandera County River Authority and Groundwater District is to protect and preserve the county’s water and natural resources for the State of Texas. The District is also tasked with maintaining local accountability of the county’s water resources to help safeguard the property rights of the citizens of Bandera County.”

Clean Rivers Program Partners

San Antonio River Authority (SARA) Nueces River Authority (NRA)

Bandera County River Authority and Groundwater District (BCRAGD) began its participation in the Clean Rivers Program during the Summer of 2012. Since then, its involvement has expanded from the Medina River to Medina Lake, Diversion Lake and the Nueces Watershed in September 2016.



Overview

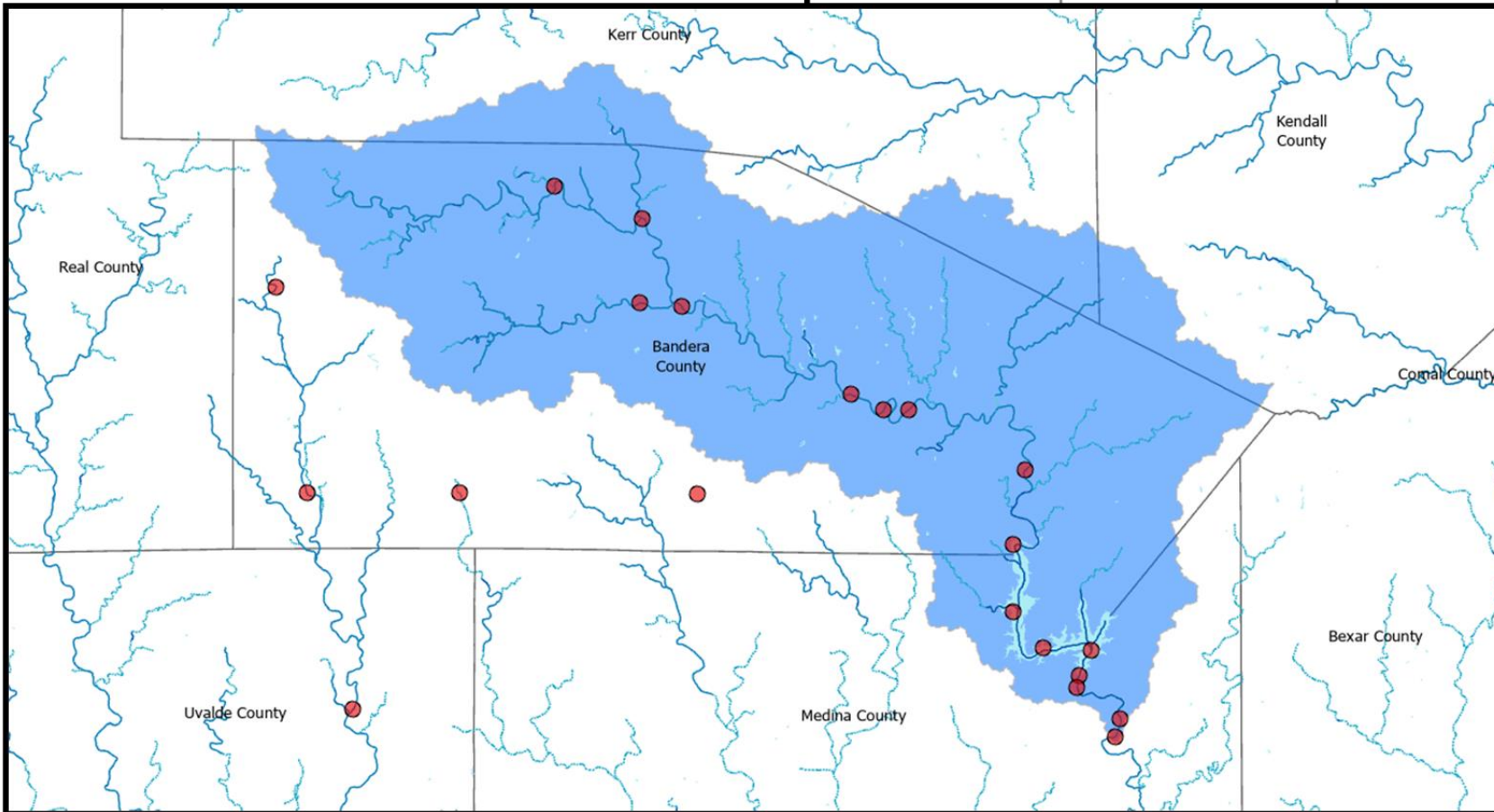
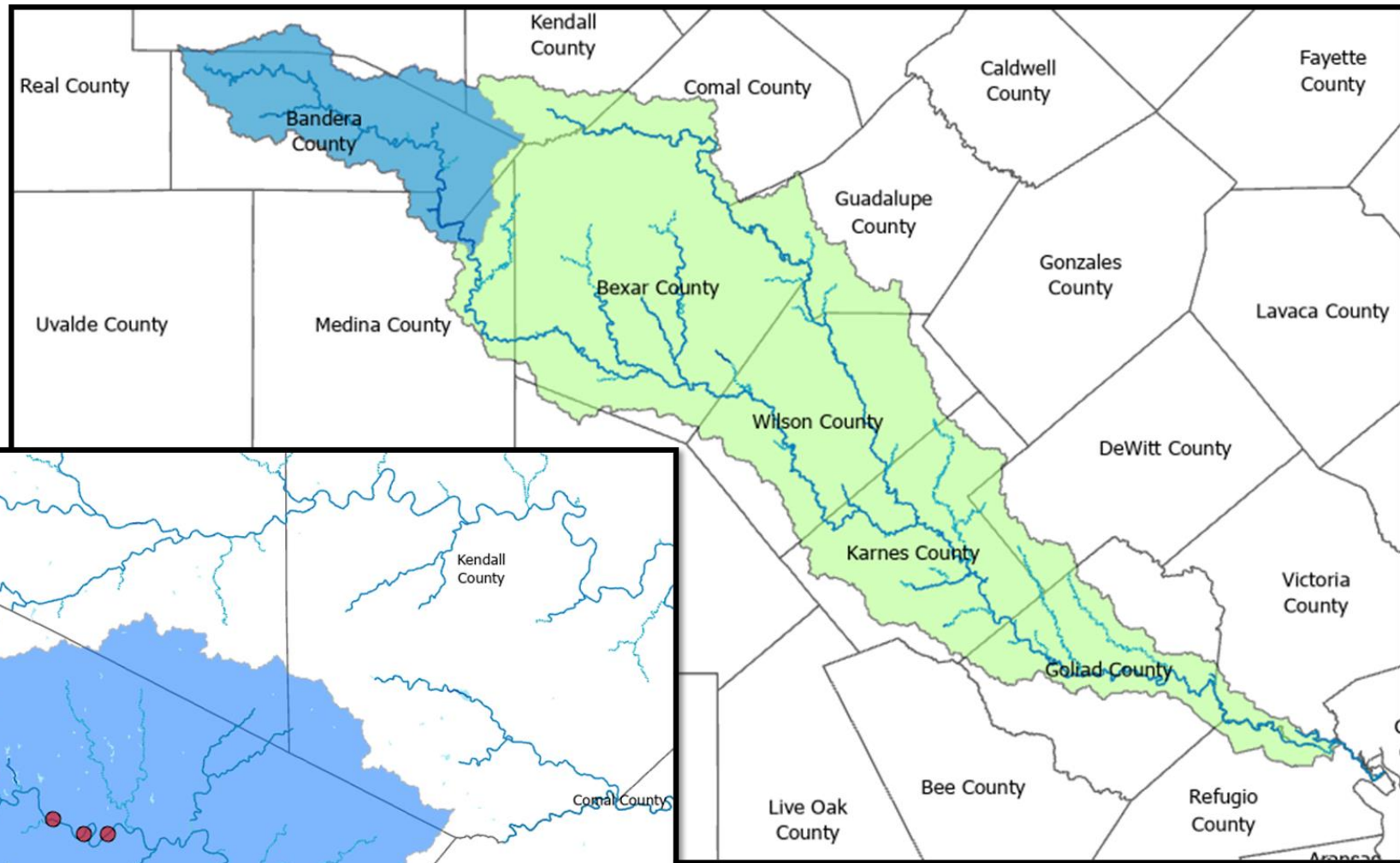
1. Drought Impacts
2. Water Quality Issues
3. Current Projects and Future Direction



BCRAGD CRP Sites:

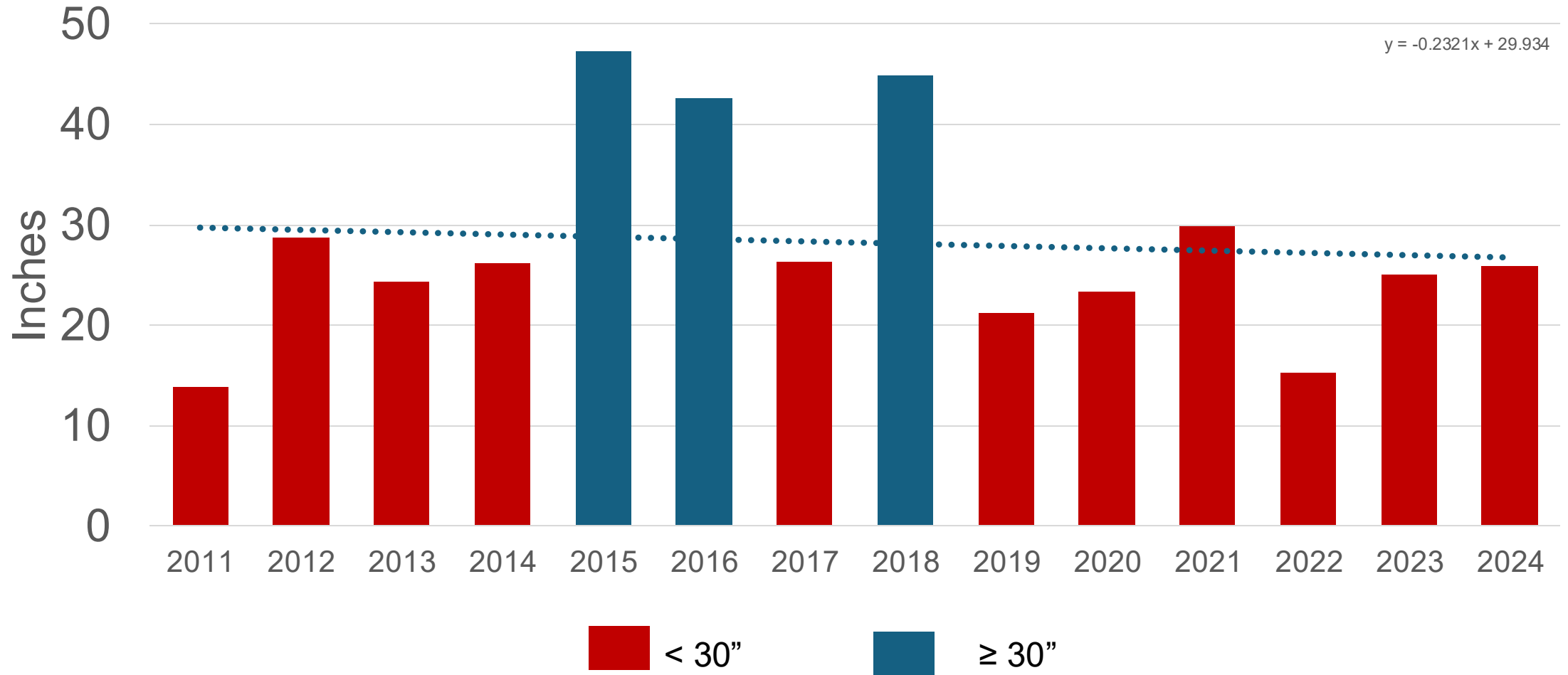
San Antonio Basin: 16 Sites

Nueces Basin: 5 Sites



6 Reservoir Sites
15 Riverine Sites

Bandera County Annual Rainfall Totals 2011-2024



11 Years of Below Average Rainfall Since the Drought of 2011



Medina River Downstream of Diversion Dam July 2023
TCEQ-12824

Premature Dormancy: Exacerbating the effects of a changing landscape through decreased carbon sequestration

Medina River Downstream of Diversion Dam July 2024
TCEQ-12824



A photograph of a stream with a large, weathered tree trunk lying horizontally across it. The water is shallow and covered with a thick layer of bright green algae. The background is filled with dense green trees and foliage. A white text box is overlaid on the upper part of the image.

Upstream of Bandera City Park July 2024

Loss of Aquatic Habitat: Local mortality of aquatic organisms including the State Fish of Texas – Guadalupe Bass



Medina Lake at 2.1% Capacity (as of 4/15/25): -94.40 feet below conservation pool.

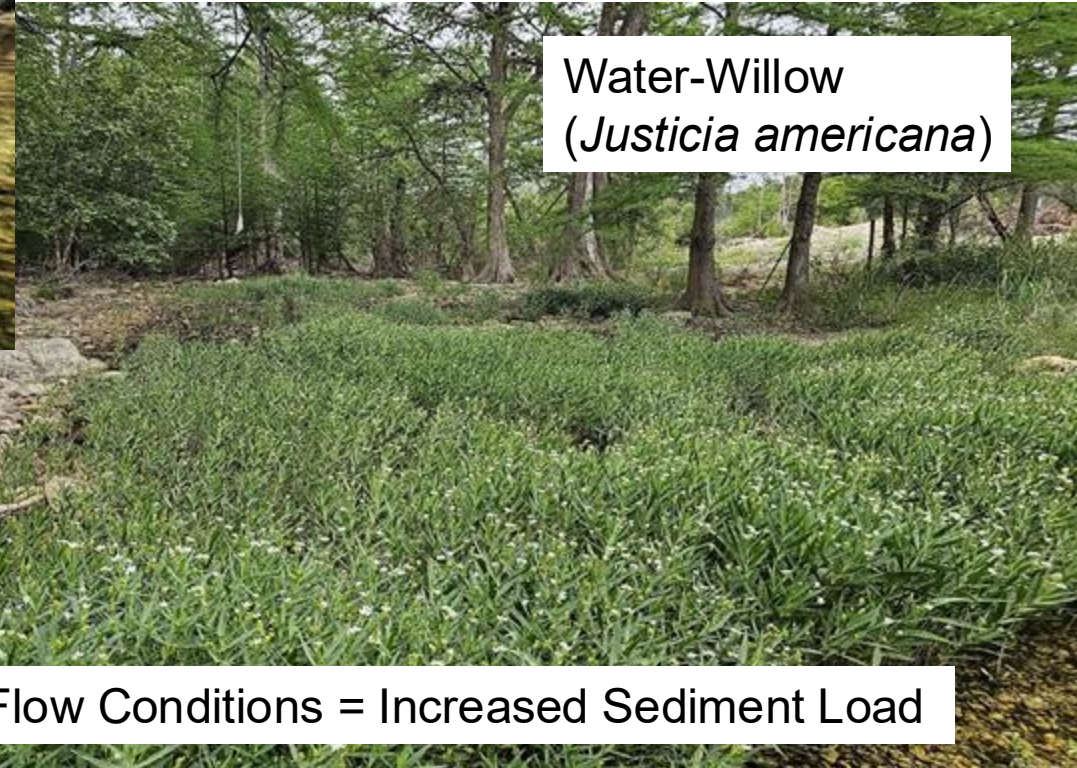
Normal Flow Conditions = Clear Cobble Streambed



N. Prong Medina River at Wallace Creek

TCEQ-18447

Water-Willow
(*Justicia americana*)



Sediment deposition provides habitat for dense colony forming species which continue to trap sediment and increase suitable habitat.

No Flow Conditions = Increased Sediment Load

Shift in Species Composition: Invasive Species Decreasing Recreational Quality

Commissioner's Creek February 2024
TCEQ-22227



Degraded Water Quality: Increased runoff from a loss of functional riparian habitat



Medina River at English Crossing Road May 2024



Bridlegate Park June 2024



Downstream of City Park March 2024

Impairment Listing

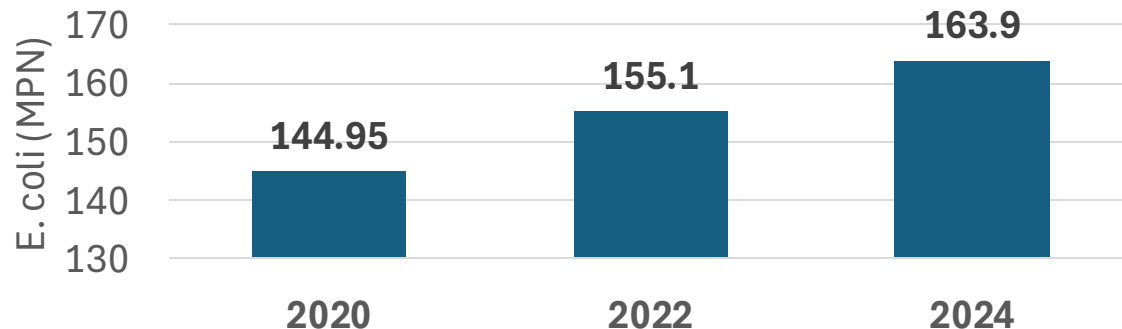
A portion of Medina River is classified as impaired for contact recreation under Section 303(d) of the Clean Water Act.

Mayan Ranch (TCEQ-21631)

Bandera City Park (TCEQ-13638)

English Crossing (TCEQ-12830)

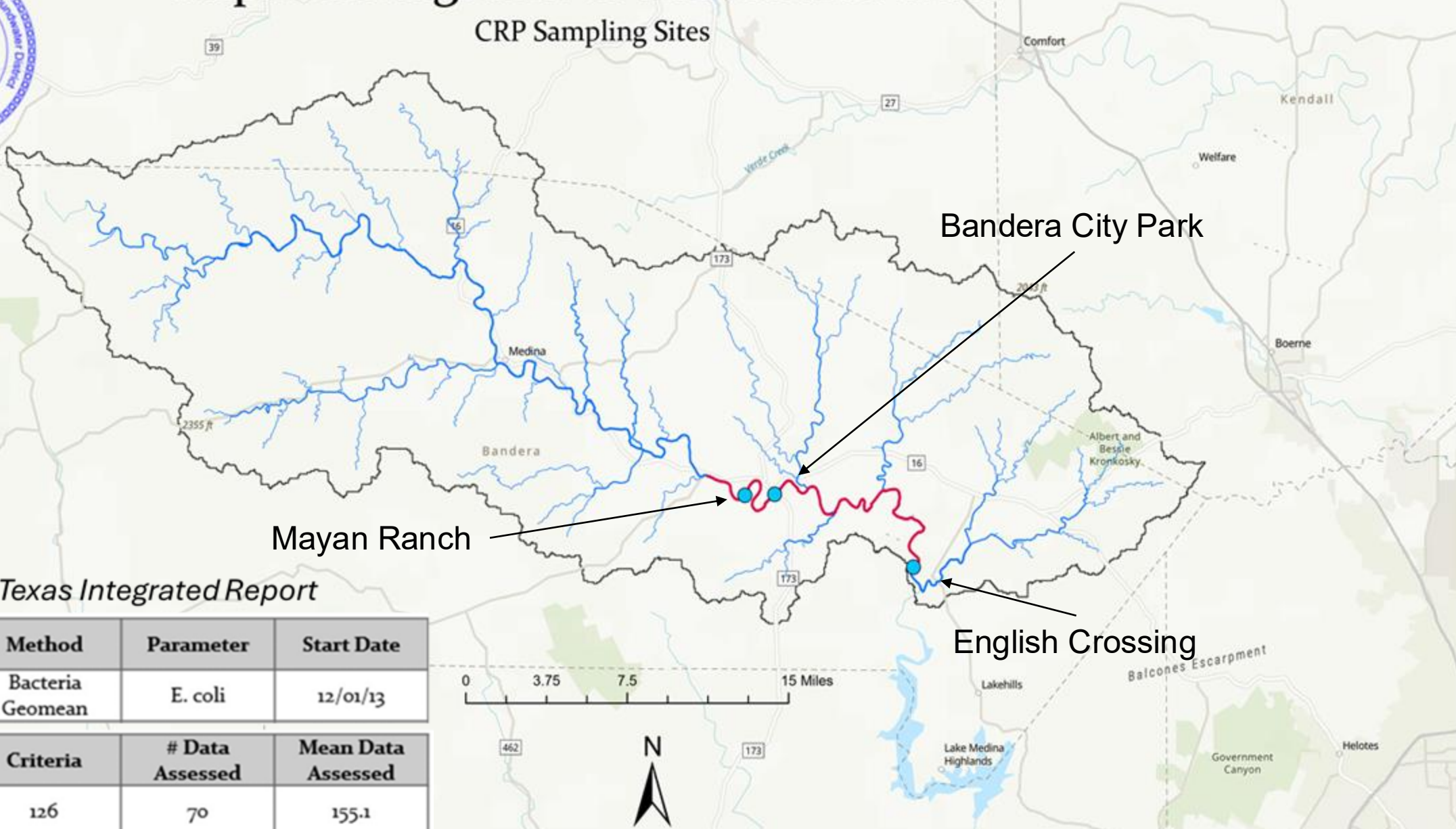
Bacteria Assessment Results
AU 1905_01





Impaired Segment of the Medina River

CRP Sampling Sites



2022 Texas Integrated Report

Use	Method	Parameter	Start Date
Recreation Use	Bacteria Geomean	E. coli	12/01/13
End Date	Criteria	# Data Assessed	Mean Data Assessed
11/30/20	126	70	155.1

Bacterial Source Tracking

Grant funds awarded through the Texas
Nonpoint Source Grant Program
FY 2024-2025

- Texas State Soil and Water Conservation Board
- Texas Water Resources Institute
- University of Texas Health Science Center Texas
- A&M AgriLife Research, Department of Soil and Crop Sciences
- Schreiner University

Total Grant Funds: \$510,735

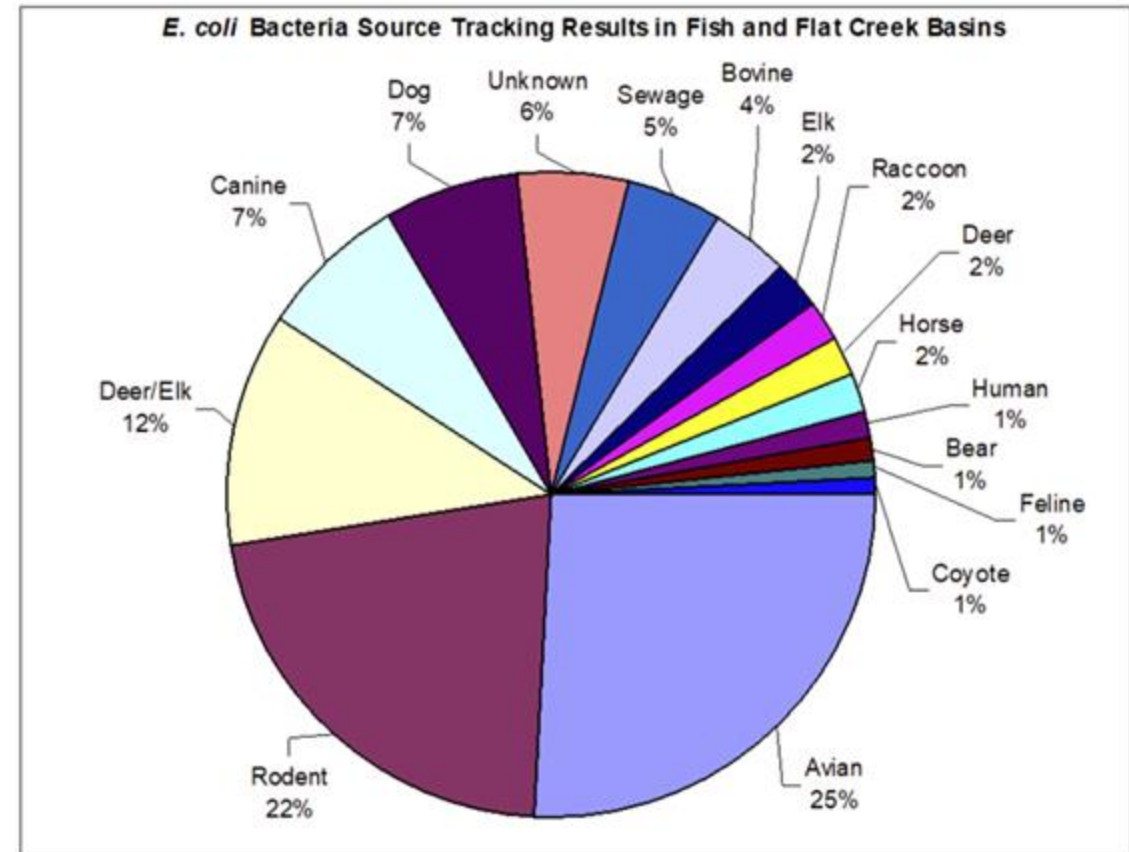


Bacterial Source Tracking Program FY 2024-2025

Objectives:

- Bacterial Source Tracking
- Expanding Texas *E. coli* Library
- Evaluating Next Generation Sequencing (NGS) Approach to Pathogen Characterization
- Developing Quantitative Microbial Risk Assessment (QMRA)

Example of Results



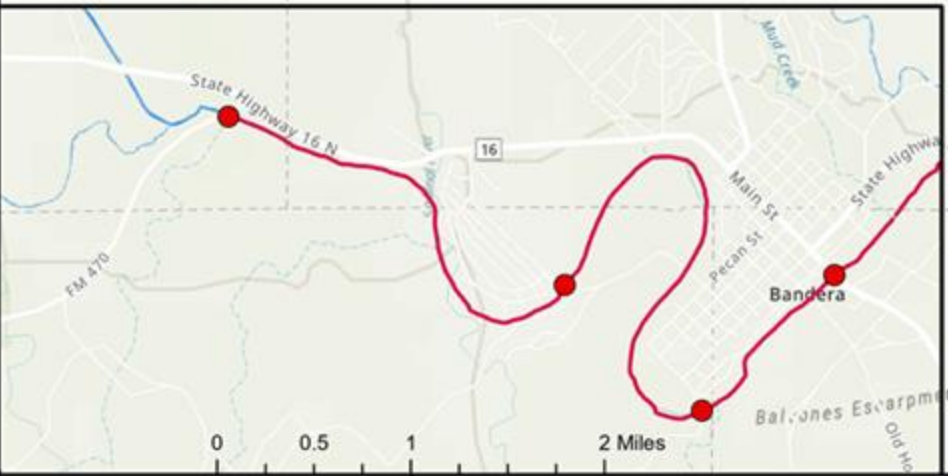
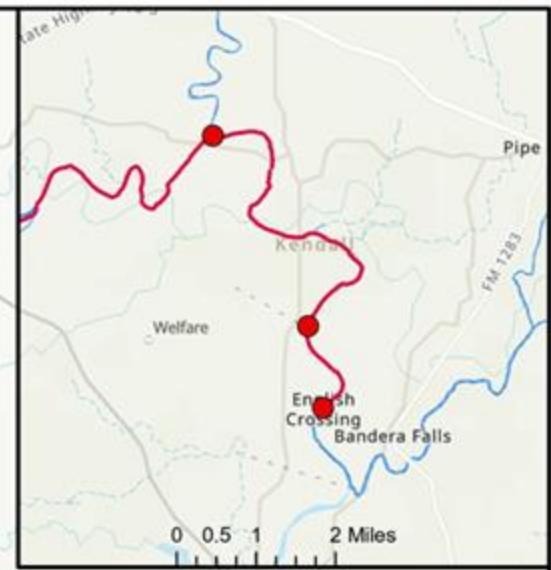
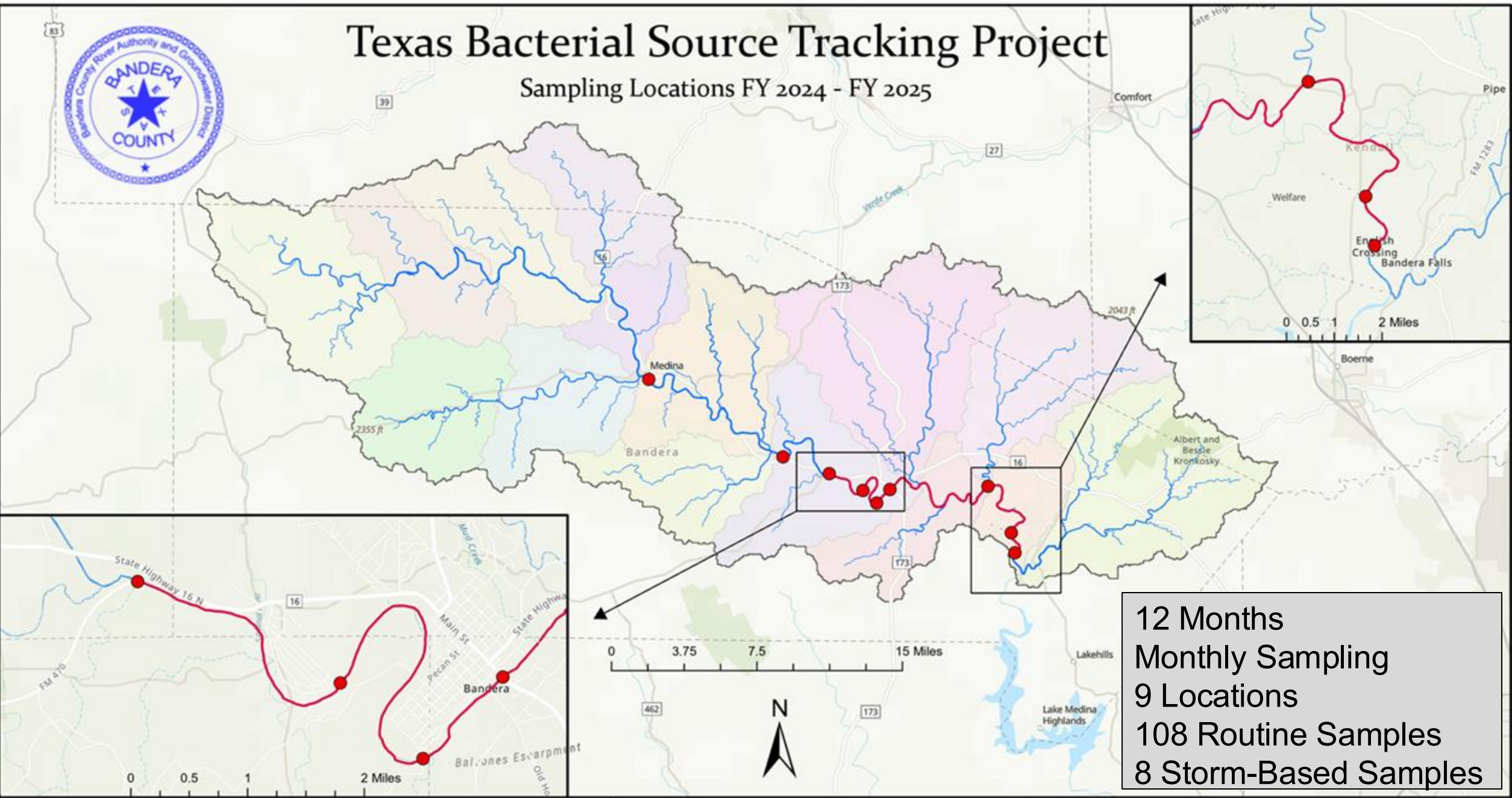
www.tetonconservation.org

Benefits: Watershed Characterization, Informed Decisions, Supported Remediation



Texas Bacterial Source Tracking Project

Sampling Locations FY 2024 - FY 2025



12 Months
Monthly Sampling
9 Locations
108 Routine Samples
8 Storm-Based Samples

Thank you!

For more information please contact:

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Watershed Ecologist | Field Operations Manager

Bandera County River Authority & Groundwater District

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