WOLF CREEK AND SANDY CREEK WATER QUALITY MEETING

Michael Schramm – Research Specialist
Lucas Gregory – Senior Research Scientist
November 21, 2019

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Agenda

- Introductions
- Water Quality Planning and Implementation in Texas
  - Dania Grundmann (TCEQ)
- Water Quality in Wolf and Sandy creeks
  - Michael Schramm (TWRI)
- Planning frameworks to address water quality
  - Lucas Gregory (TWRI)
- Next Steps

Introductions

- Name
- Entity/Group – (Agency, Landowner, Citizen, Business Owner, Etc.)

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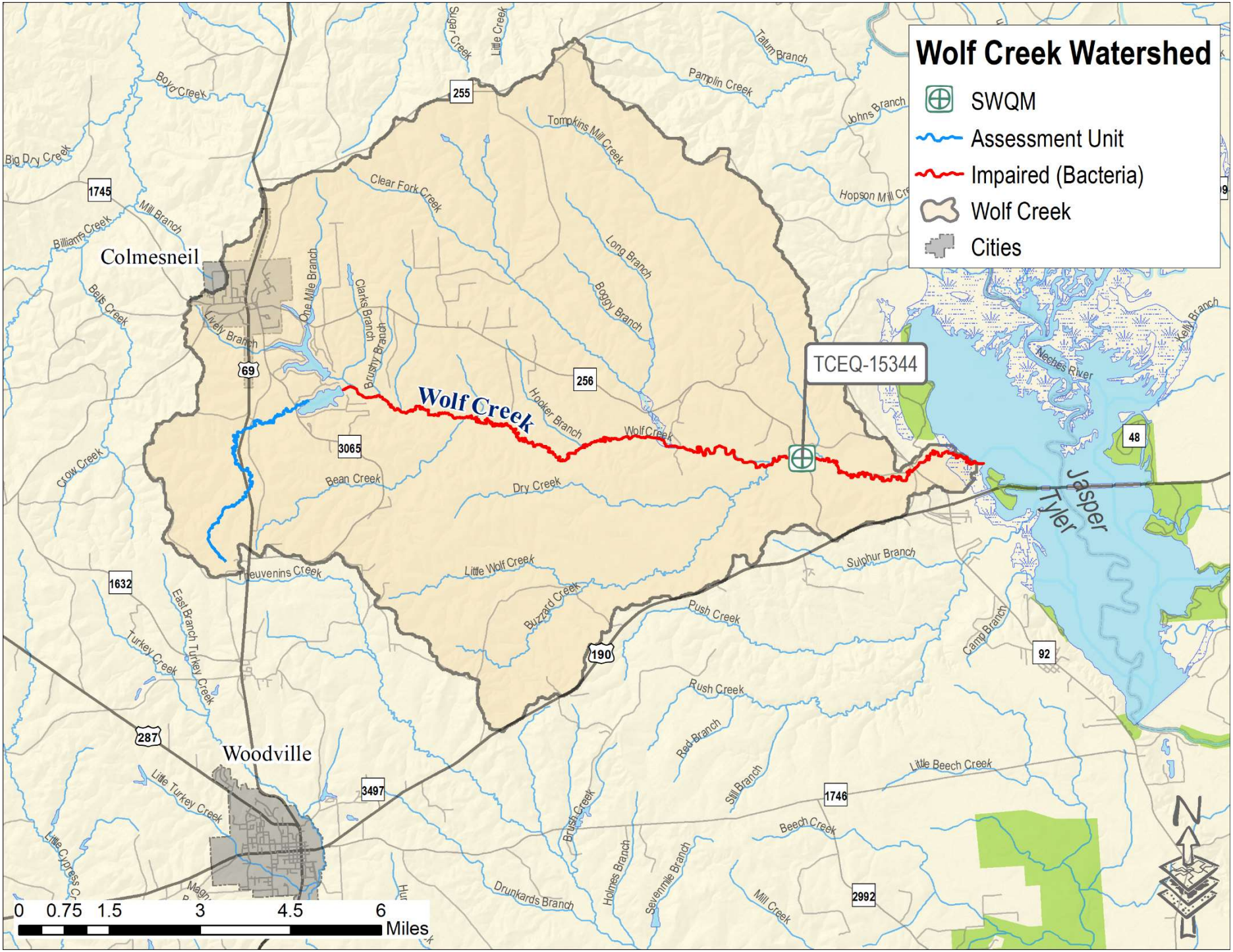
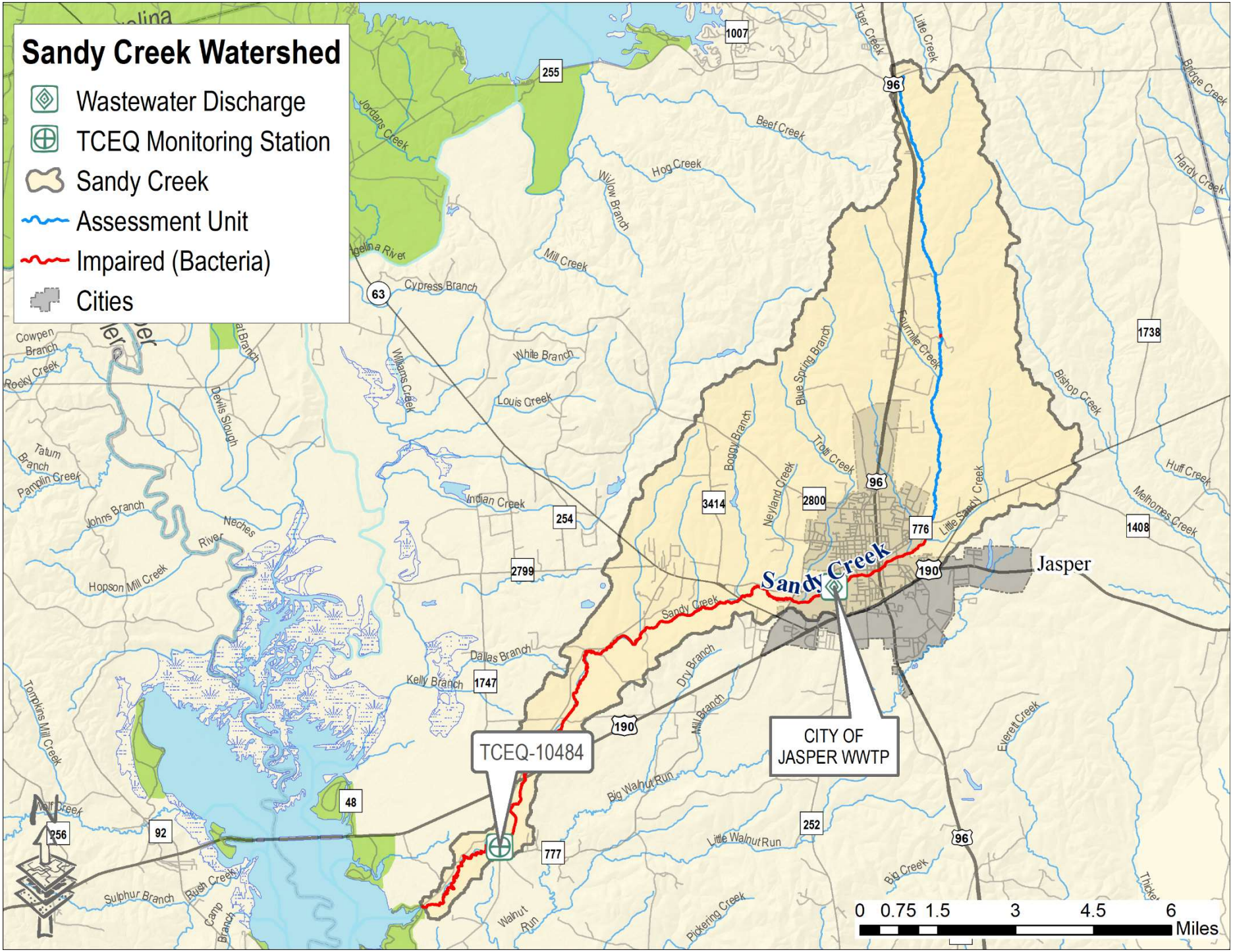

Wolf Creek Watershed
SWQM
Assessment Unit
Impaired (Bacteria)
Wolf Creek
Cities
TCEQ-15344
Wolf Creek
Colmesneil
Woodville
Jasper
Tyler
Sugar Creek
Little Creek
Talum Branch
Pamplin Creek
Johns Branch
Boyd Creek
Big Dry Creek
Tompkins Mill Creek
Clear Fork Creek
Mill Branch
Billiams Creek
Bells Creek
Lively Branch
One Mile Branch
Clarks Branch
Brushy Branch
Long Branch
Boggy Branch
Hooker Branch
Wolf Creek
Crow Creek
Bean Creek
Dry Creek
Theuvenins Creek
Little Wolf Creek
Buzzard Creek
Sulphur Branch
Push Creek
Camp Branch
East Branch Turkey Creek
Turkey Creek
Little Turkey Creek
Rush Creek
Red Branch
Sill Branch
Little Beech Creek
Beech Creek
Brush Creek
Holmes Branch
Sevenmile Branch
Drunkards Branch
Mill Creek
Hopson Mill Cr
Kelly Branch
Neches River
255
256
69
1745
1632
287
3497
190
92
48
1746
2992
3065
0 0.75 1.5 3 4.5 6
Miles
N


Sandy Creek Watershed
Wastewater Discharge
TCEQ Monitoring Station
Sandy Creek
Assessment Unit
Impaired (Bacteria)
Cities
TCEQ-10484
CITY OF JASPER WWTP
Sandy Creek
Jasper
0 0.75 1.5 3 4.5 6
Miles

Wolf Creek

2016 Assessment[1]

- **Contact Recreation**
  - Impaired (Elevated *E. coli* bacteria)
- **Aquatic Life Use**
  - No impairments (dissolved oxygen)
- **General Use**
  - No concerns (nutrients)

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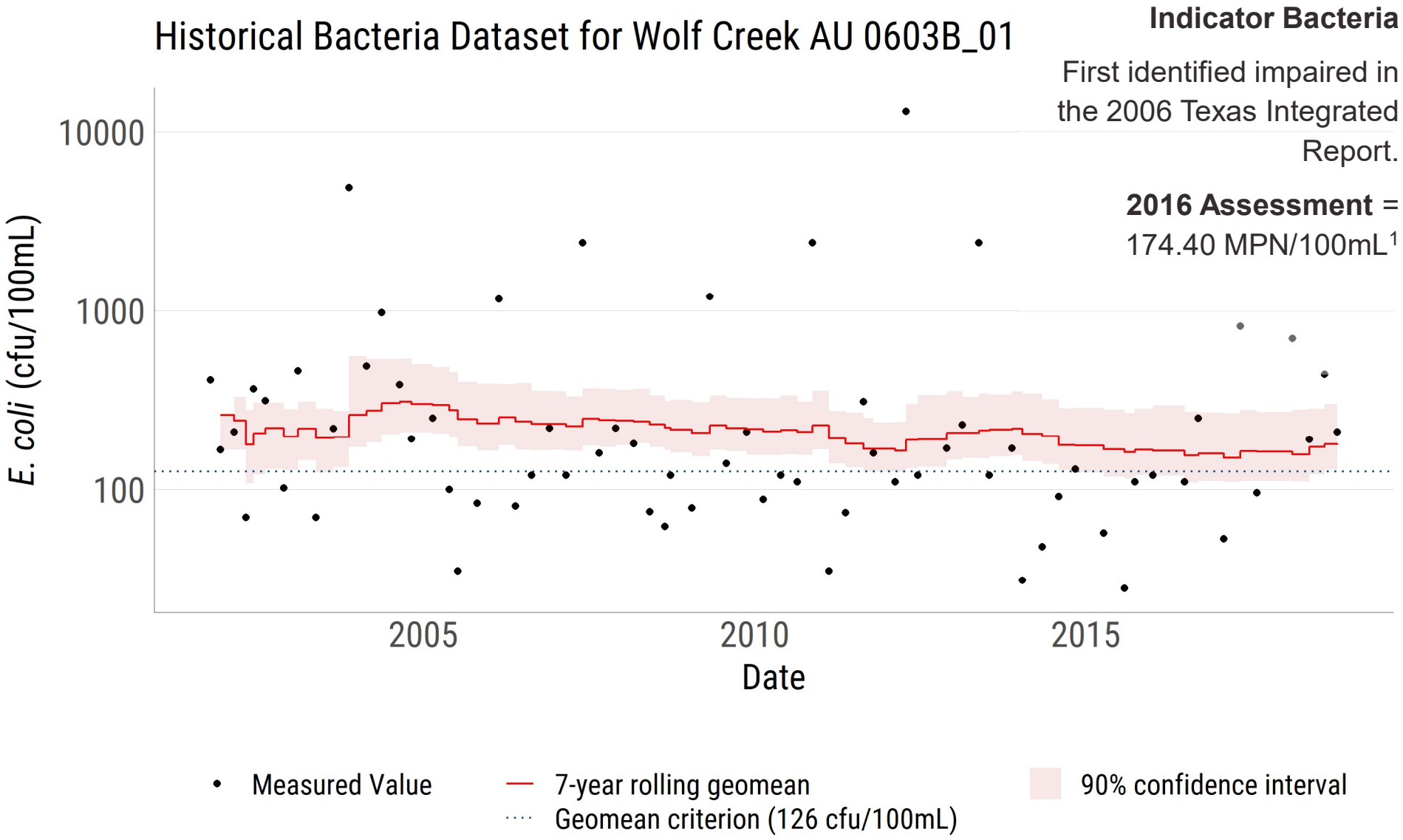
[1] TCEQ. 2019. 2016 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) . URL: https://www.tceq.texas.gov/waterquality/assessment/16twqi/16txir

Water Quality Standard

- **Primary Contact Recreation:**
- 126 MPN/100 mL *E. coli* bacteria

- Fecal indicator bacteria is used to indicate potential risk for people engaged in primary contact recreation (swimming, diving, and other activities with increased risk of water ingestion) contracting a gastrointestinal illness [1]

[1] EPA Office of Water. 2012. Recreational Water Quality Criteria. URL: https://www.epa.gov/sites/production/files/2015-10/documents/rwqc2012.pdf



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[1] TCEQ. 2019. 2016 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) . URL: https://www.tceq.texas.gov/waterquality/assessment/16twqi/16txir

Sandy Creek

2016 Assessment[1]

- **Contact Recreation**
  - Impaired (Elevated *E. coli* bacteria)
- **Aquatic Life Use**
  - No impairments (dissolved oxygen, acute toxic substances, and chronic toxic substances)
- **General Use**
  - No concerns (nutrients)
- **Fish Consumption Use**
  - No impairments (Bioaccumulative toxics)

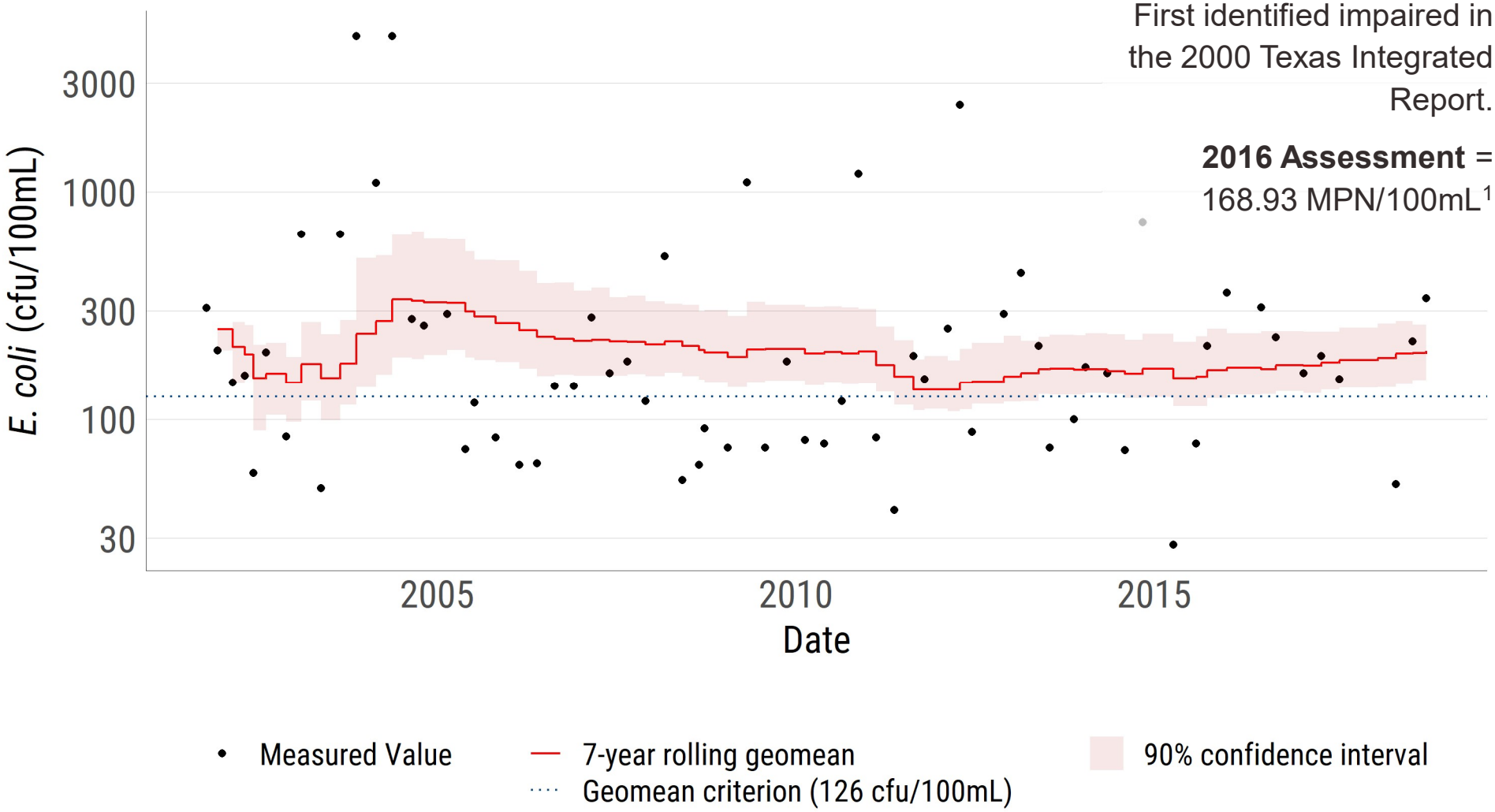
[1] TCEQ. 2019. 2016 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) . URL: https://www.tceq.texas.gov/waterquality/assessment/16twqi/16txir

Historical Bacteria Dataset for Sandy Creek AU 0603A_01

Indicator Bacteria

First identified impaired in the 2000 Texas Integrated Report.

2016 Assessment = 168.93 MPN/100mL[1]



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[1] TCEQ. 2019. 2016 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) . URL: https://www.tceq.texas.gov/waterquality/assessment/16twqi/16txir

APPROACHES TO ADDRESS WATER QUALITY & STAKEHOLDER INVOLVEMENT

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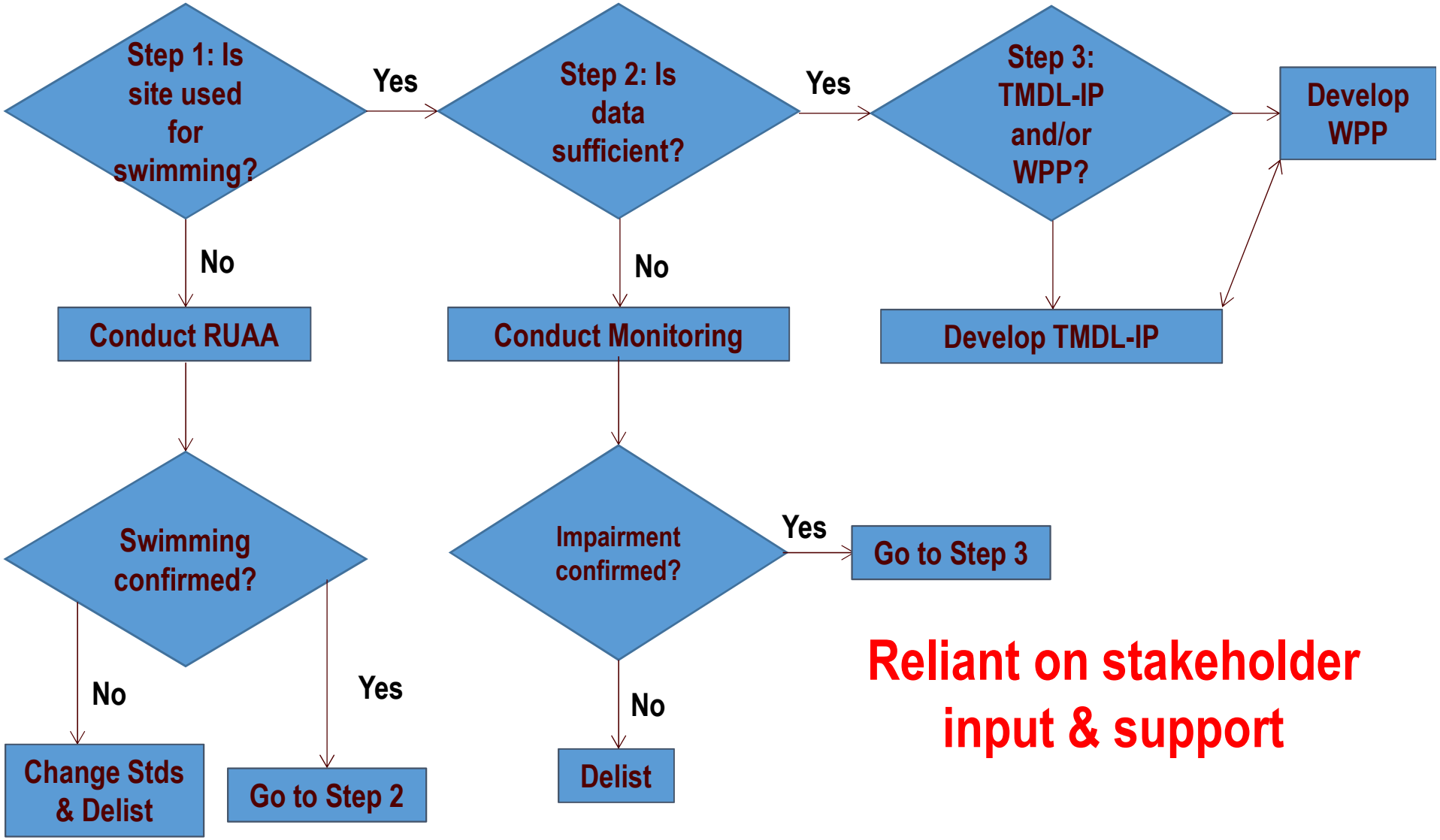
General approach used today



Reliant on stakeholder input & support

Strategies For Improving Water Quality

- **Total Maximum Daily Load (TMDL)** – Driven by federal Clean Water Act requirements
- **Total Maximum Daily Load Implementation Plan (I-Plan)** – Stakeholder driven plan that outlines how the TMDL will be achieved
- **Watershed Protection Plan (WPP)** – Stakeholder driven plan that holistically addresses all impairments and concerns in a watershed.

TMDL

- The TMDL is also a document submitted to the EPA to fulfill requirements of the Clean Water Act. TMDLs identifies the pollutant of concern, potential sources, and allocates the allowable load.

I-Plan

- The TMDL Implementation Plan (I-Plan) is a document outlining steps and schedules for reducing a pollutant load in the waterbody covered by the TMDL.
- The management measures and control actions identified in the I-Plan are developed by local stakeholders.
- I-Plans address the pollutant of concern in the TMDL.

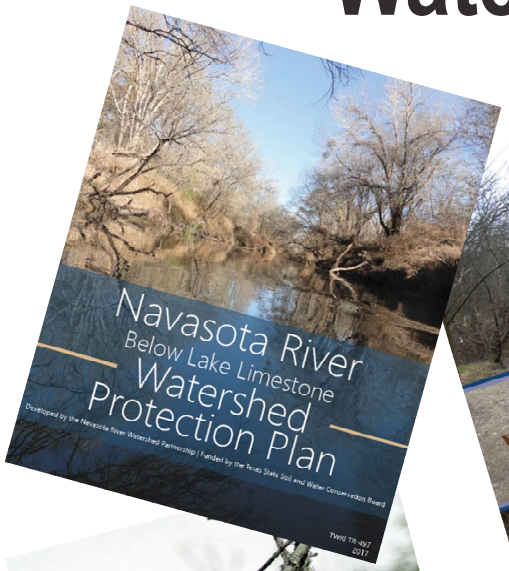
Photo: Ed Rhodes

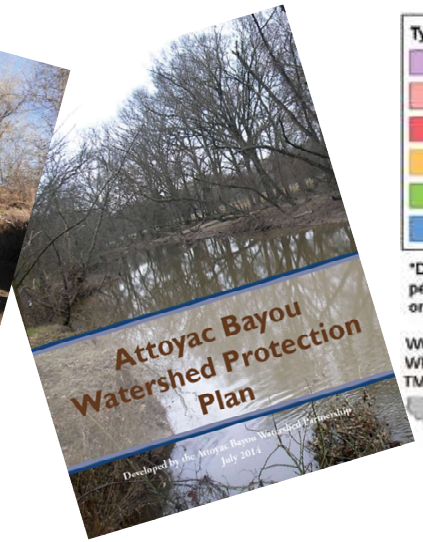
Watershed Protection Plan

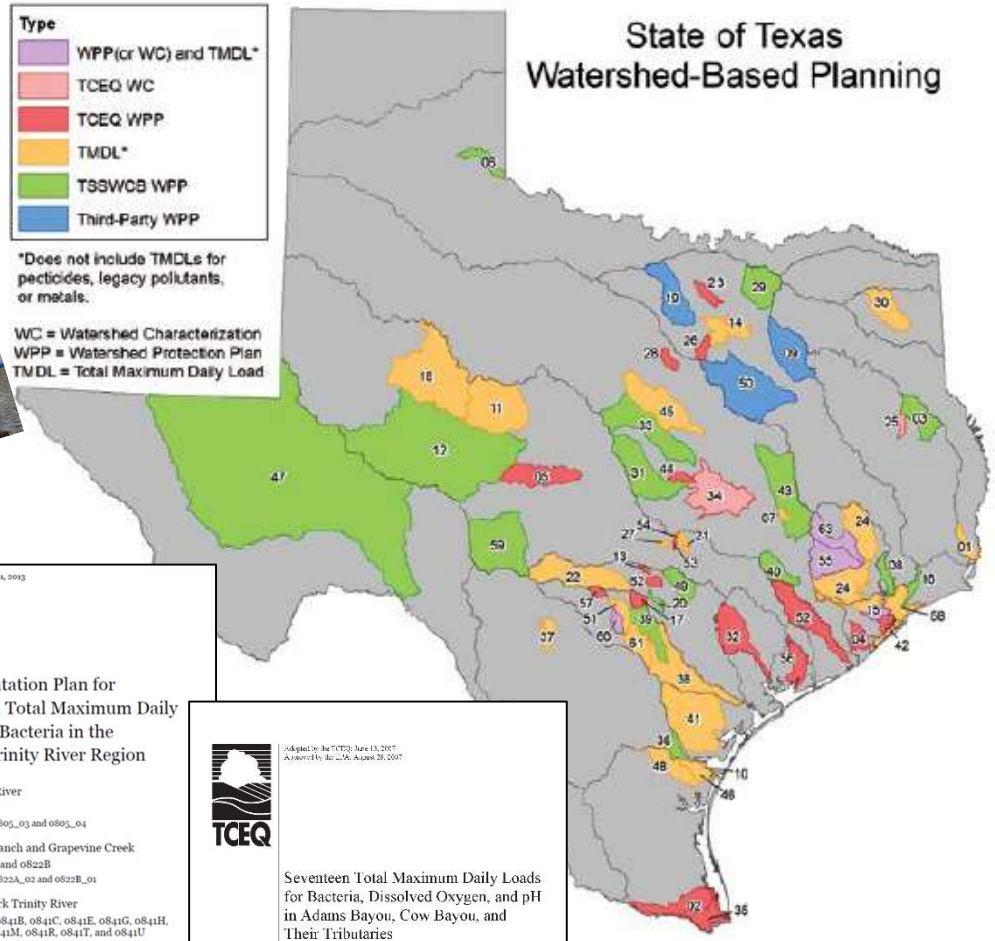
- A holistic stakeholder driven plan that addresses water quality in a watershed rather than political subdivisions
- Addresses all impairments in a watershed
- A mechanism for voluntarily addressing complex water quality problems that cross multiple jurisdictions
- Provides a framework for coordinated implementation of prioritized and integrated protection and restoration strategies
- Integrates ongoing activities, prioritizes implementation projects based on technical merit and benefits to the community

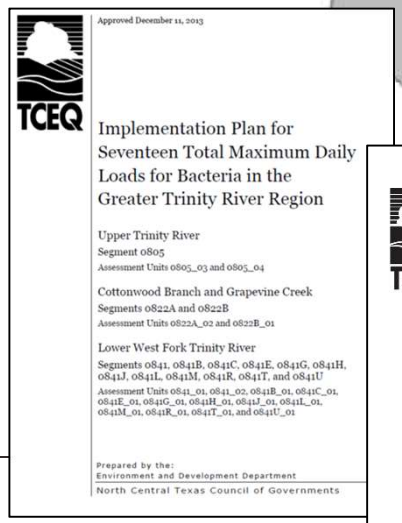
Photo: Ed Rhodes

Watershed-Based Plans Across Texas








Approved December 11, 2013

TCEQ

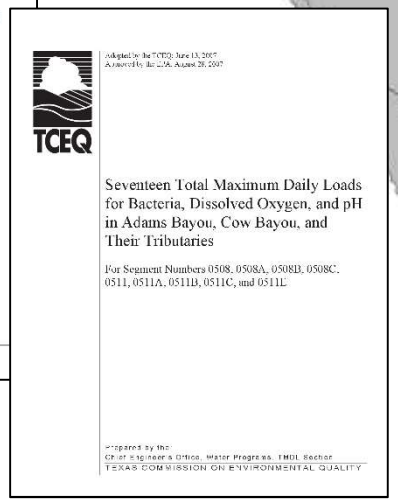
Implementation Plan for Seventeen Total Maximum Daily Loads for Bacteria in the Greater Trinity River Region

Upper Trinity River
Segment 0805
Assessment Units 0805_03 and 0805_04

Cottonwood Branch and Grapevine Creek
Segments 0822A and 0822B
Assessment Units 0822A_02 and 0822B_01

Lower West Fork Trinity River
Segments 0841, 0841B, 0841C, 0841E, 0841G, 0841H, 0841J, 0841L, 0841M, 0841R, 0841T, and 0841U
Assessment Units 0841_01, 0841_02, 0841B_01, 0841C_01, 0841E_01, 0841G_01, 0841H_01, 0841J_01, 0841L_01, 0841M_01, 0841R_01, 0841T_01, and 0841U_01

Prepared by the:
Environment and Development Department
North Central Texas Council of Governments


TCEQ

Seventeen Total Maximum Daily Loads for Bacteria, Dissolved Oxygen, and pH in Adams Bayou, Cow Bayou, and Their Tributaries

For Segment Numbers 0508, 0508A, 0508B, 0508C, 0511, 0511A, 0511B, 0511C, and 0511E

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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TMDL	I-Plan	Watershed Protection Plan
Driven by Clean Water Act requirements	Associated with the TMDL	Voluntary and stakeholder driven
Addresses impairments prioritized by the state	Addresses impairments in TMDL	Holistic, address any water quality issues
Establishes allowable loading for specific pollutant	Establishes management measures and schedules to achieve the TMDL	Establish management measures, reduction goals, and schedule to achieve stakeholder identified goals
Administratively removes waterbody from 303(d) list		Qualifies a watershed for potential 319 grant funding
Approved by TCEQ & EPA	Approved by TCEQ	Submitted by TCEQ or TSSWCB for EPA approval
Well suited for watersheds with permitted point source discharges	Well suited for watersheds with permitted point source discharges	Well suited for watersheds with unregulated NPS TCEQ may pursue TMDL if WPP doesn't show progress

What is a stakeholder?

- A group or individual who:
  - Has the responsibility for implementing a decision
  - Is affected by the decision
  - Assists with problem identification
  - Promotes awareness, education, and action
  - Facilitates implementation of solutions

Types of stakeholders

- Stakeholders can belong to the following entities:
  - Landowners
  - County or regional representatives
  - Local municipal representatives
  - State and federal agencies
  - Business and industry representatives
  - Citizen groups
  - Community service and Religious organizations
  - Universities, colleges, and schools
  - Environmental and conservation groups
  - Soil and water conservation districts

Major Tasks for Stakeholders

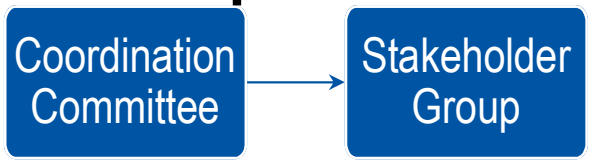
- Provide guidance and input on potential sources of bacteria and estimated pollutant loads
- Set goals and objectives
- Guide identification of measures that could be implemented to address bacteria
- Identify level of implementation that's reasonable
- Identify outreach and education that is needed
- Oversee development of an implementation plan & schedule

Key Definitions

- **Stakeholder Group** – The general body of individuals who participate in public meetings
- **Coordination Committee** – A decision making body made up of stakeholders from diverse interest/backgrounds
- **Workgroup** – Groups made up of stakeholders of a similar interest/background

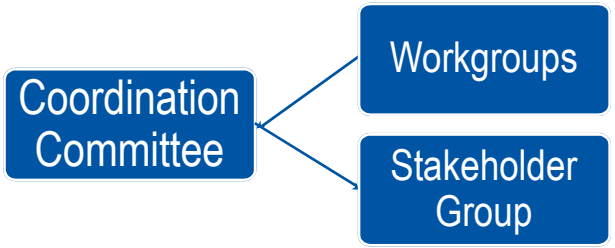
Stakeholder frameworks

Option 1

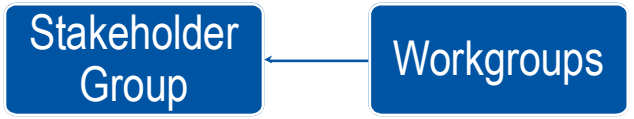


Option 3

Option 2



Option 4

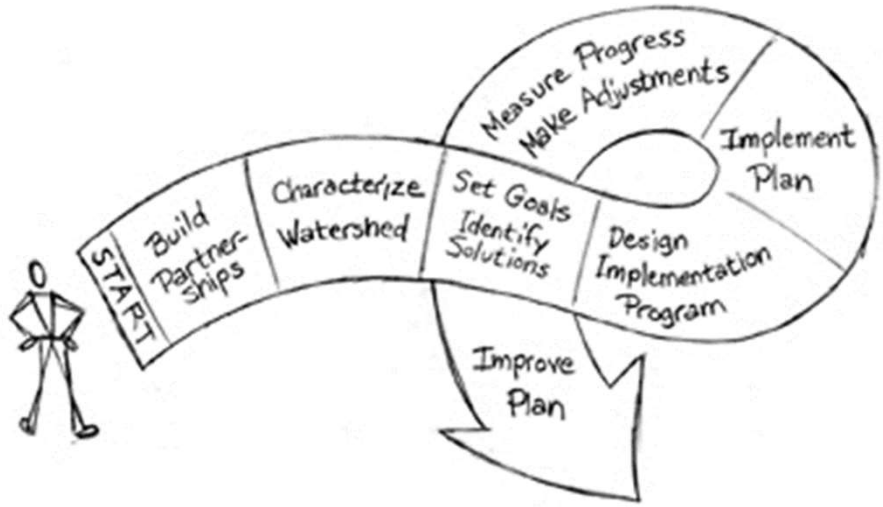


Questionnaire

- What are your water quality concerns, what would you like to see addressed?
- Should their be joint Sandy Creek and Wolf Creek meetings and documents or should they be separate?
- What is your desired stakeholder structure?
- Would you like to serve on steering committees and/or work groups?
- Do you have a preferred planning option (TMDL/I-Plan/WPP)?

Next Steps – Near Term

- Continue meeting with stakeholders
- Identify and finalize desired stakeholder and decision-making structures
- Presentations on technical work
- Decide on path forward (TMDL/I-Plan/WPP)



Thank You!

Project websites:
https://twri.tamu.edu/neches/lower-neches
https://www.tceq.texas.gov/waterquality/tmdl/nav/118-sandy-wolf-creeks-bacteria

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EXTRA SLIDES

INTRO TO WATER QUALITY IN TEXAS

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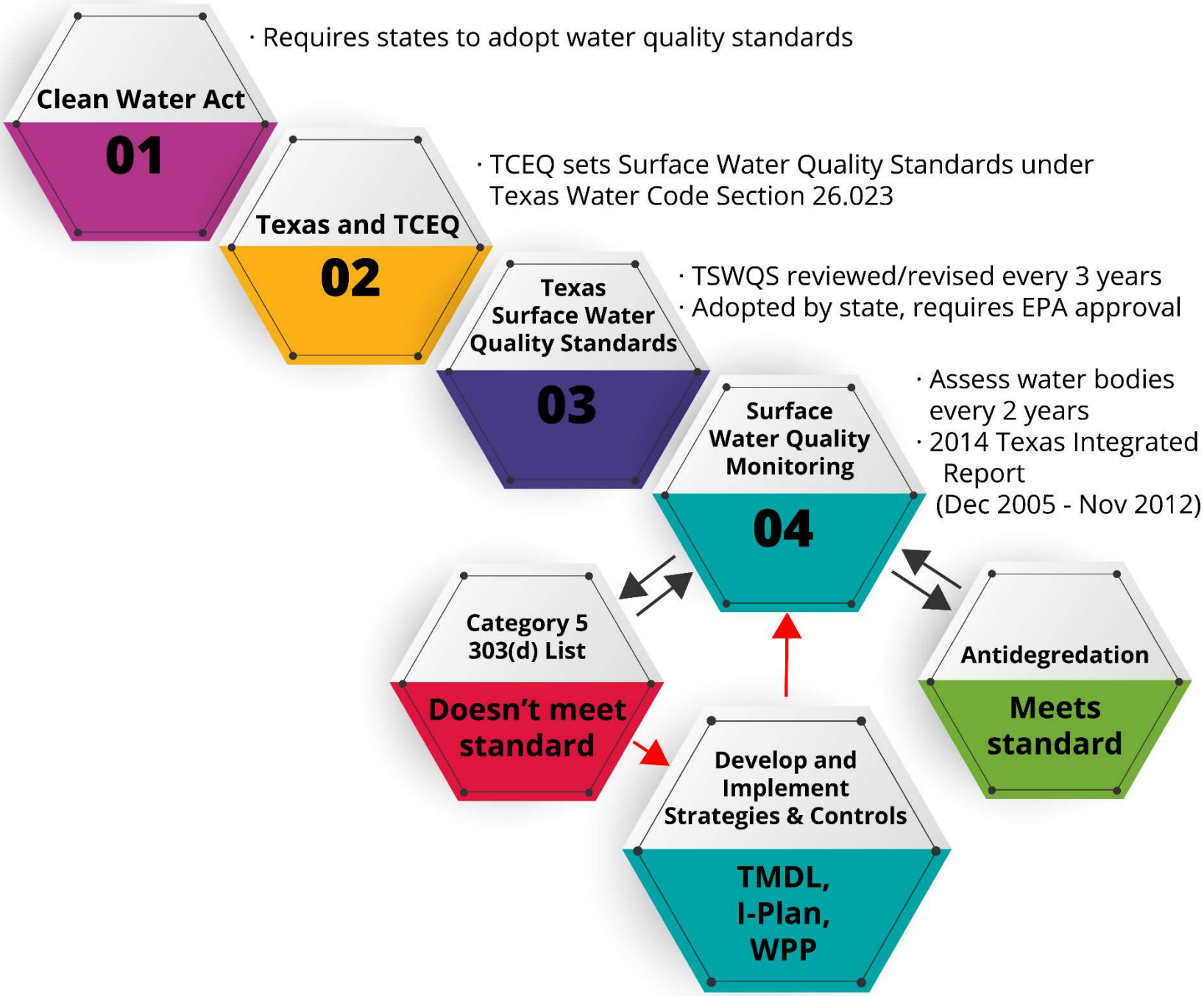

Clean Water Act
01
· Requires states to adopt water quality standards
Texas and TCEQ
02
· TCEQ sets Surface Water Quality Standards under Texas Water Code Section 26.023
Texas Surface Water Quality Standards
03
· TSWQS reviewed/revised every 3 years
· Adopted by state, requires EPA approval
Surface Water Quality Monitoring
04
· Assess water bodies every 2 years
· 2014 Texas Integrated Report (Dec 2005 - Nov 2012)
Category 5 303(d) List
Doesn't meet standard
Antidegredation
Meets standard
Develop and Implement Strategies & Controls
TMDL, I-Plan, WPP

Texas Surface Water Quality Standards

Two Components:

1) Beneficial Uses – Waterbodies are assigned a use.
   - General Use
   - Aquatic Life Use
   - Recreational Use
   - Public Water Supply

2) Criteria – The numeric or narrative limit used to evaluate if the waterbody meets its use.

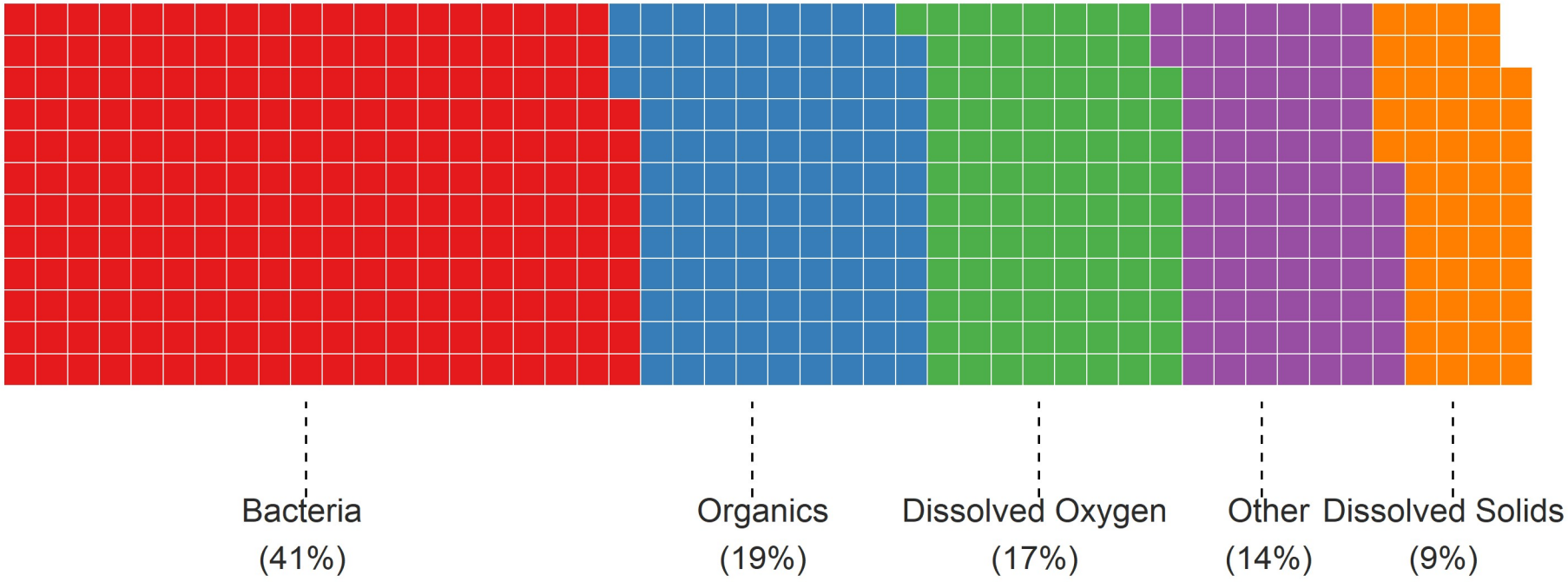
Texas Surface Water Quality Standards

Some Examples:

Use	Criteria	Parameter
Primary Contact Recreation	126 MPN/100 mL (FW) 35 MPN/100 mL (Marine)	*E. coli* Bacteria (FW) Enterococci (Marine)
Secondary Contact Recreation 1	630 MPN/100 mL (FW) 175 MPN/100 mL (Marine)	*E. coli* Bacteria (FW) Enterococci (Marine)
High Aquatic Life Use	5.0 mg/L Average 3.0 mg/L Minimum	Dissolved Oxygen
General Use	6.5 – 9.0	pH

2016 Integrated Report Summary

574 Impairments in 1,071 Assessed Waterbodies



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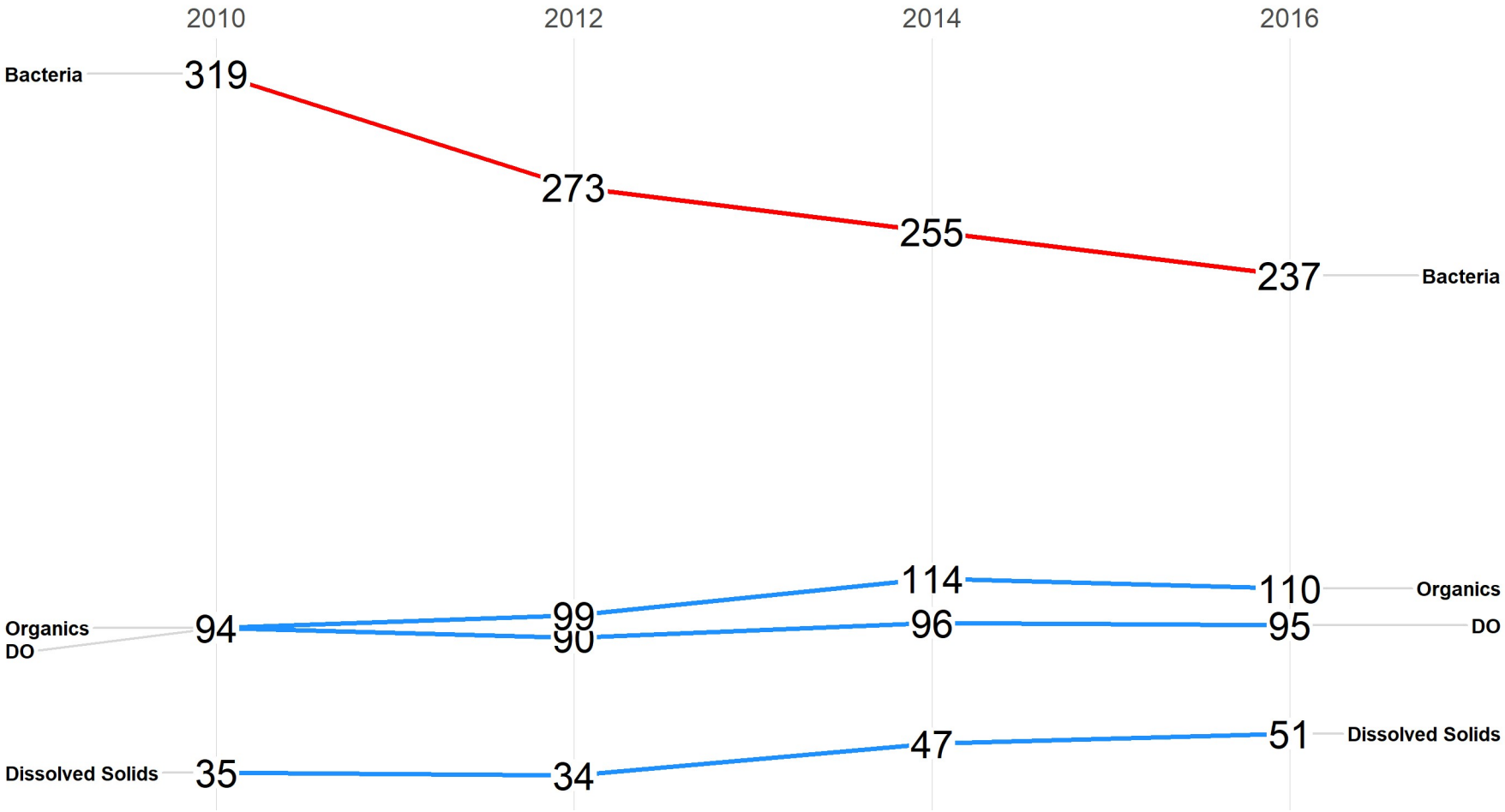
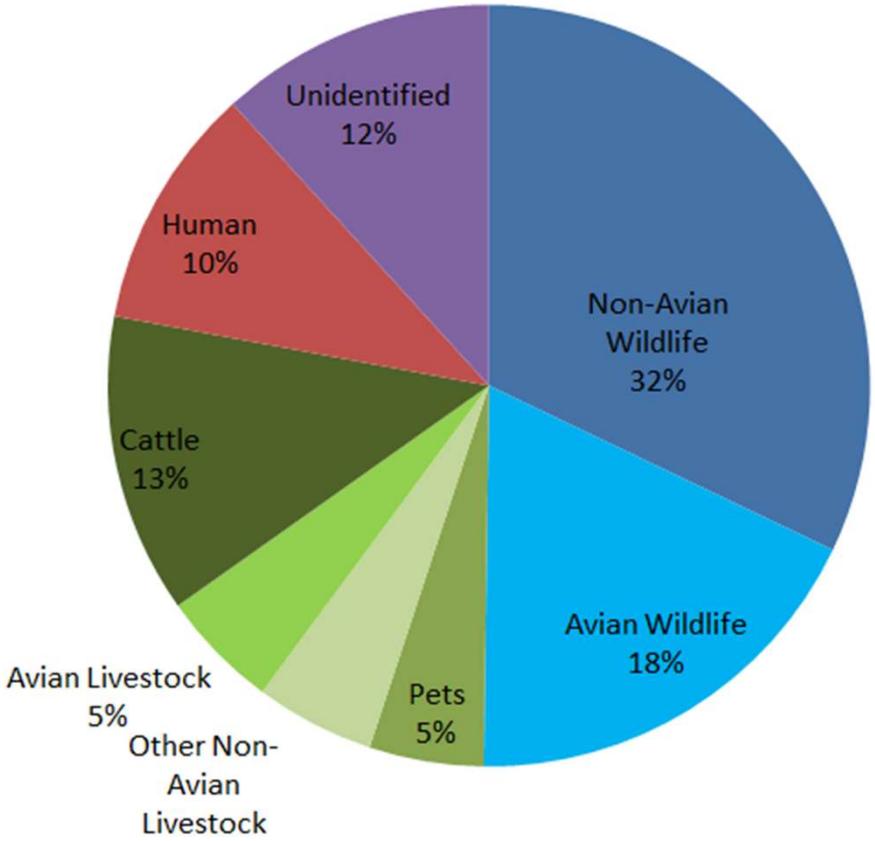
Water Quality Impairement Listing Changes

Listings from 2010 through 2016 Texas Integrated Reports



Major Sources of Bacteria (based on prior projects)



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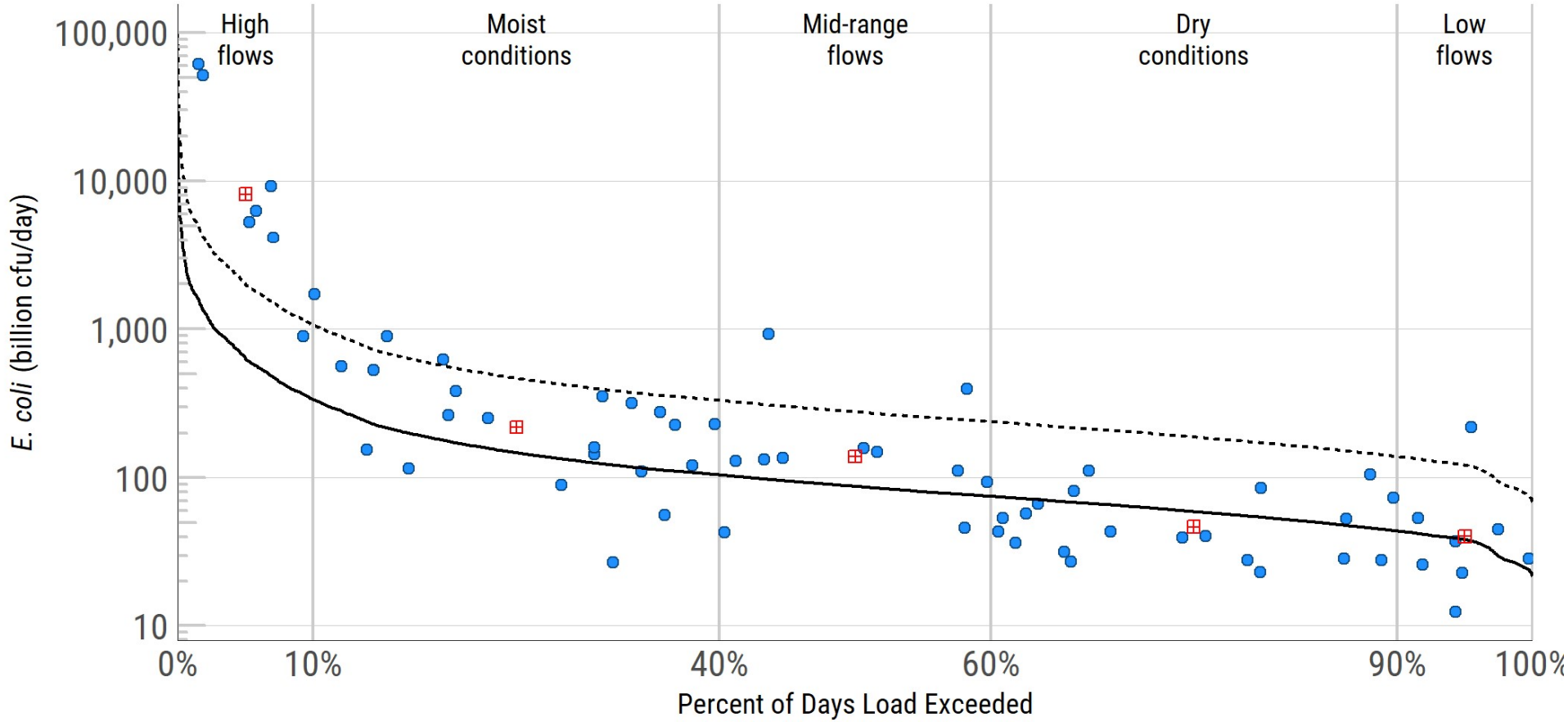
Where Does Fecal Bacteria Come From?

- Direct Deposition:
  - Animals directly deposit fecal matter into water
  - Warm-blooded wildlife, livestock
- Non-Point Sources
  - Stormwater runoff transports bacteria from fecal matter deposited on surfaces
  - Failing septic systems
- Point Sources
  - Improperly treated wastewater
  - Illegal dumping
  - Municipal stormwater

Load Duration Curve AU 0603A_01



Allowable Load at Geomean Criterion (126 cfu/100mL)

Allowable Load at Single Sample Criterion (399 cfu/100mL)

Exisiting Geomean Load (cfu/day)

Measurement Value (cfu/day)

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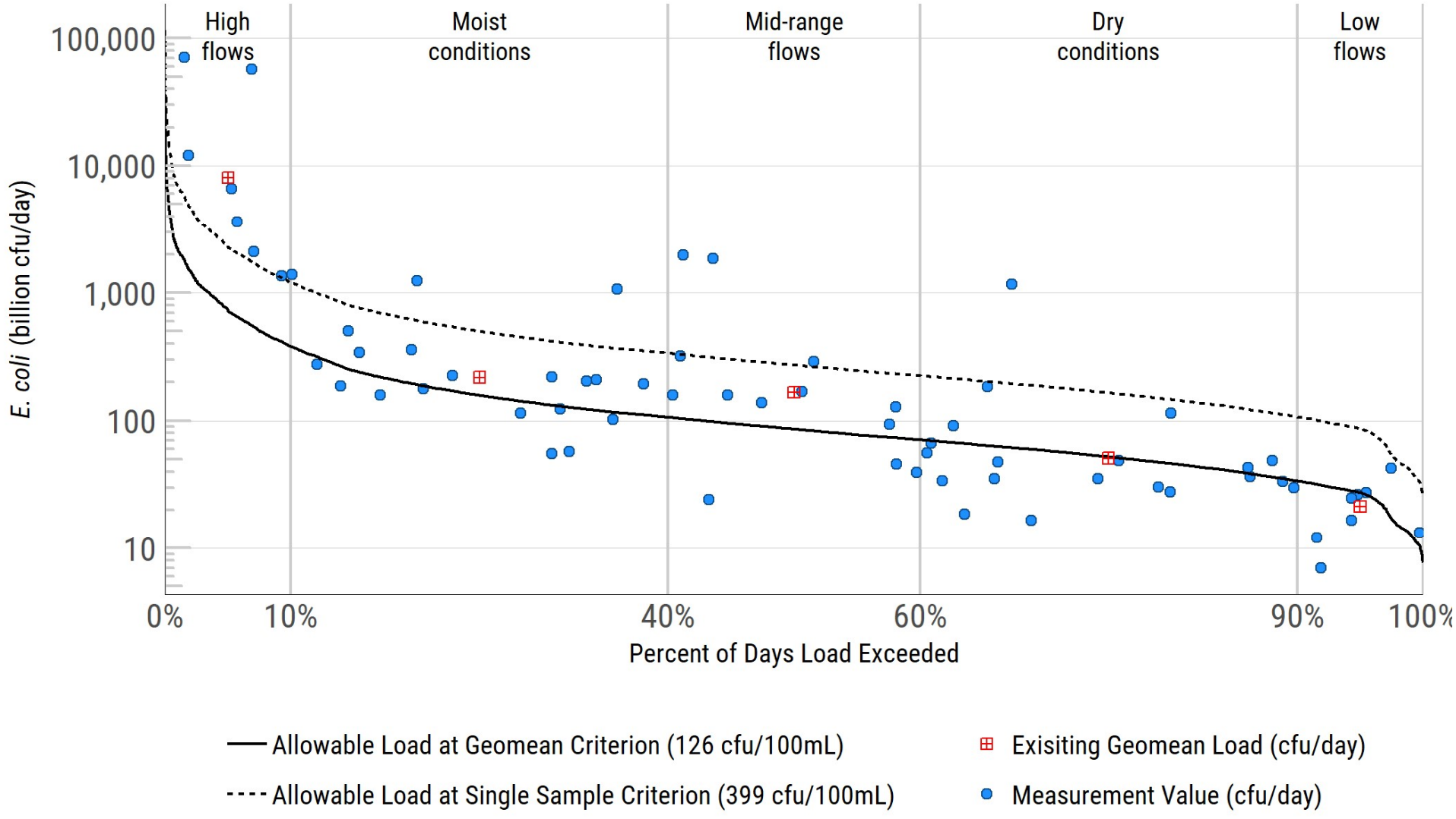
Load Duration Curve AU 0603B_01



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