

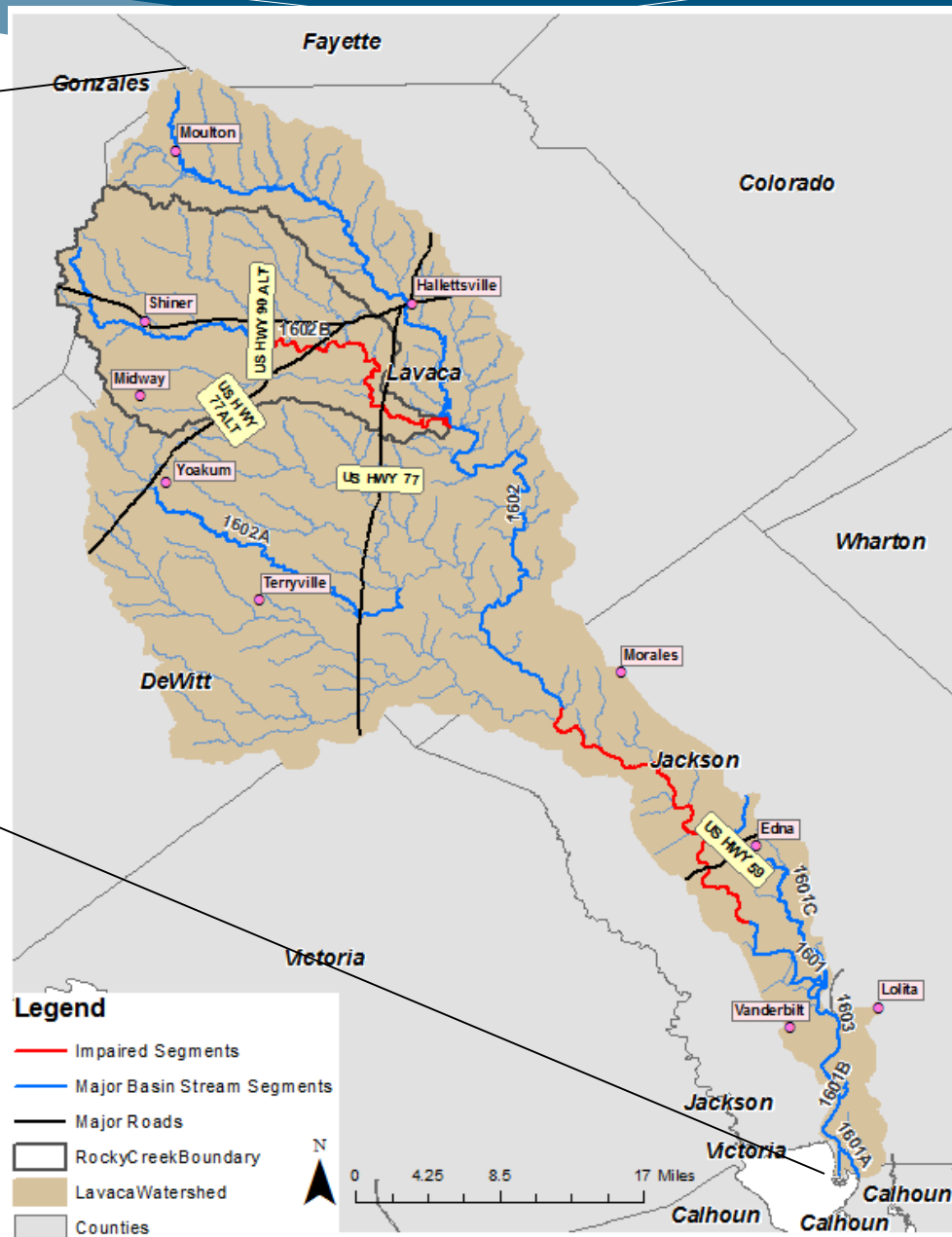
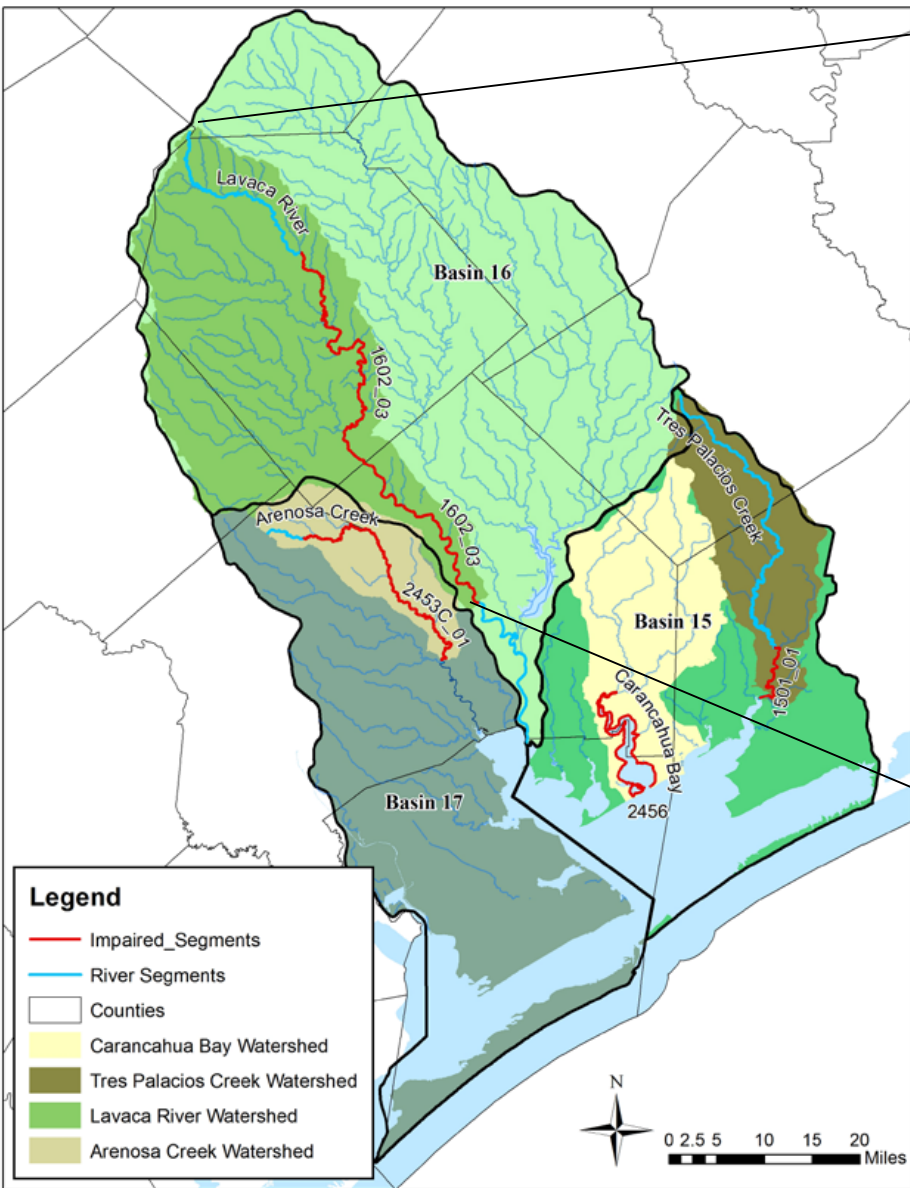
Lavaca River Watershed Meeting Overview

T. Allen Berthold, PhD

Texas Water Resources Institute

October 24, 2016





Topics for Today

- ⦿ Water Quality Policy, Water Quality Data, Watershed-Based Planning
 - ⦿ Description of Lavaca River Watershed
- ⦿ Possible Stakeholder Organizational Frameworks and Decision Making Processes
- ⦿ Proposed Timeline and Next Steps



Introductions

- ◎ Name
- ◎ Entity/group representing/
landowner/interested citizen, etc.

LAVACA RIVER

Water Quality Policy and Data

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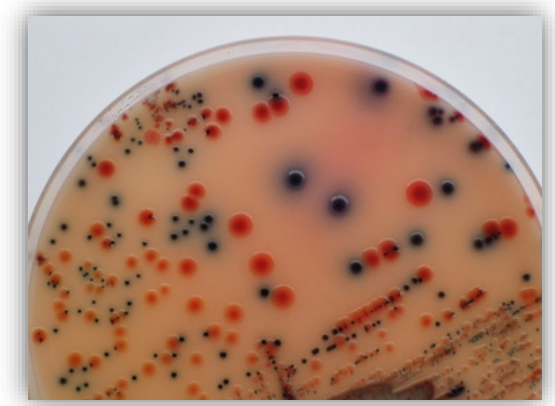


Background: The Clean Water Act

- ⦿ Federal Clean Water Act (CWA)
 - ⦿ Goal of CWA is to provide water quality suitable for the protection and propagation of fish, shellfish and wildlife while providing for recreation in and on the water
- ⦿ U.S. Environmental Protection Agency (USEPA) administers and implements CWA
 - ⦿ Requires individual states to set water quality standards and monitor to ensure waterbodies meet standards
 - ⦿ Impaired waterbodies are listed on CWA 303(d) list

E.g. Standards

Parameter	TCEQ Standard
pH (standard units)	6.5 – 9.0 range
Chlorophyll-a (µg/L)	21
Dissolved Oxygen (mg/L)	5.0/4.0 (grab avg/min)
<i>E. coli</i> (cfu/100mL)	126* - Non-Tidal Segment
<i>Enterococci</i> (cfu/100mL)	35* - Tidal Segment

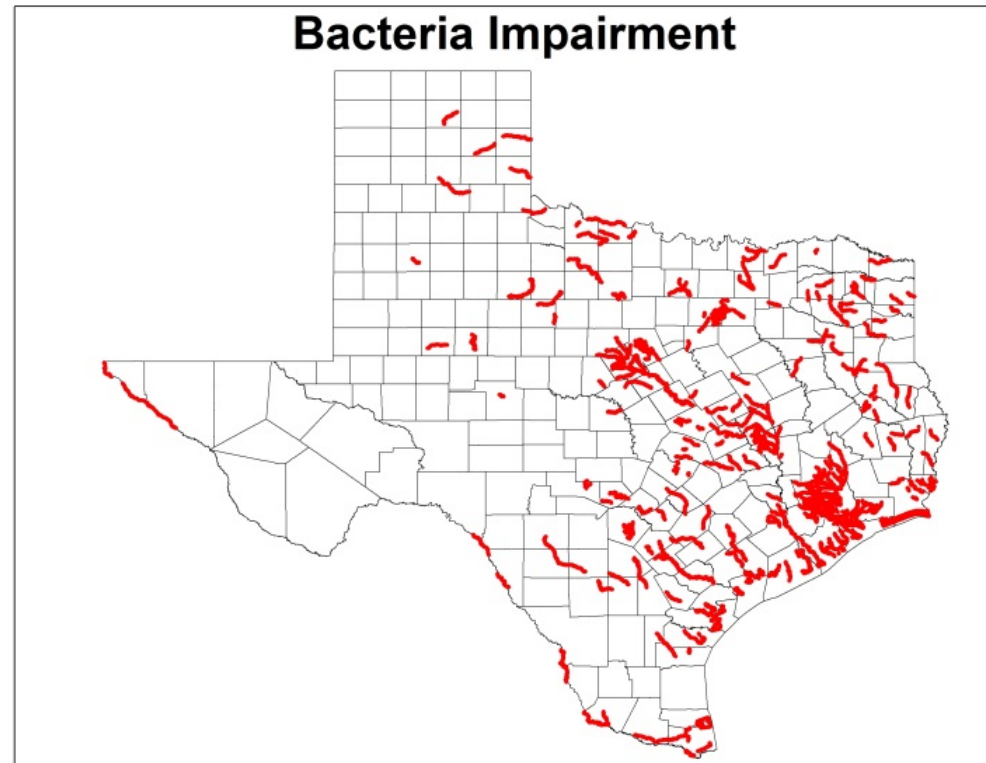
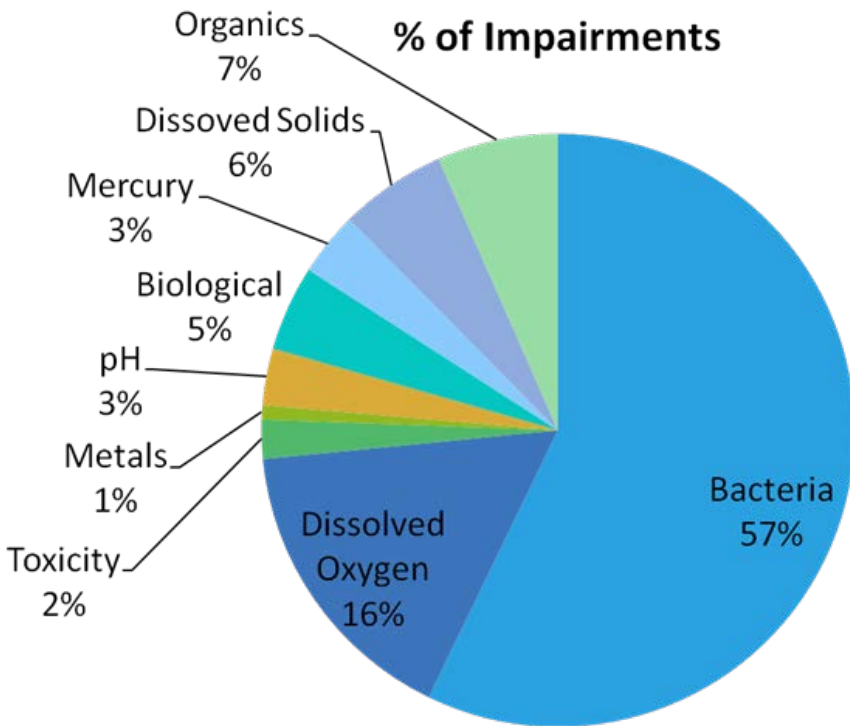


* Indicates that there are more than one standard and the most stringent is listed

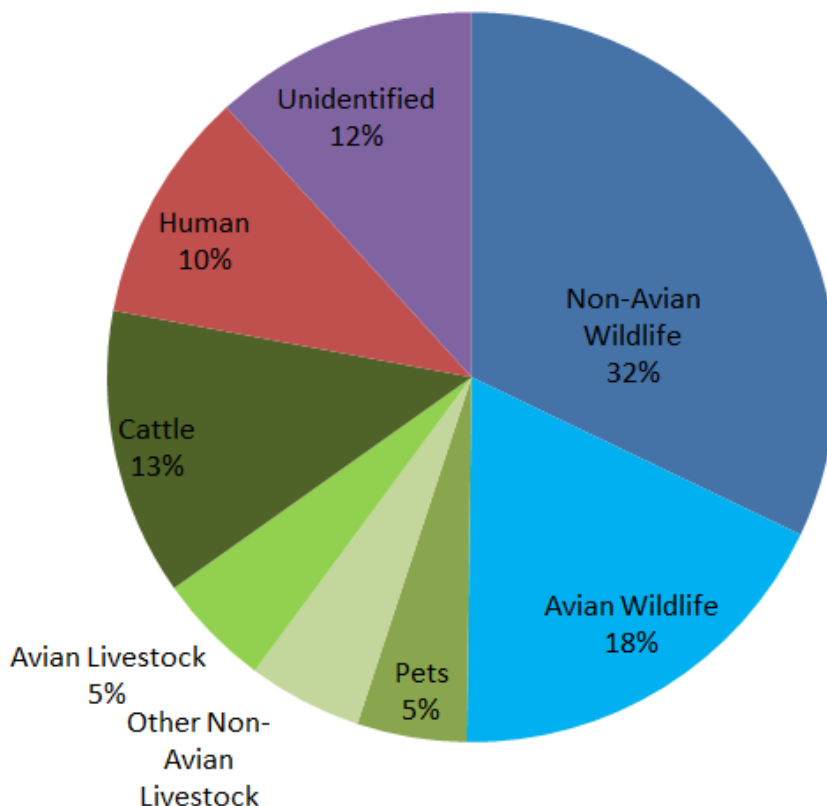
Water Quality Management Overview



Current Impairing Parameters



Major Sources Of Bacteria (based on previous projects)

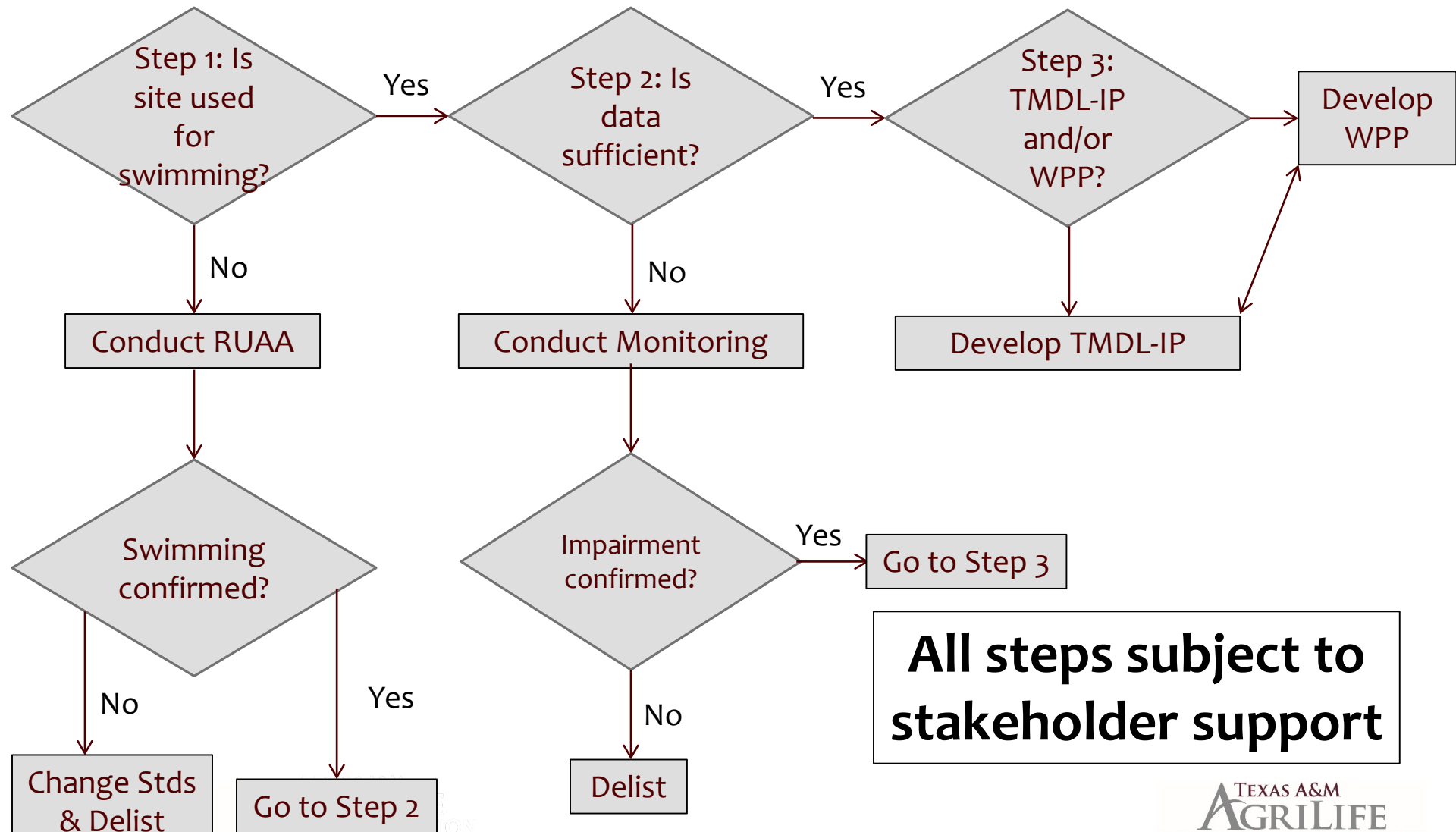


How does Bacteria get into Creeks?

- ⊙ Direct deposition
 - ⊙ Animals directly deposit fecal material into the water
 - ⊙ Birds above water, ducks on water, livestock & wildlife drinking
- ⊙ Non-Point Sources
 - ⊙ Storm water runoff from landscape
 - ⊙ Fecal material runoff from landscape
 - ⊙ Pet waste, livestock, wildlife
 - ⊙ Failing septic systems
- ⊙ Point Sources
 - ⊙ Improperly treated waste water treatment discharge
 - ⊙ Illegal dumping
 - ⊙ Storm water from cities



General approach used today



What is a Watershed-Based Plan?

- ⦿ A plan that addresses water quality issues in a particular watershed rather than political subdivision
- ⦿ WPPs are mechanisms for voluntarily addressing complex water quality problems that cross multiple jurisdictions
- ⦿ WPPs are coordinated frameworks for implementing prioritized and integrated protection and restoration strategies driven by environmental objectives
- ⦿ WPPs integrate activities and prioritize implementation projects based upon technical merit and benefits to the community

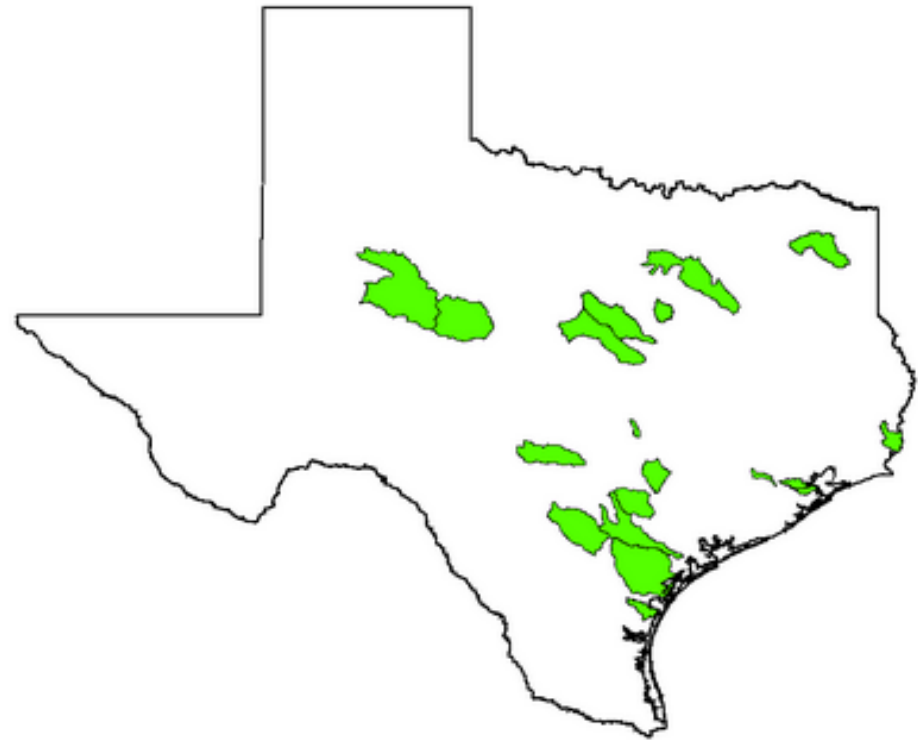
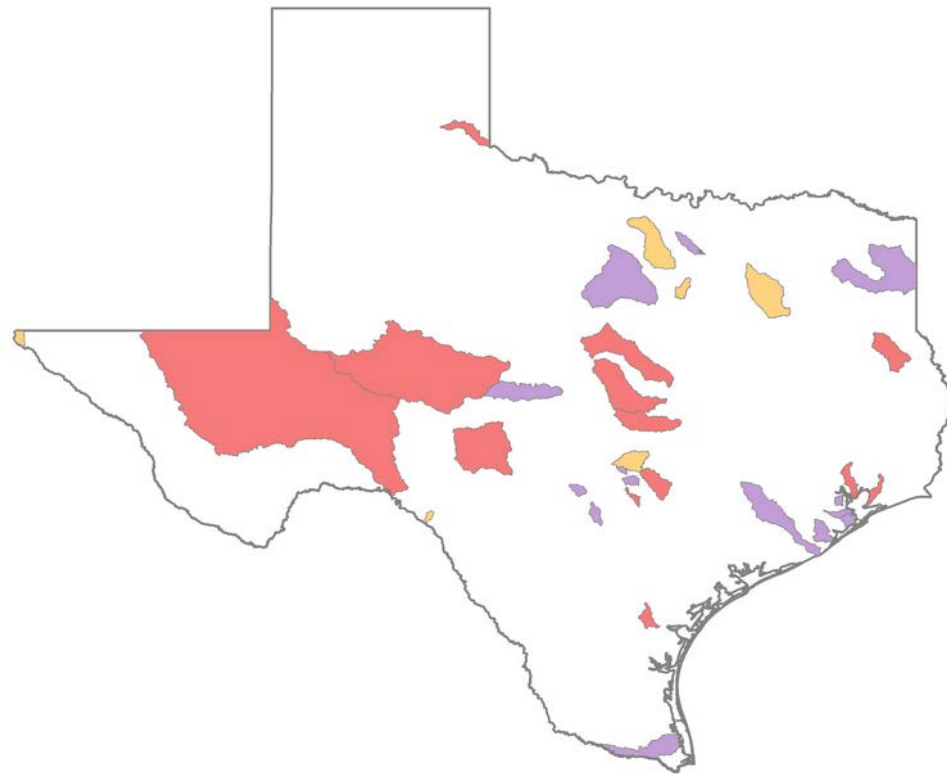
What does a watershed plan consist of?

- ⦿ USEPA 9 Elements
 - ⦿ Identify Causes and Sources
 - ⦿ Estimate Loading Reductions Needed
 - ⦿ Describe Management Measures
 - ⦿ Education and Outreach Component
 - ⦿ Schedule for Implementation
 - ⦿ Measureable Milestones
 - ⦿ Source of Financial Assistance and Estimate Costs
 - ⦿ Progress Indicators to Measure Reductions and Adaptive Management
 - ⦿ Monitoring to Evaluate Effectiveness

Watershed-Based Plans Across Texas

Watershed Protection Plans (WPP)

Total Maximum Daily Load (TMDL) and Implementation Plan (I-Plan)



LAVACA RIVER

Watershed Overview

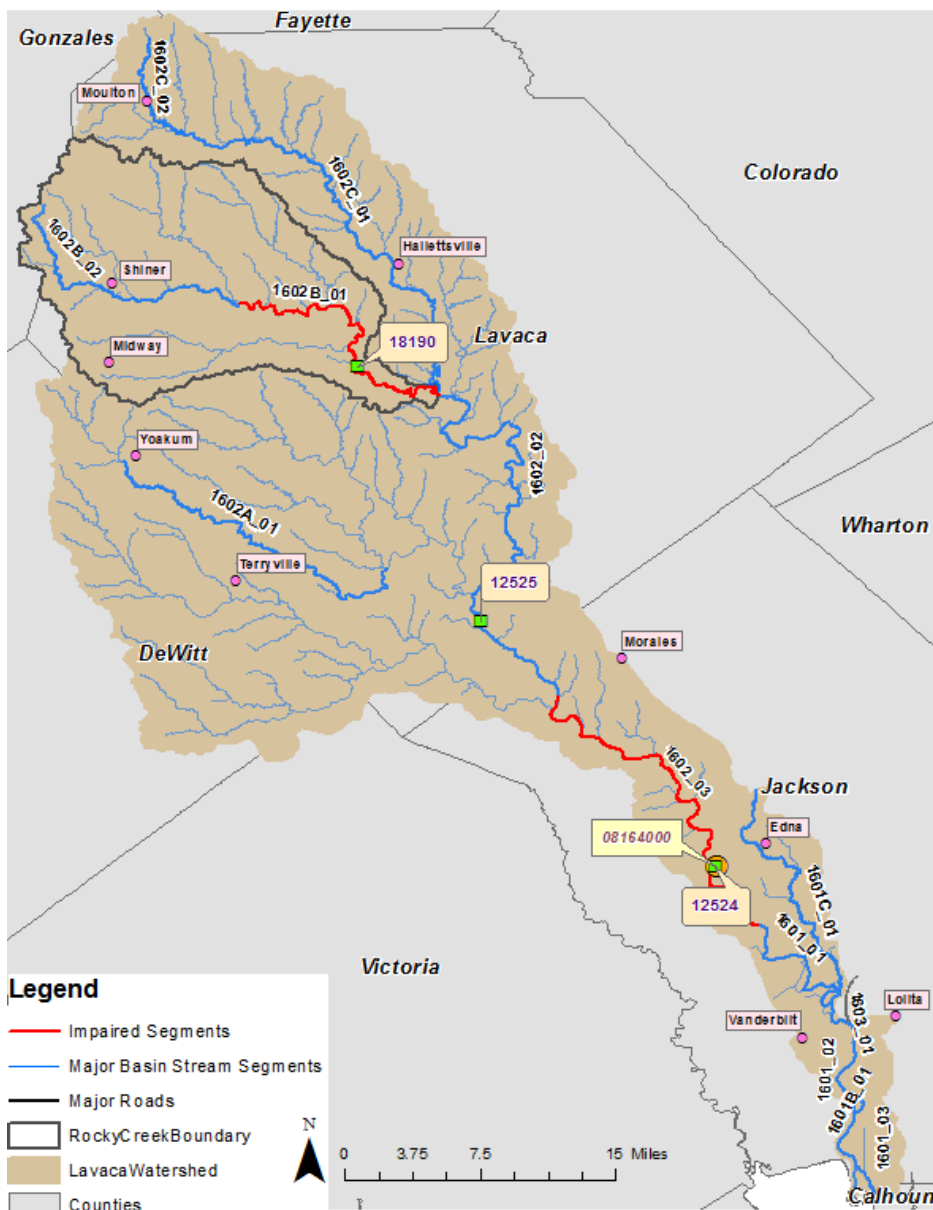
Clare Entwistle

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October 24, 2016

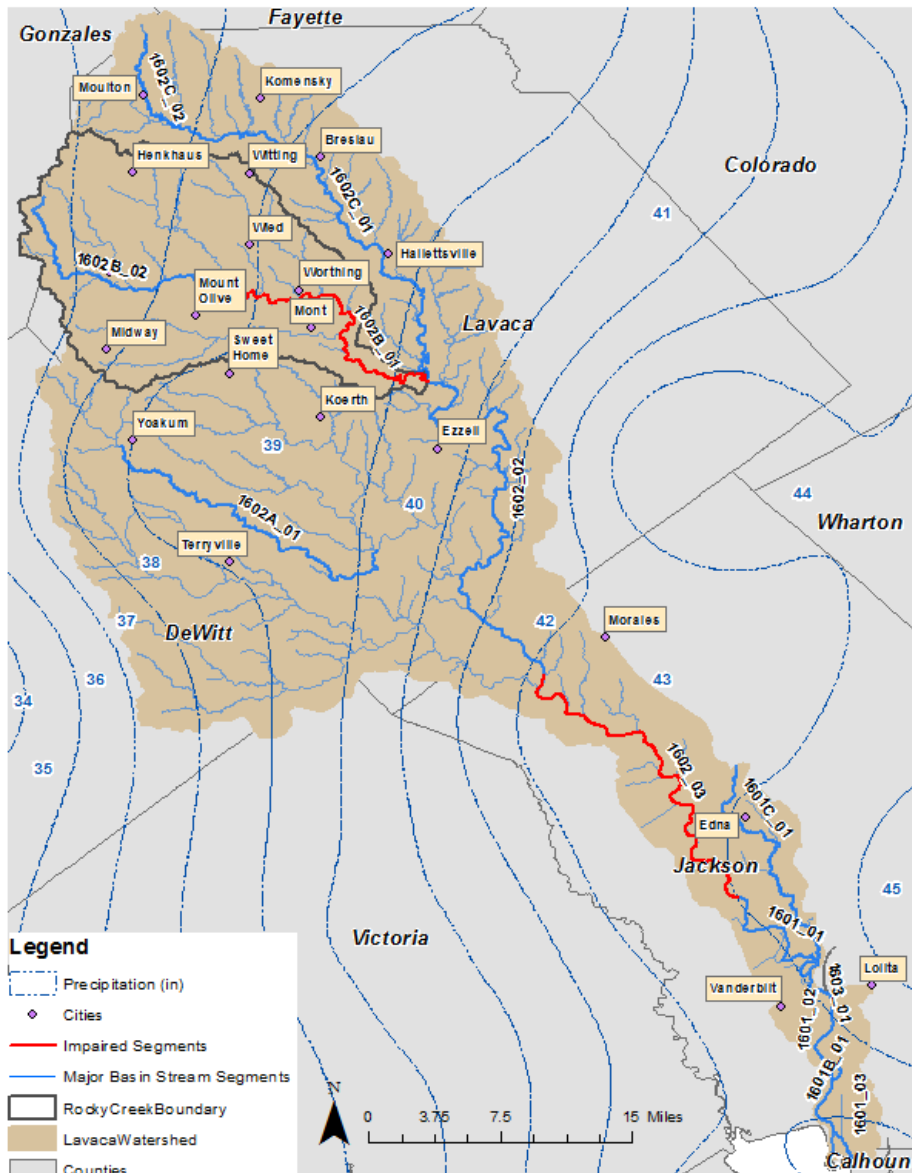


Watershed Description



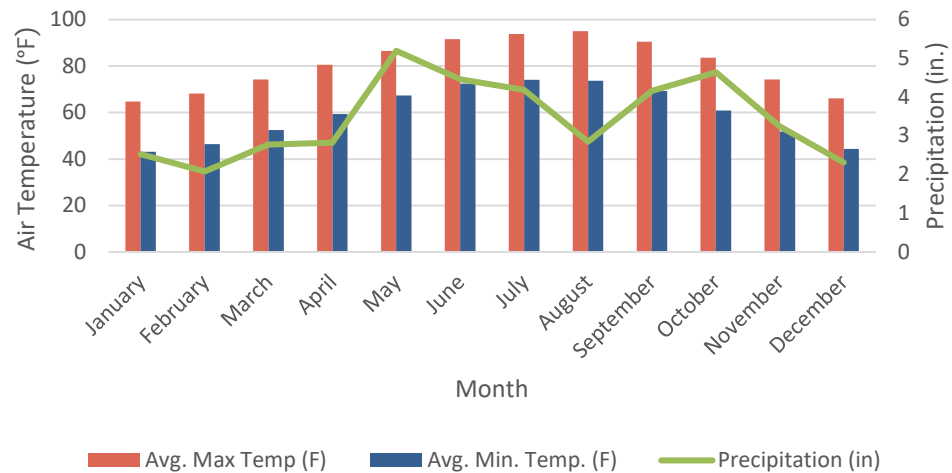
- **Lavaca River:** 582,255 acres (910 sq mi)
- **Rocky Creek:** 113,704.5 acre (118 sq mi)
- **Lavaca River** begins in Gonzales County flows to Lavaca Bay
- **Rocky Creek** begins in Gonzales County and flows to Lavaca River
- **Above Tidal (1602_03)** begins at confluence of Beard Branch and ends approximately 23 miles later south of Edna in Jackson County
- **Rocky Creek (1602B_01)** – From the confluence of Lavaca River upstream to confluence of Ponton Creek
- **Monitoring Stations:**
 - **12525** – at SH 111
 - **12524** – at US 59
 - **18190** – at Lavaca CR387

Climate Data



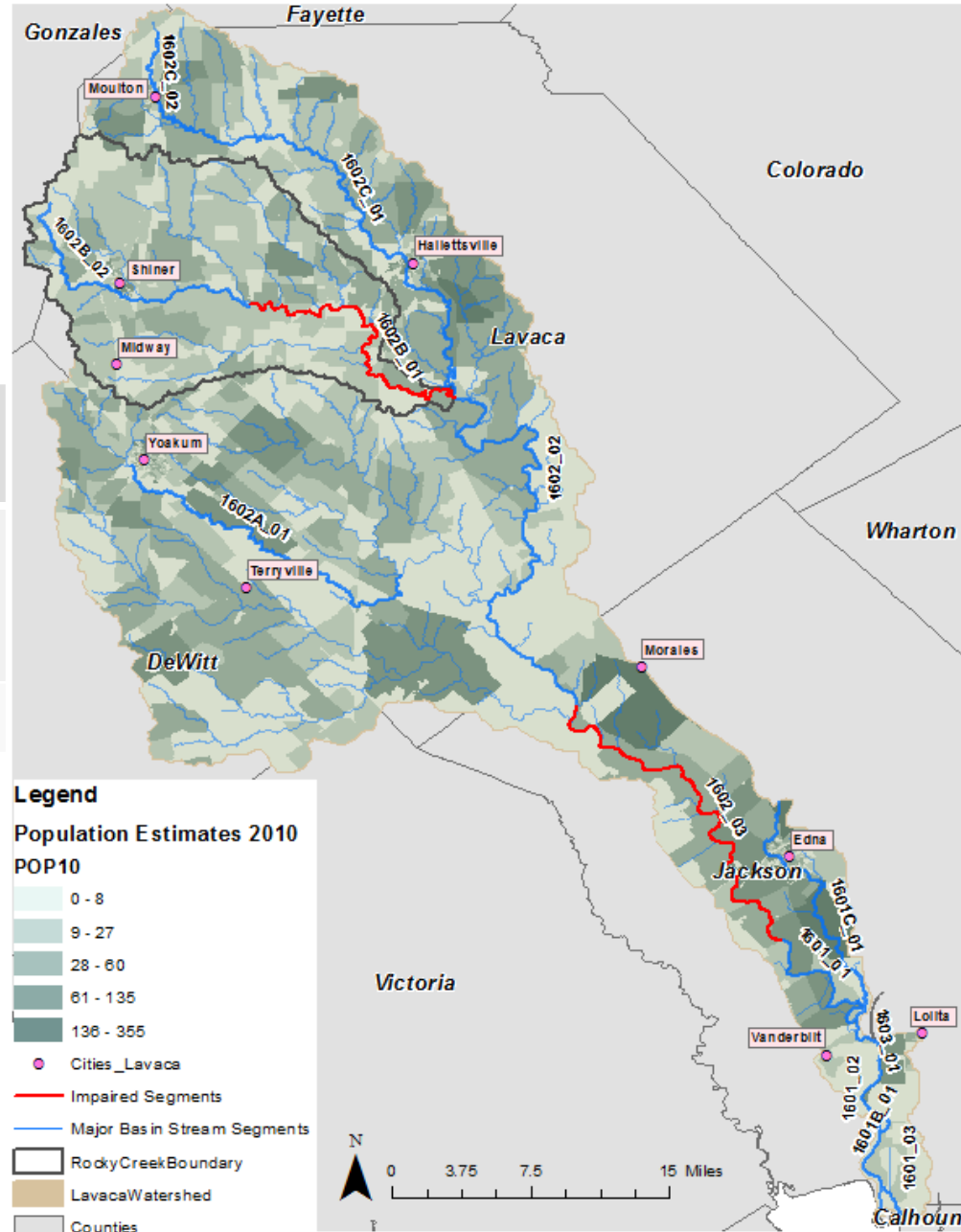
- Average Annual Highs in August ~94.5°F
- Average Annual Lows in January ~45°F
- Wettest Month is May (5.19 in)
- Driest Month is February (2.08 in)
- Average Annual Precipitation is ~41 in

2010 Temperature and Precipitation at Victoria Regional Airport

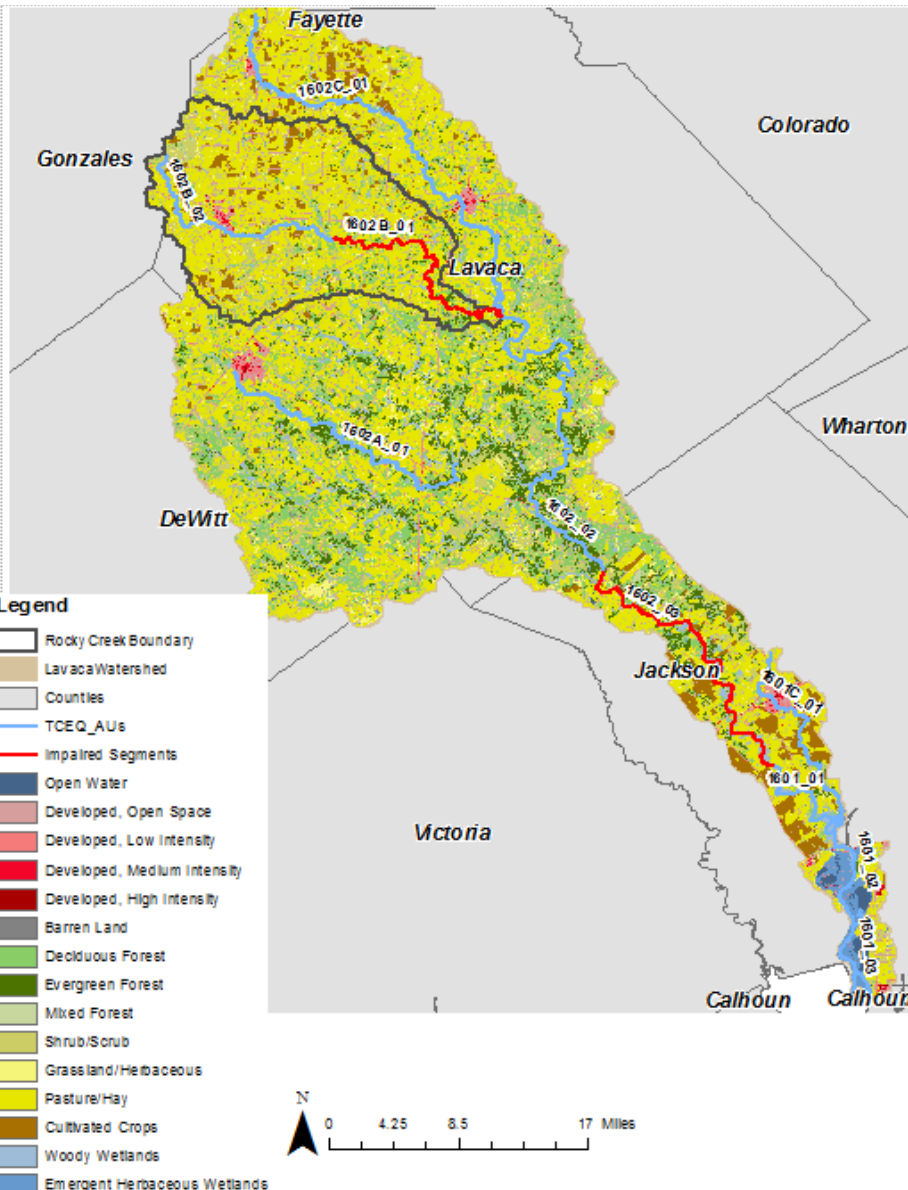


Population Estimates

Watershed	Segment	2010 Census Population
Lavaca River (incl. Rocky Creek)	Above Tidal (1602) & Tidal (1601)	30,156
Rocky Creek	1602B	5,884



Land Use and Land Cover



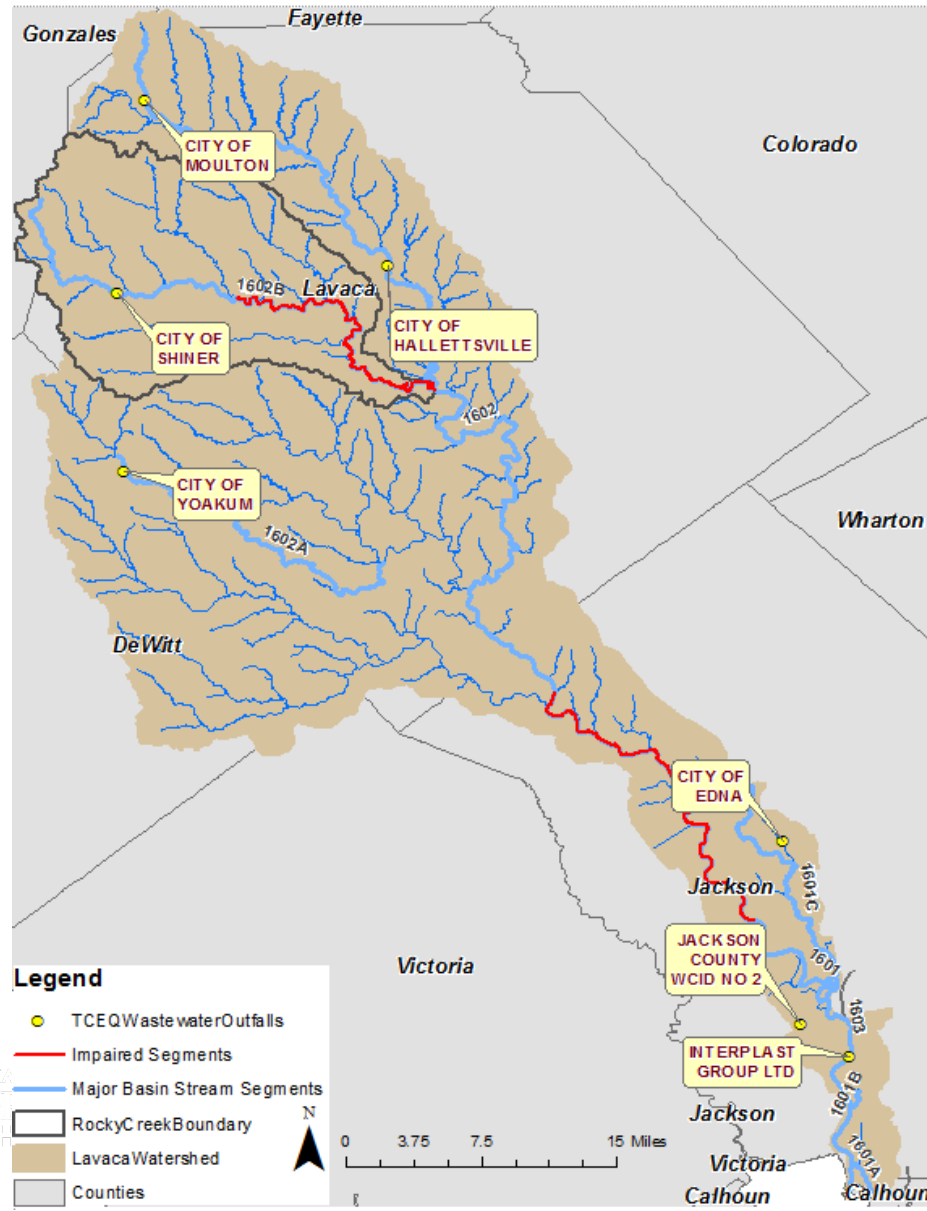
Lavaca River

Cropland: 4.5%
 Pasture: 44.5%
 Developed Land: 6.1%
 Forest: 21.4%
 Shrub/Scrub: 14.1%
 Grassland: 3.4%

Rocky Creek

Cropland: 6.3%
 Pasture: 56.3%
 Developed Land: 6.5%
 Forest: 9.2%
 Shrub/Scrub: 16.15%
 Grassland: 2.7%

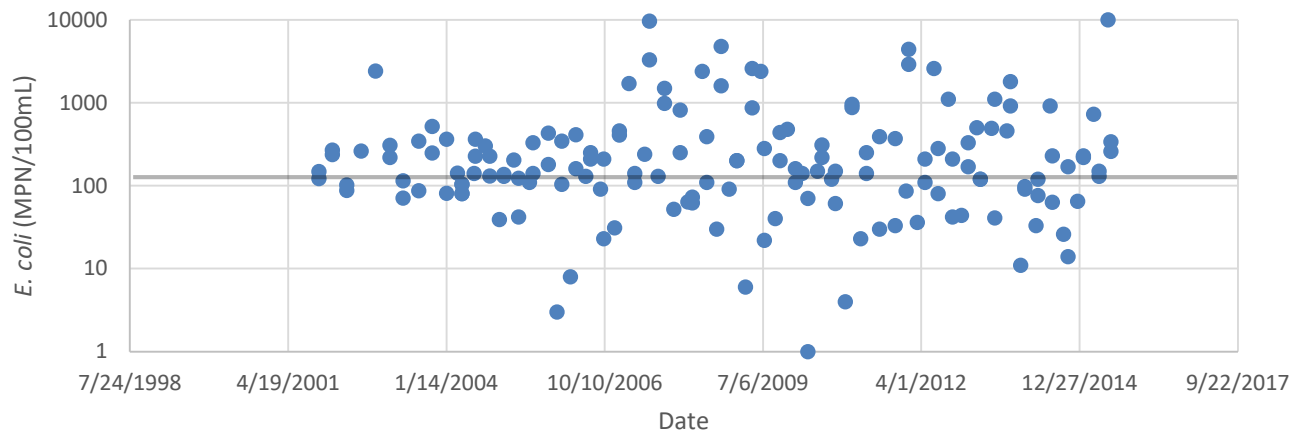
Wastewater Treatment Facilities (WWTFs)



Bacteria Data for Lavaca River

Data used for:	Parameter	ASMT Start Date	ASMT End Date	# of samples	Geometric Mean	Criteria	Designated Use
2014 Assessment	<i>E. coli</i>	12/13/2005	10/16/2012	82	186.15	126.00	Recreation
All Data	<i>E. coli</i>	10/30/2001	7/14/2015	155	180.37	126.00	Recreation

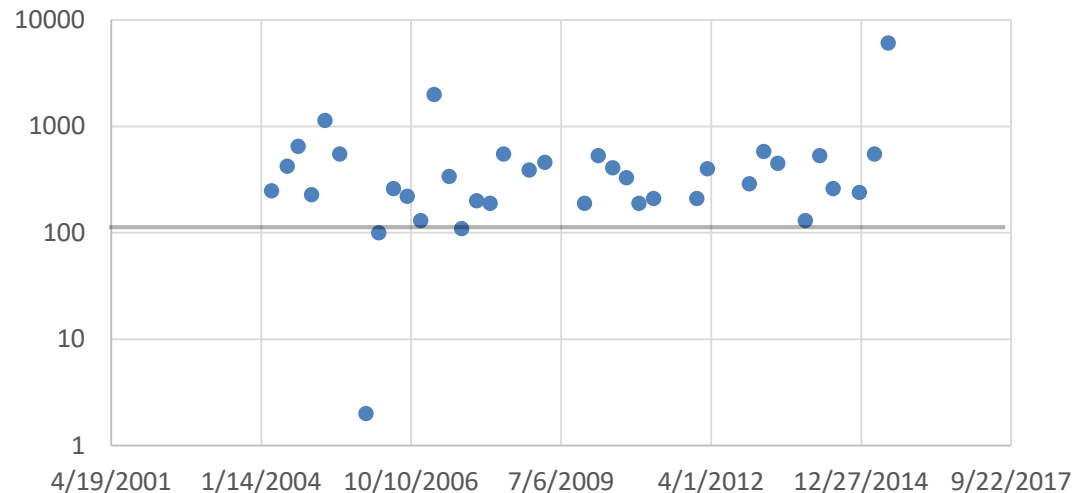
Bacteria Data for Lavaca River Above Tidal



Bacteria Data for Rocky Creek

Data used for:	Parameter	ASMT Start Date	ASMT End Date	# of samples	Geometric Mean	Criteria	Designated Use
2014 Assessment	<i>E. coli</i>	12/13/2005	12/11/2012	22	224.86	126.00	Recreation
All Data	<i>E. coli</i>	3/23/2004	6/25/2015	36	302.48	126.00	Recreation

Bacteria Data for Rocky Creek



Questions/Discussion

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