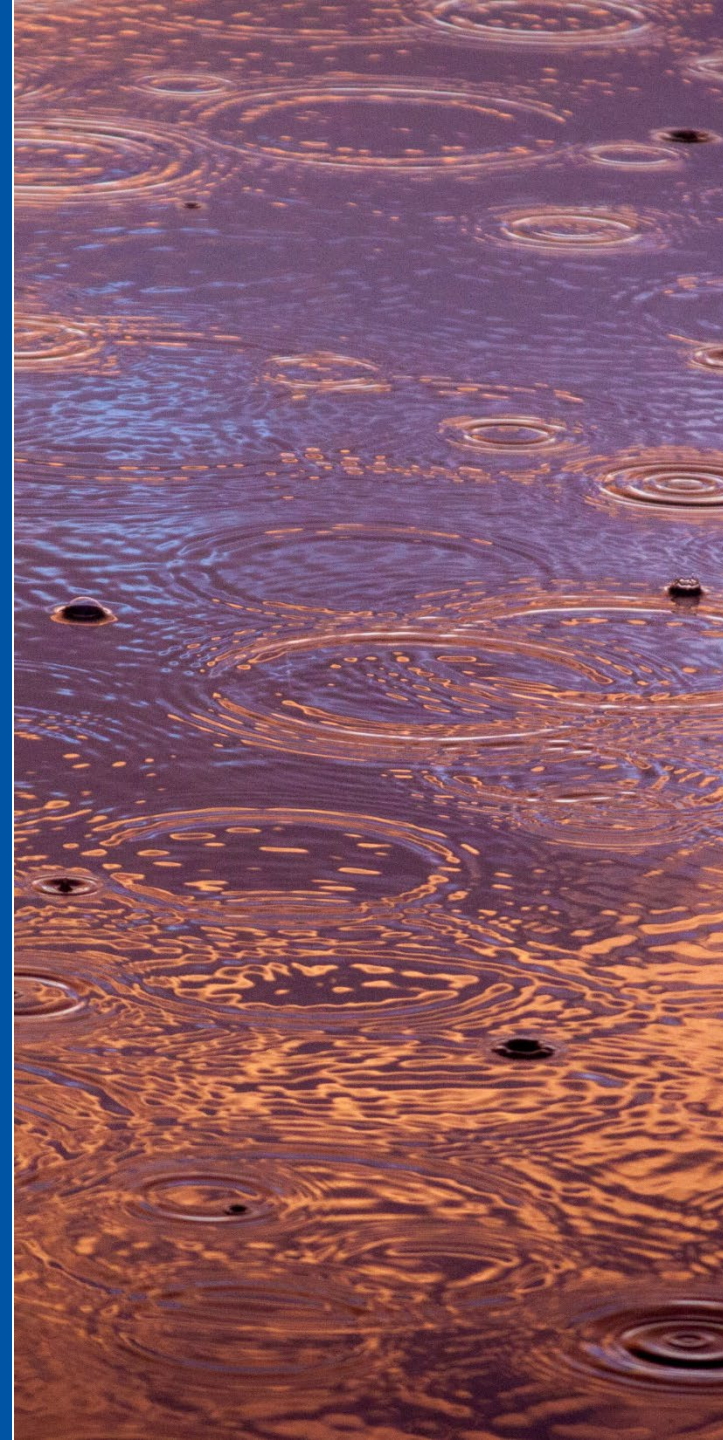


Sandy and Wolf Creeks TMDL and I-Plan

The meeting will start at 2:00 PM.

If you have issues with sound, please join by phone. Use the chat box below if there are other issues.

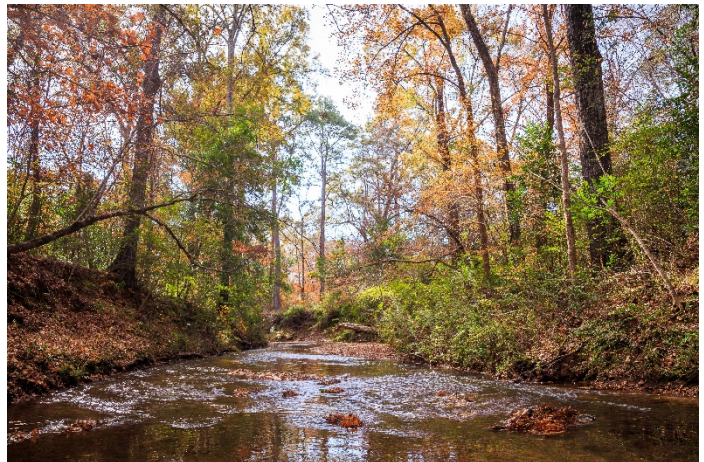




Sandy and Wolf Creeks TMDL and I-Plan



Michael Schramm | Research Specialist
Lucas Gregory | Research Scientist
Texas Water Resources Institute



Online - September 1, 2020

Before we start:

- 1) Please mute your microphones.
- 2) If you have questions, please use the chat box and our moderator will chime in to make sure your question is addressed.
- 3) The slides and meeting notes will be posted online after the meeting at:
<https://www.tceq.texas.gov/waterquality/tmdl/nav/118-sandy-wolf-creeks-bacteria>
- 4) Please sign in using our webform, the link will be posted in the chat box.

Project Team

Michael Schramm – Texas Water Resources Institute

Nicole Reed - Texas Commission on Environmental Quality (TCEQ), TMDL Program
Implementation Plan (I-Plan) Coordinator

Jazmyn Milford – TCEQ TMDL Program
TMDL Project Manager

Zoom Moderator

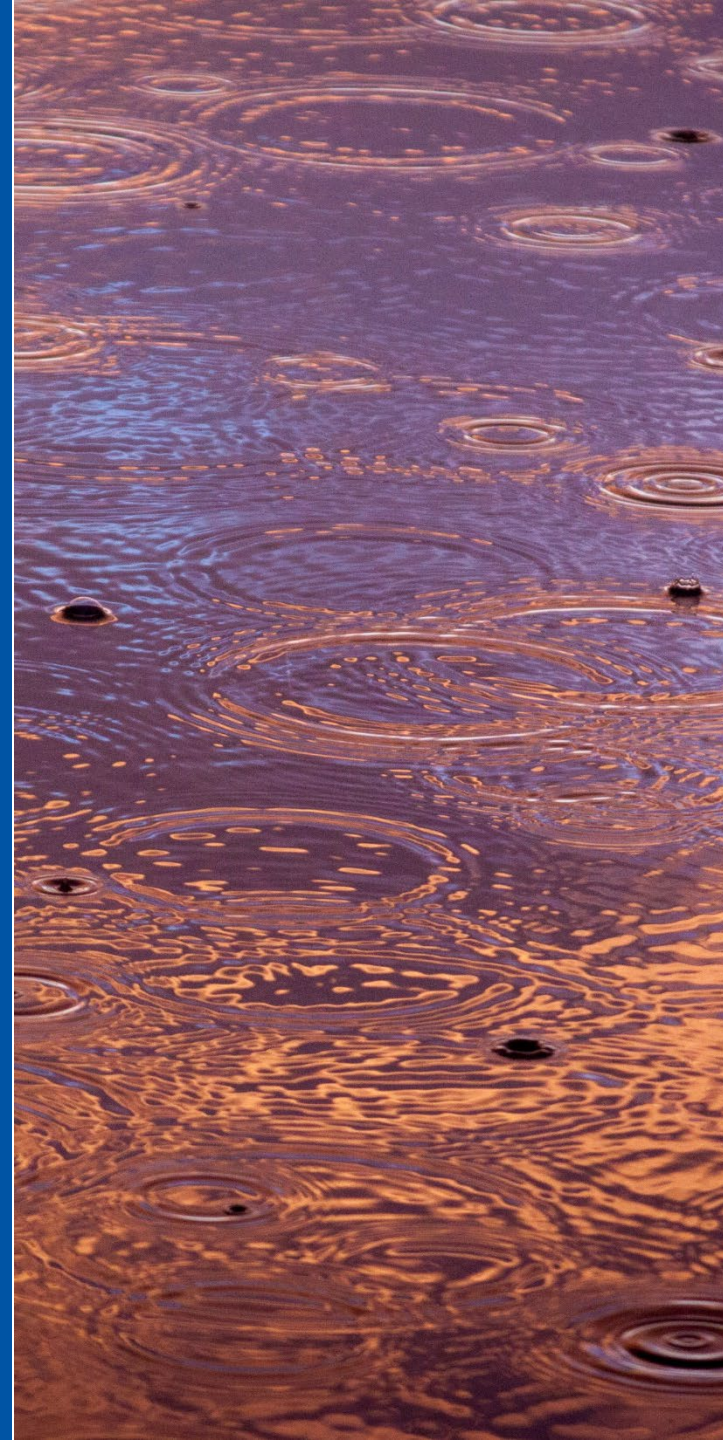
Lucas Gregory – Texas Water Resources Institute

Reminder:

If you are interested in being on the coordination committee or planning workgroups please let me know.

Agenda

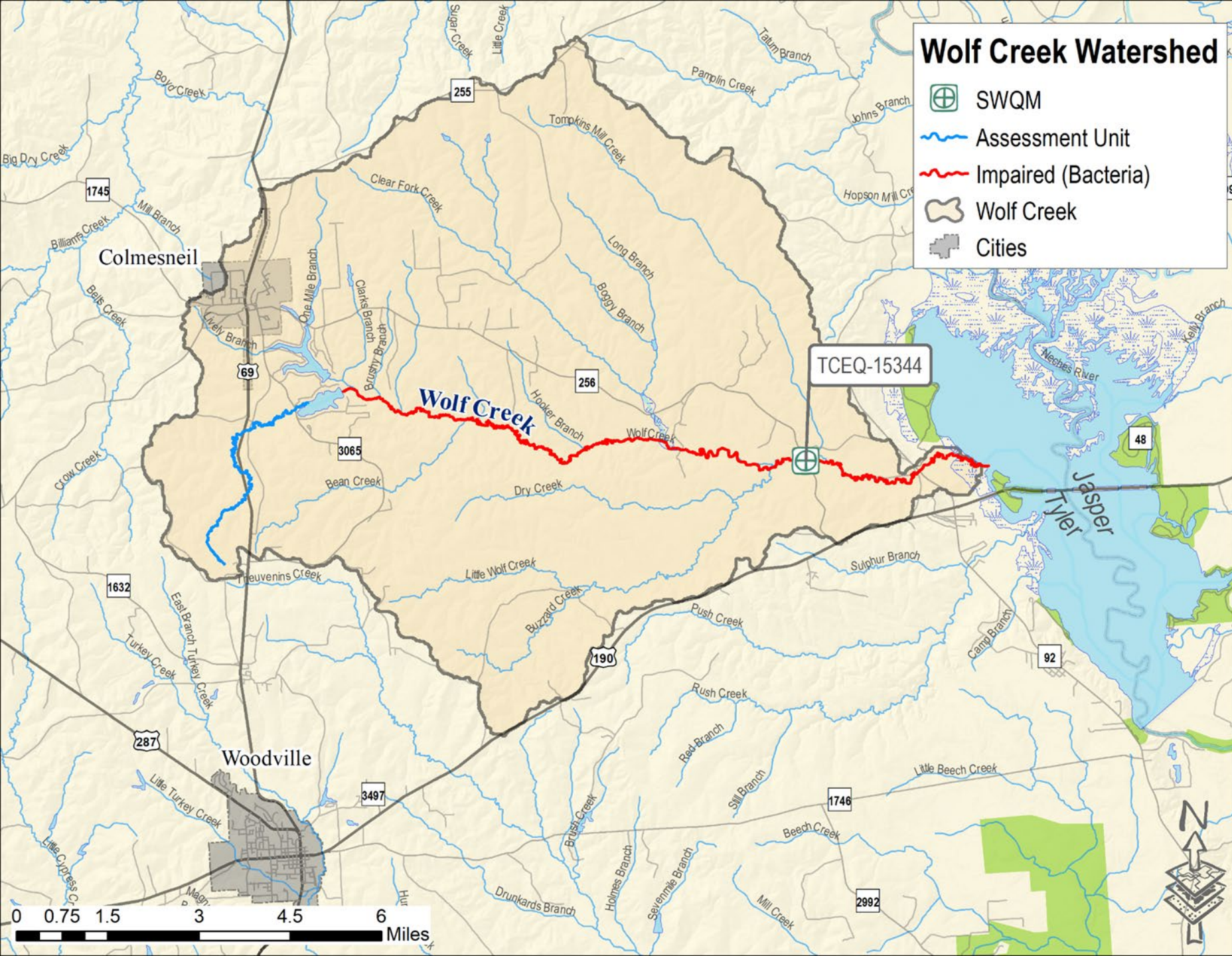
- 1: Recap of November 2019 Meeting
- 2: Coordination Committee Formation
- 3: Technical Support Document
- 4: Next Steps





November 21, 2019 Meetings Recap

- Presentation about water quality planning and implementation in Texas (TCEQ)
- Presentation about bacteria impairments in Wolf and Sandy creeks (Michael Schramm, TWRI)
- Presentation on planning frameworks to address water quality (Lucas Gregory, TWRI)



Wolf Creek (0603B)

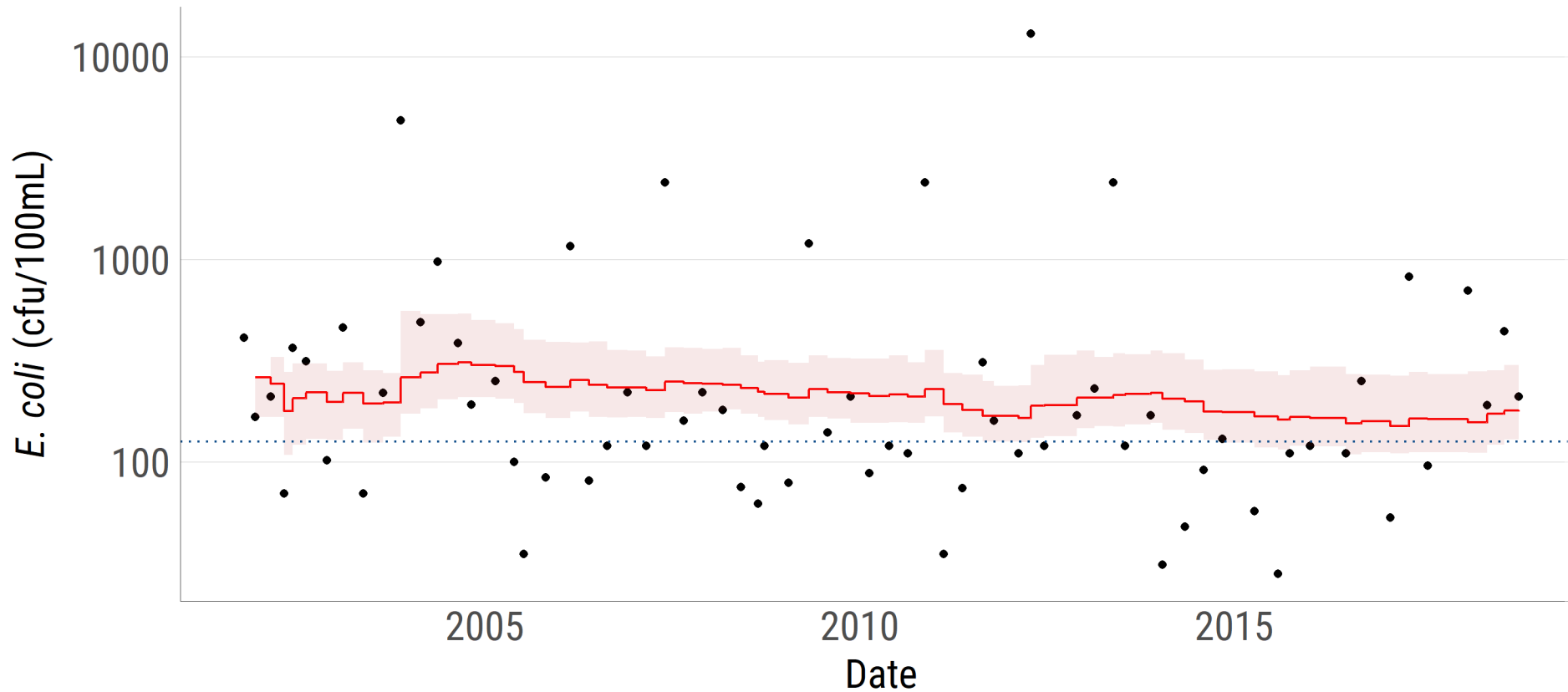
Summary:

- Entirely in Tyler County
- 83 sq. miles
- ~1,683 people
- Predominately forest and wetland

Historical Bacteria Dataset for Wolf Creek AU 0603B_01

Indicator Bacteria
 First identified impaired in the
 2006 Texas
 Integrated
 Report.







2020 Assessment
 161.49 cfu/100mL¹

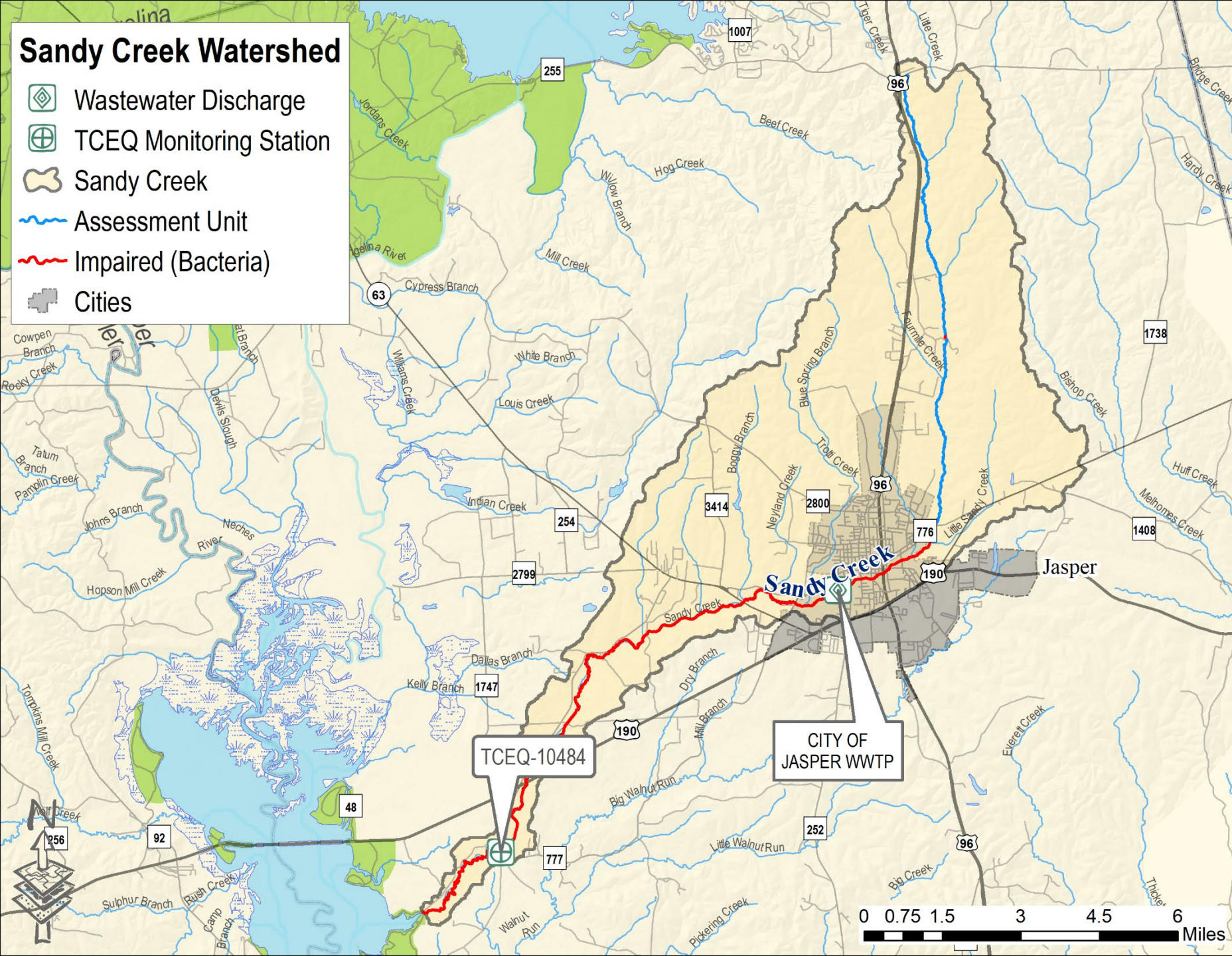


- Measured Value
- 7-year rolling geomean
- 90% confidence interval
- ⋯ Geomean criterion (126 cfu/100mL)

¹ TCEQ. 2020. 2020 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/20twqi/20txir>

Sandy Creek Watershed

-  Wastewater Discharge
-  TCEQ Monitoring Station
-  Sandy Creek
-  Assessment Unit
-  Impaired (Bacteria)
-  Cities



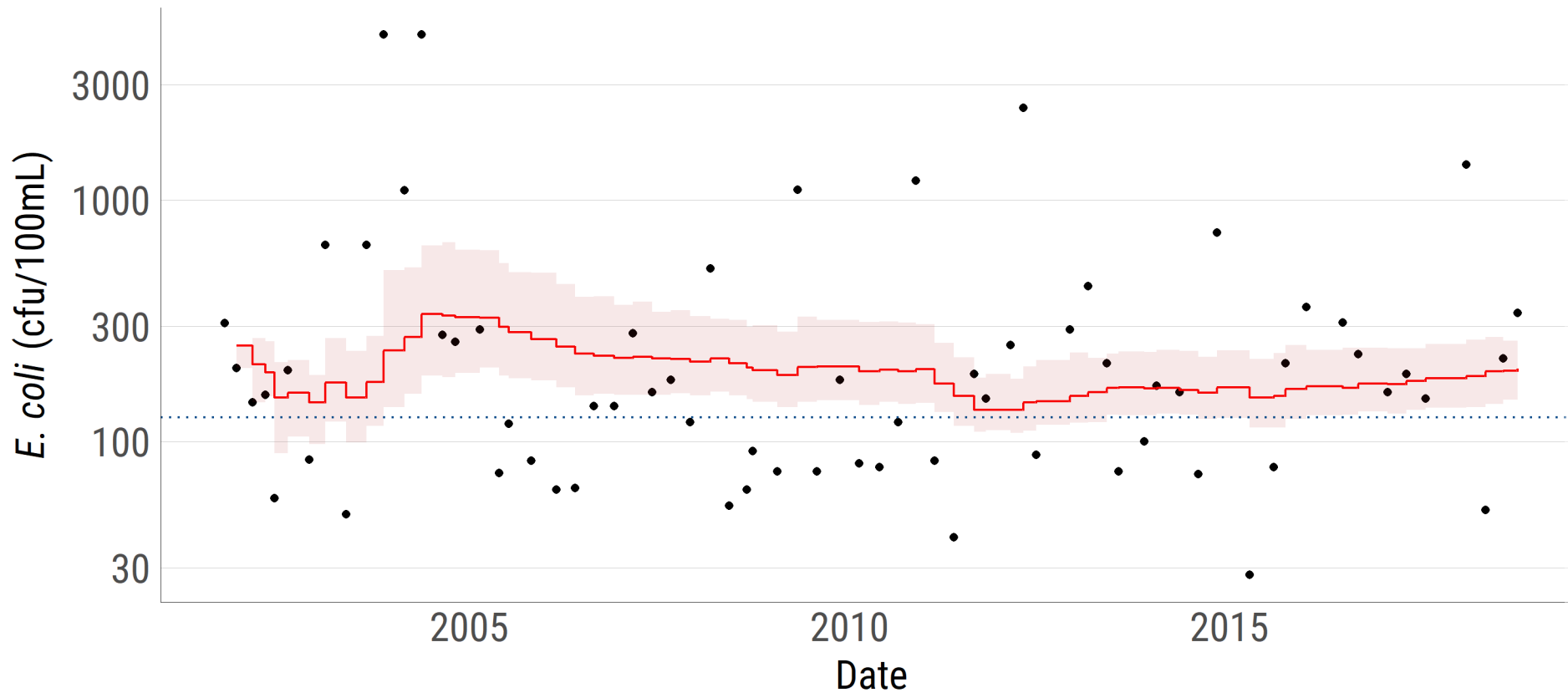
Sandy Creek (0603A) Summary:

- Entirely in Jasper County
- 57 sq. miles
- ~7,462 people
- Predominately forest and wetland
- Approximately 14.5 percent developed
- 1 permitted wastewater facility

Historical Bacteria Dataset for Sandy Creek AU 0603A_01

Indicator Bacteria
 First identified impaired in the
 2000 Texas
 Integrated
 Report.

2020 Assessment
 193.66 cfu/100mL¹



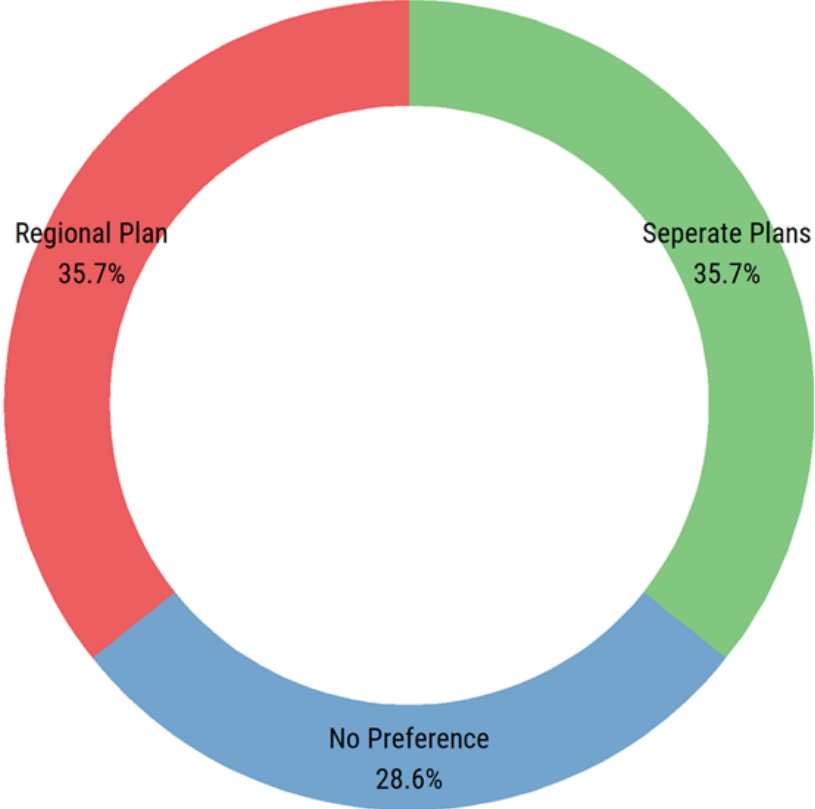
- Measured Value
- 7-year rolling geomean
- 90% confidence interval
- ⋯ Geomean criterion (126 cfu/100mL)

¹ TCEQ. 2020. 2020 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/20twqi/20txir>

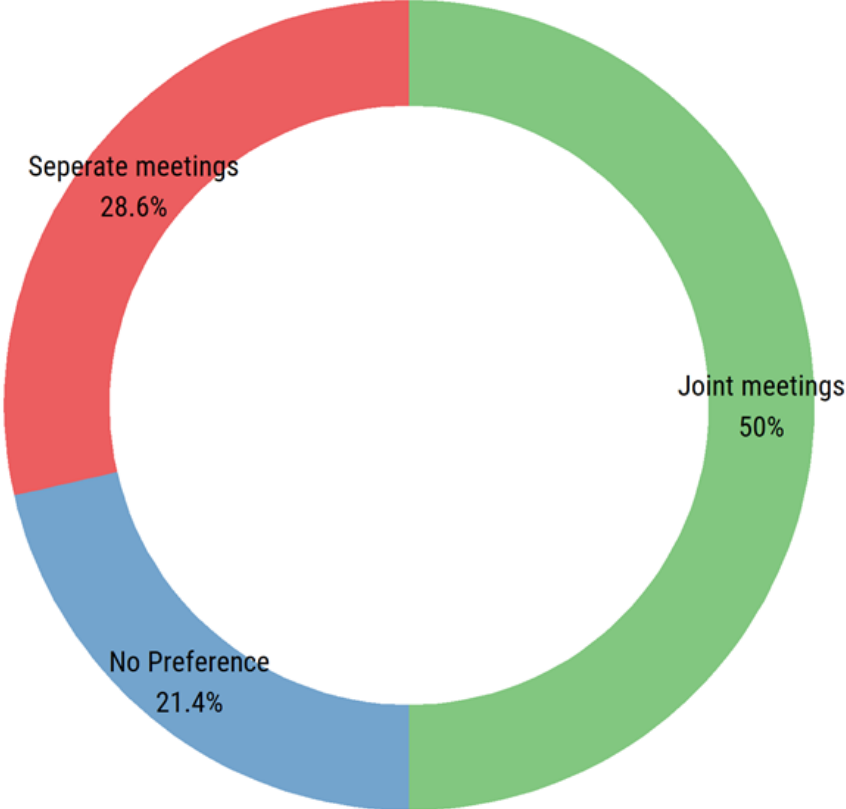
November Questionnaire

We provided a questionnaire to meeting attendees asking about stakeholder and meeting structure, and what type of documents you would like to produce.

Q1: Do you prefer a regional document or seperate documents?

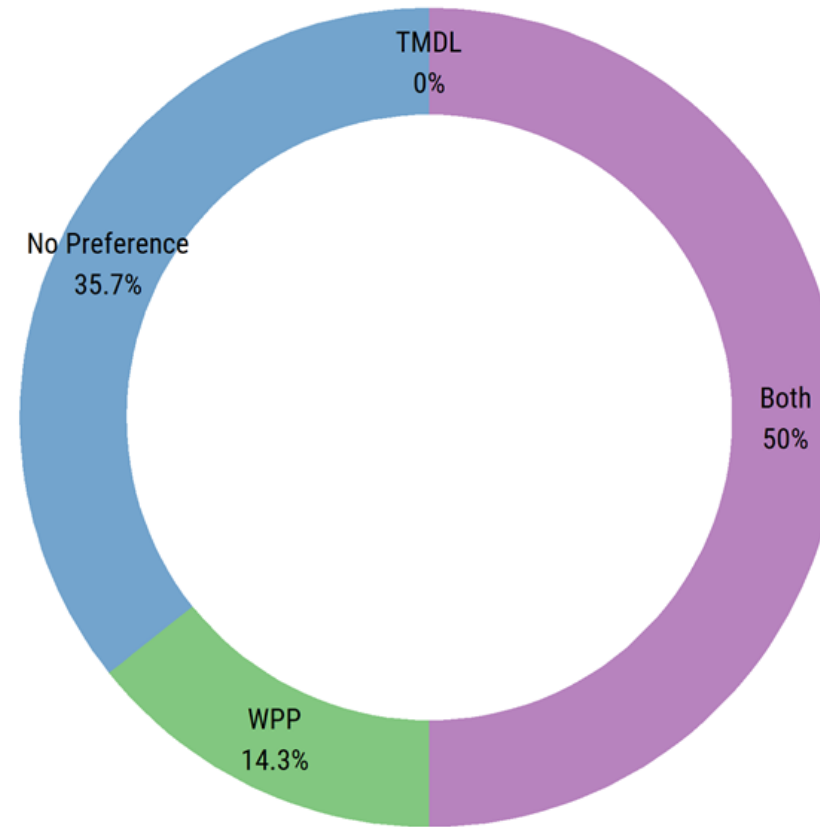
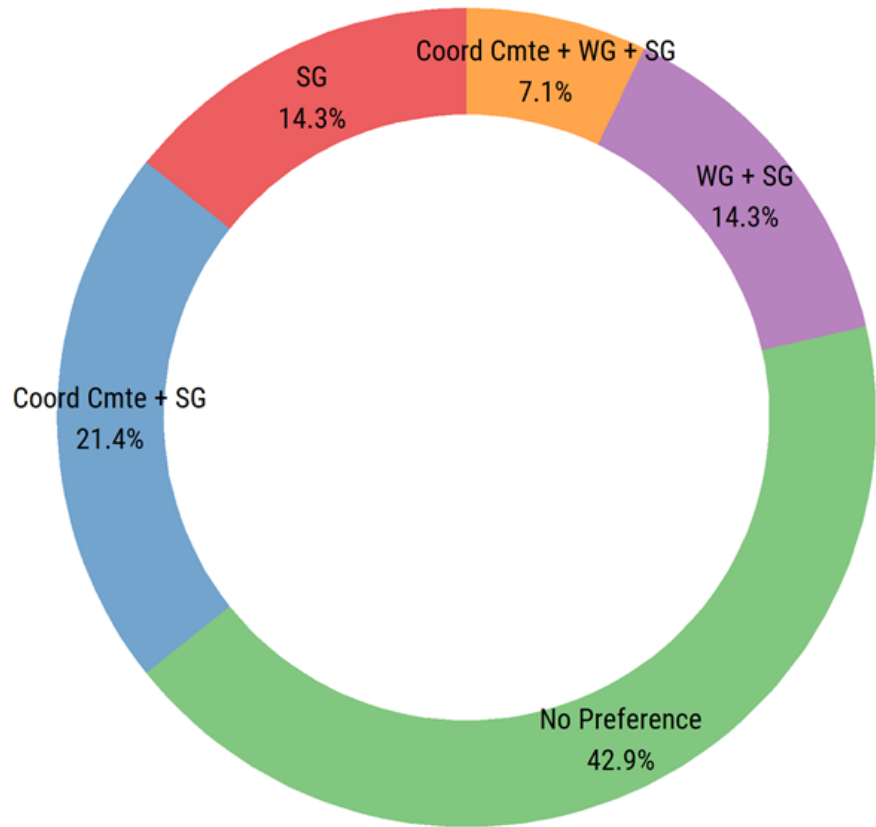


Q1: Do you prefer a joint meeting or seperate meetings



Q3: What is your desired stakeholder structure?

Q5: Do you have a preferred planning option?



Coord Cmte = Coordination Committee
SG = Stakeholder Group
WG = Work Group

Take away messages:

- 1) "No preference" for regional I-Plan or separate I-Plans.
Regional plan is suggested.
- 2) High preference for joint meetings.
Joint meetings will be held, possibly alternating locations.

Take away messages:

- 3) "No preference" for stakeholder structure.
I-Plan Coordination Committee is the suggested option.

- 4) TMDL I-Plan and WPP are planning options.
 - TMDL I-Plan(s) for Sandy Creek and Wolf Creek will be completed along with the TMDLs.
 - WPPs for Sandy Creek and/or Wolf Creek may be pursued.
 - Detailed discussion with the coordination committee is needed.



Coordination Committee Formation

I-Plan Coordination Committee

The decision making body that represents different interests and backgrounds in the watershed.

- Identify needed voluntary management measures
- Establish implementation schedule
- Identify outreach and education needs
- Help guide implementation



I-Plan Coordination Committee

1. Who else needs to be included?
2. Who can serve on the Committee (alternates/backups)?
3. Desired meeting times/locations?
4. Meeting frequency?
5. Ground rules?



Proposed Coordination Committee

Member	Alternate(s)	Agency/Organization	Representing Group(s)
Brock Fry	Jacob Spivey	AgriLife Extension	Agriculture, Education/Outreach
Carla Ethridge	Allison McElroy; Jeremiah Poling	ANRA	River Authority
Jeannie Mahan	Jason Watson	LNVA	River Authority
Adrian Van Dellen		Resident	Sandy Creek Park/NPS Team
Laura Clark	Sylvia Holmes, Lori Horne	Resident	Texas Master Naturalist
Brian Koch		TSSWCB	Agriculture
Sarah Bailey		Texas Forest Service	Forestry
James Garrigus		US Army Corp of Engineers	Corp of Engineers
Terry McFall	Don Martindale	Jasper-Newton SWCD	Agriculture, Forestry
Bob Gary		City of Jasper	City of Jasper

TMDL Technical Support Document Summary

TECHNICAL SUPPORT DOCUMENT FOR TWO TOTAL MAXIMUM DAILY LOADS FOR INDICATOR
BACTERIA IN SANDY CREEK AND WOLF CREEK

Technical Support Document for Two Total Maximum Daily Loads for Indicator Bacteria in Sandy Creek and Wolf Creek

Segments: 0603A, 0603B

Assessment Units: 0603A_01, 0603B_01

Prepared for
Total Maximum Daily Load Program
Texas Commission on Environmental Quality
MC-203
P.O. Box 13087
Austin, Texas 78711-3087

Prepared by:
Michael Schramm and Achla Jha
Texas Water Resource Institute
Texas A&M University
College Station, Texas

January 2020
(Revised June 2020)

<https://www.tceq.texas.gov/assets/public/waterquality/tmdl/118sandywolfcreeks/118-sandy-wolf-tsd-2020june.pdf>



Technical Support Document

- Provides a summary of the watershed characteristics, *potential* sources, available data, flow conditions, and bacteria loadings.
- Used as a basis for the TMDLs (Total Maximum Daily Load).
 - TMDLs do provide allocations for regulated sources such as wastewater treatment plants
 - Unregulated (nonpoint) sources are generally characterized, but not given individual allocations
- Provides load reduction analysis to help guide stakeholders.

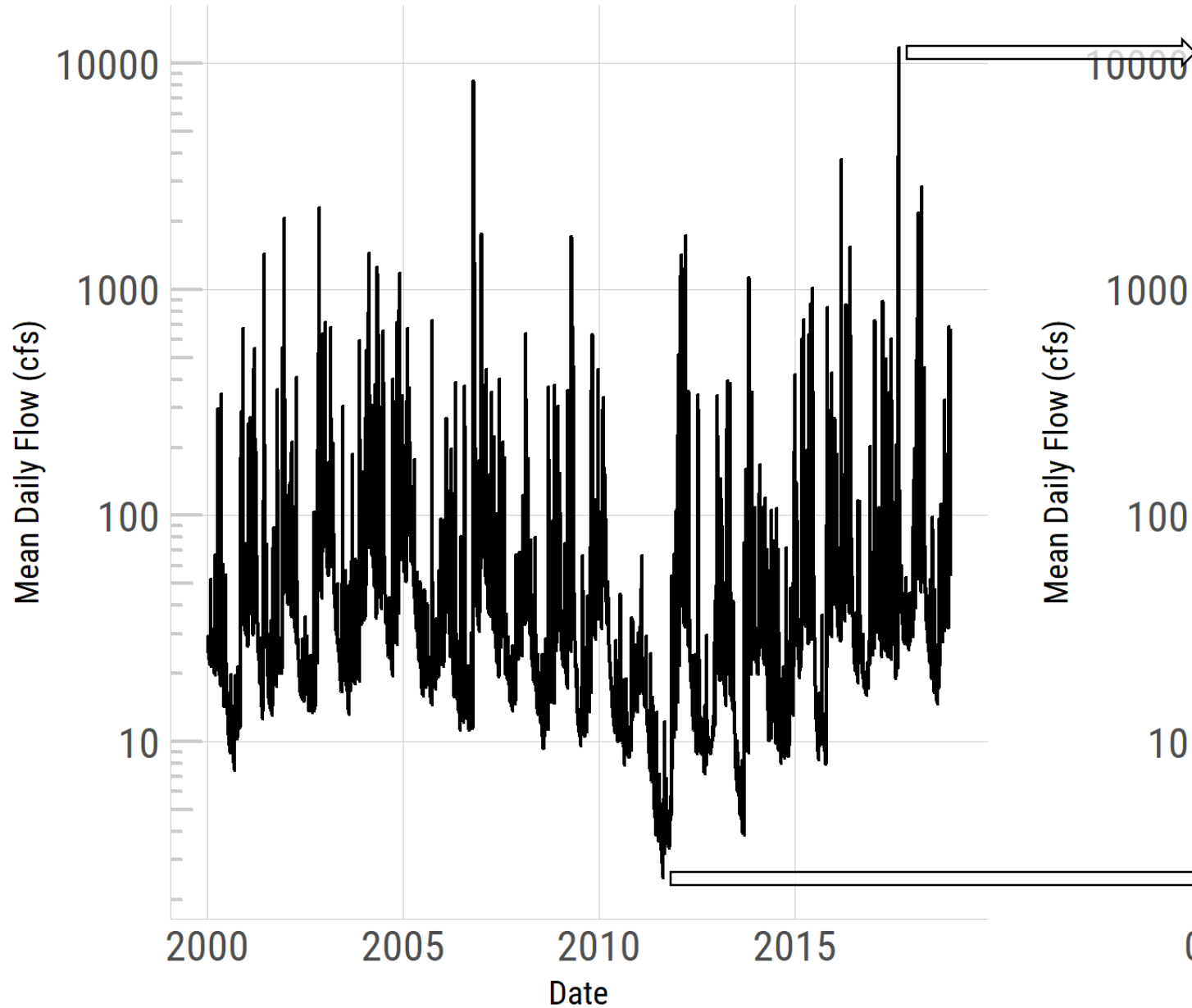
Technical Support Document

- Uses a Load Duration Curve to estimate the daily bacteria loadings for each water body and the allowable loadings for each water body.
- What is a Load Duration Curve???
 - A graph that shows the percentage of time streamflow (or bacteria load) is equaled or exceeded on the x-axis and the magnitude on the y-axis.

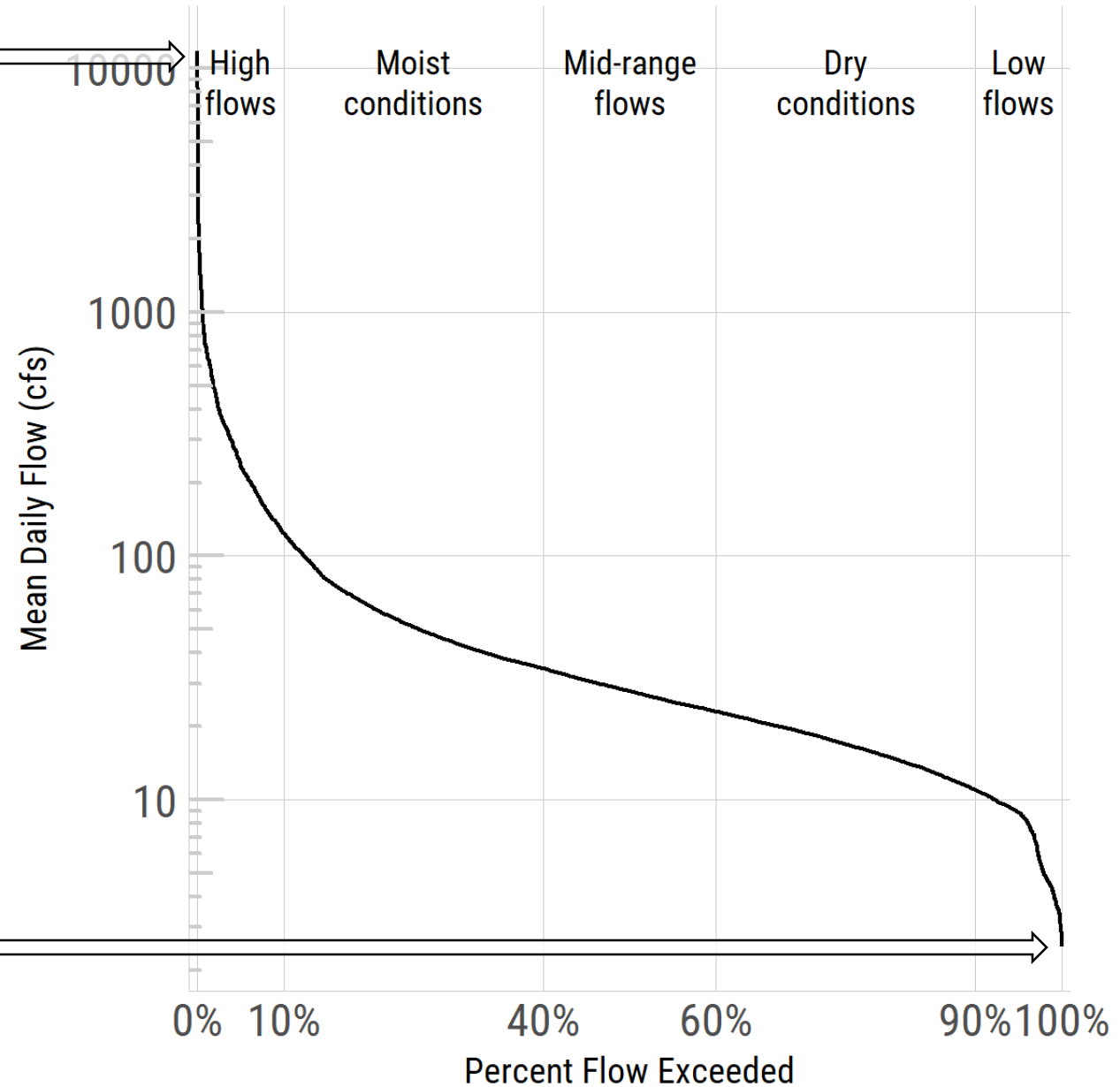
Technical Support Document

- Why do we use a Load Duration Curve?
 - Combines concentrations of pollutant with flow at the same time to develop a load
 - Illustrates the pollutant load versus the time the given load is exceeded
 - Illustrates under what conditions a stream exceeds water quality standards
 - Able to calculate percent reductions under different flow categories

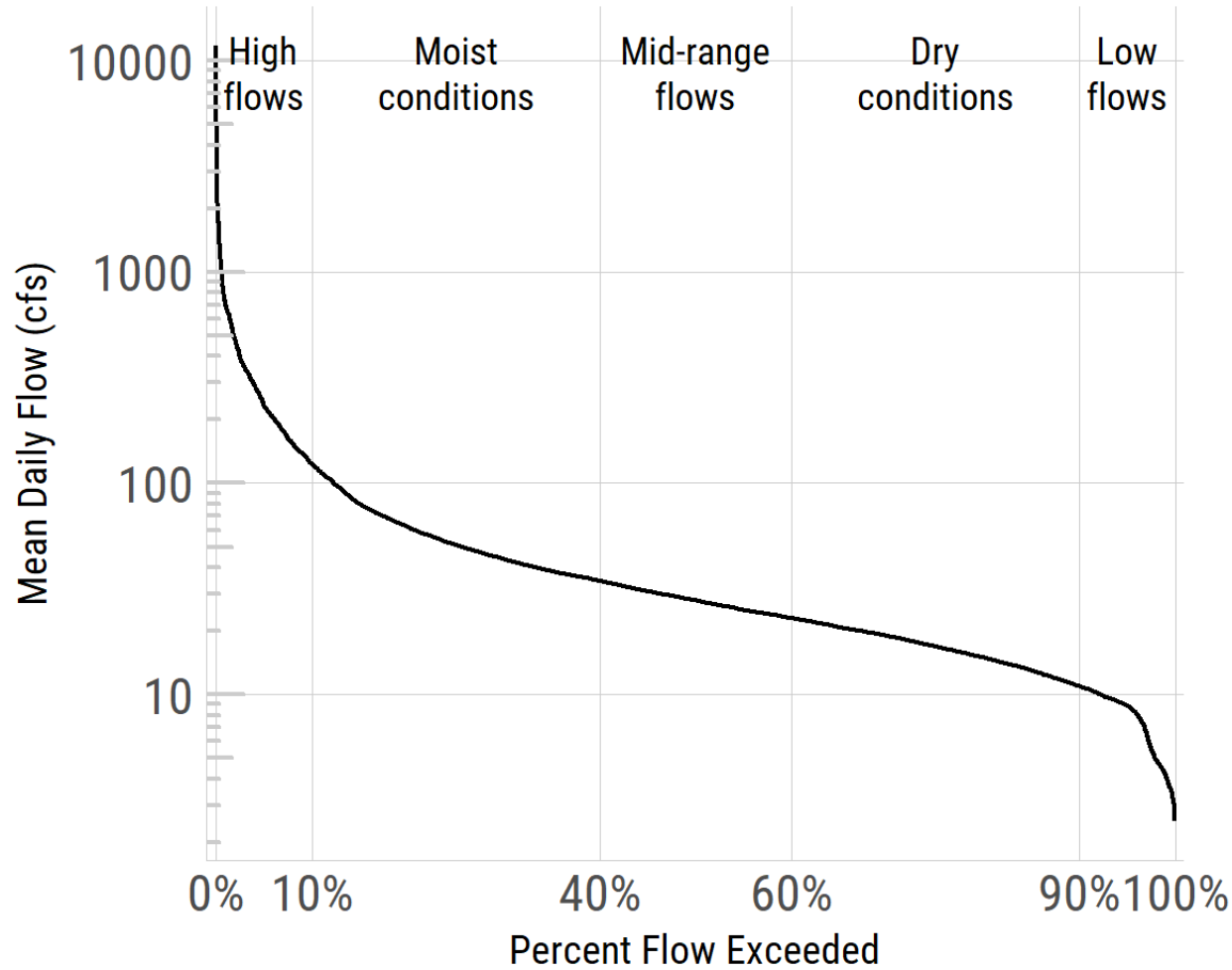
Wolf Creek Estimated Streamflow



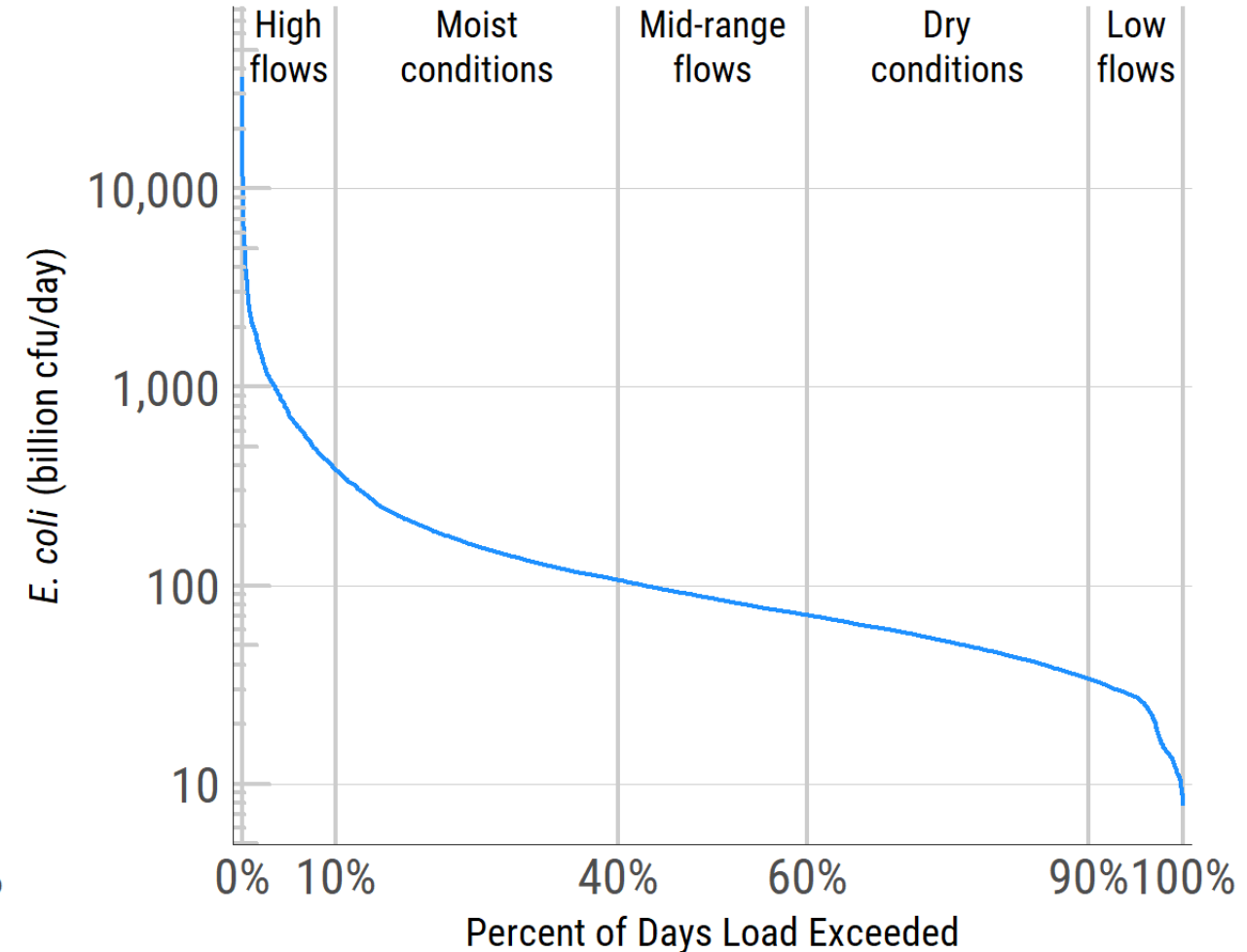
Wolf Creek Flow Duration Curve



Wolf Creek Flow Duration Curve



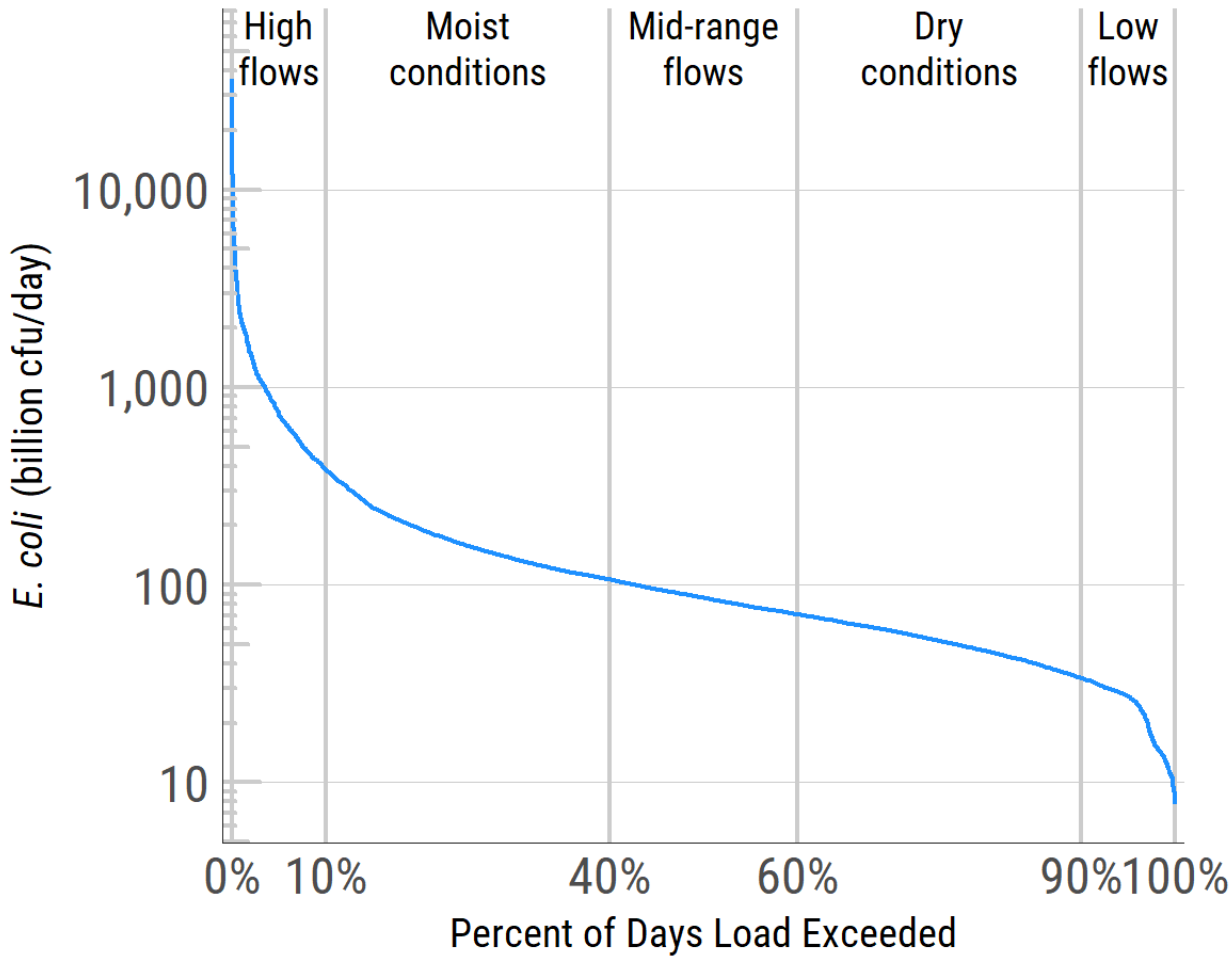
Wolf Creek Load Duration Curve



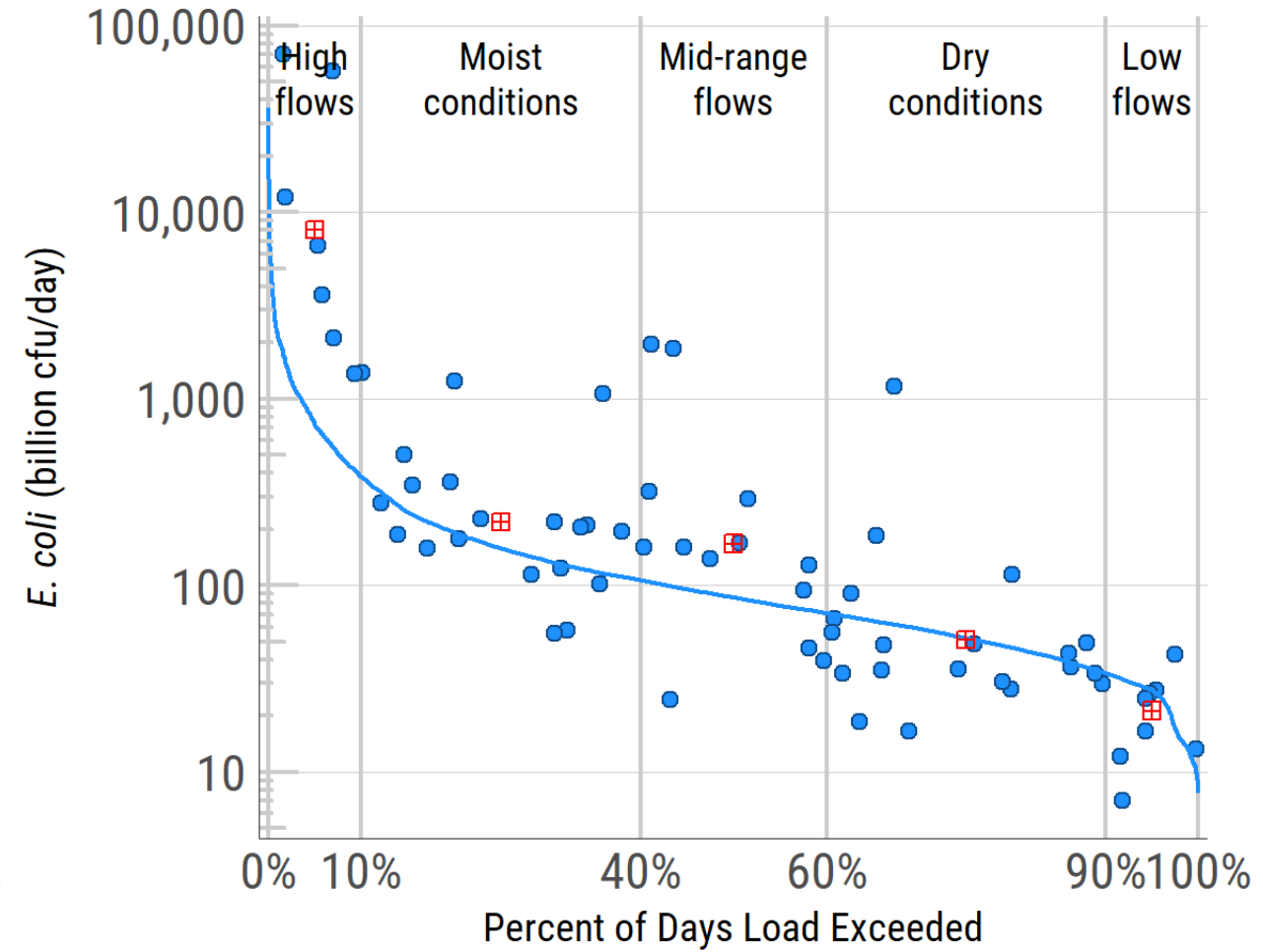
$$\text{Flow} \times 126 \text{ cfu}/100 \text{ mL} \times \text{Conversions}$$

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

Wolf Creek Load Duration Curve

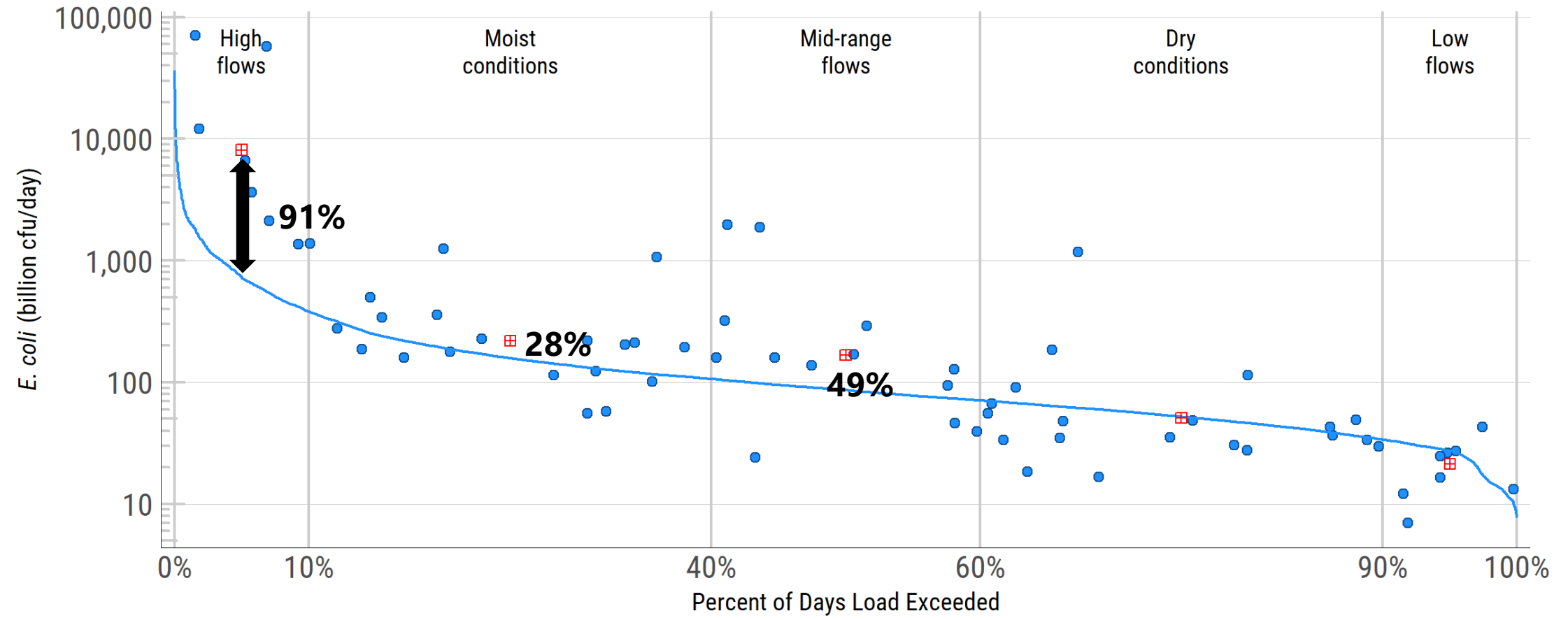


Load Duration Curve + Measured Values



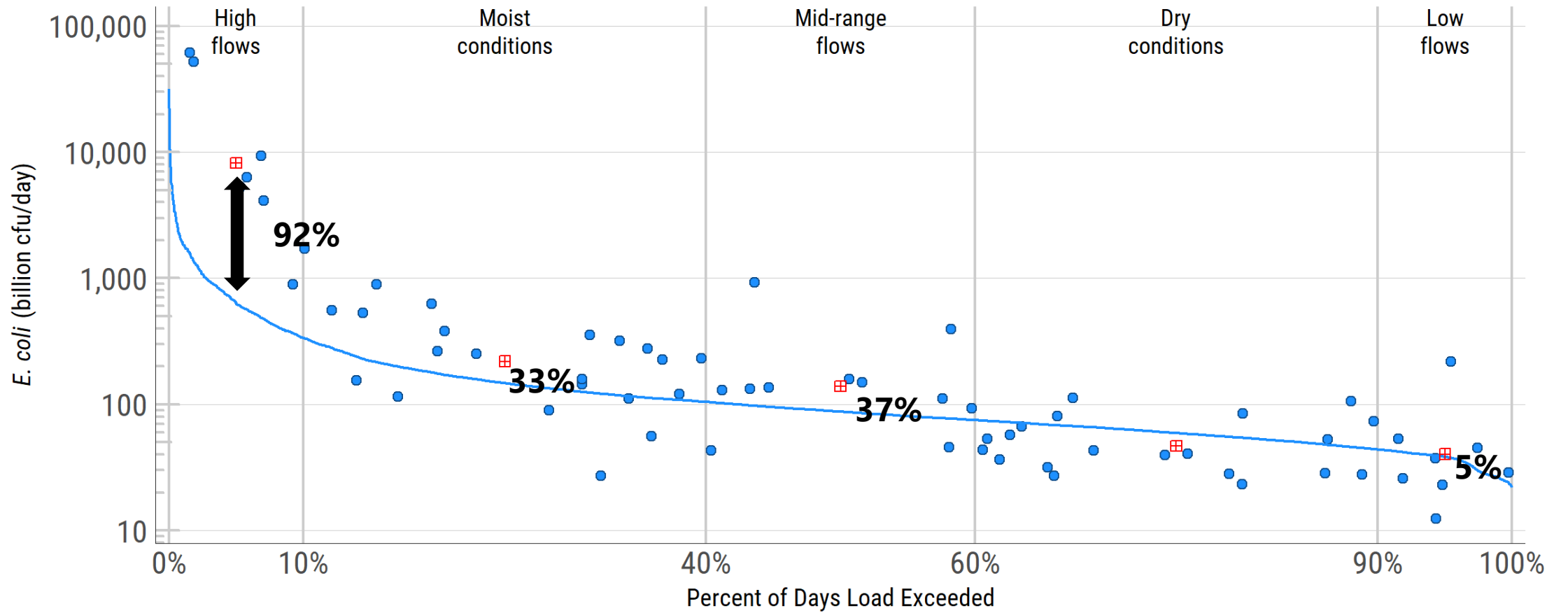
- Existing Geomean Load (cfu/day)
- Measurement Value (cfu/day)
- Allowable Load

Wolf Creek Load Duration Curve, Percent Reduction



- ⊠ Existing Geomean Load (cfu/day)
- Allowable Load
- Measurement Value (cfu/day)

Sandy Creek Load Duration Curve



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

▣ Existing Geomean Load (cfu/day)

● Measurement Value (cfu/day)

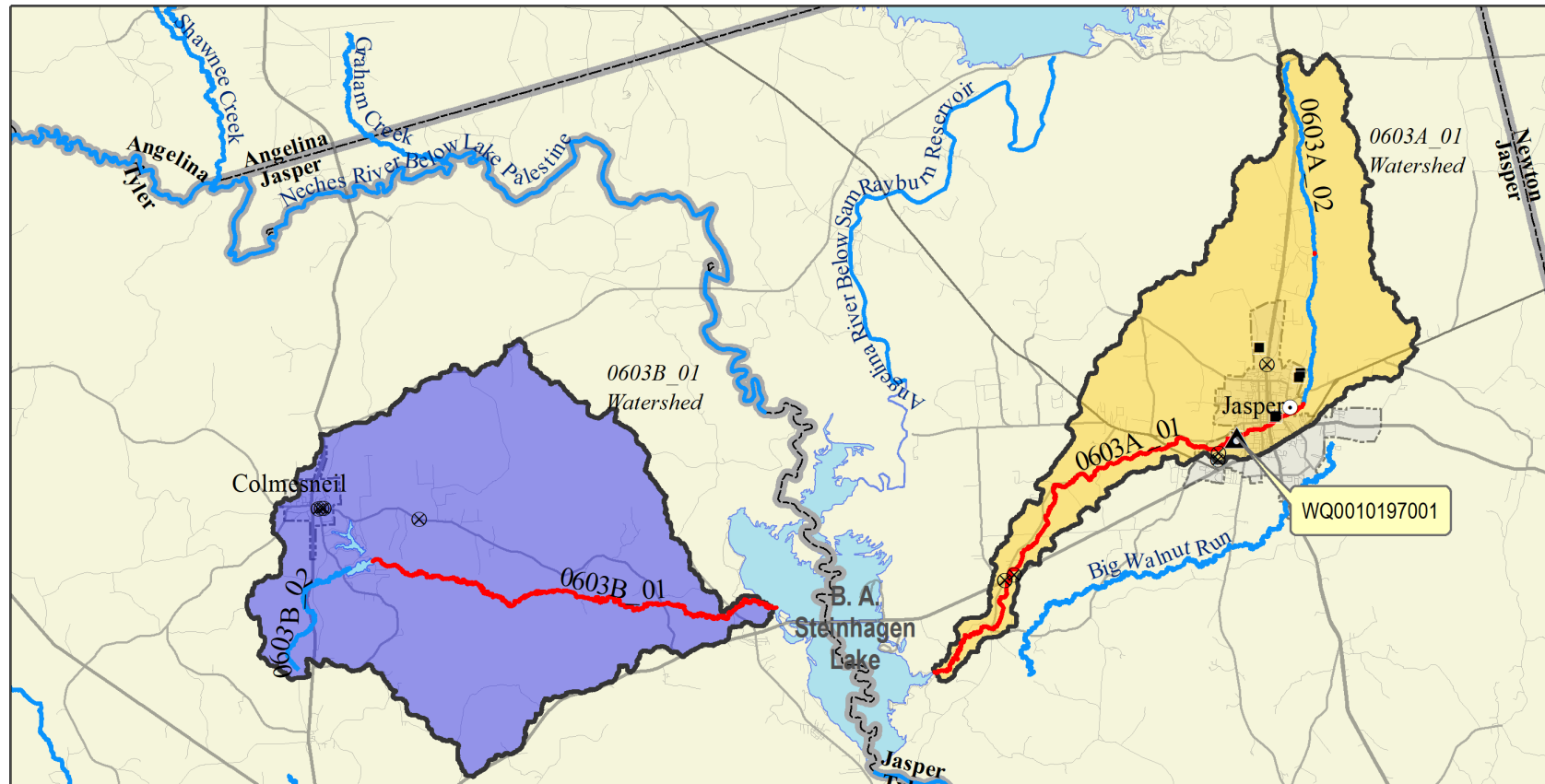
Potential Regulated Sources

- TPDES permitted point source discharges (wastewater facilities or industrial discharges with bacteria component)
- Permitted stormwater (large urbanized areas, industrial stormwater, construction sites)



Permitted Point Sources

AU	Facility	Held By	Annual Average Permitted Discharge (MGD ⁺)	Recent Discharge (MGD)*
0603A_01	City of Jasper WWTF	City of Jasper	3.25	1.23



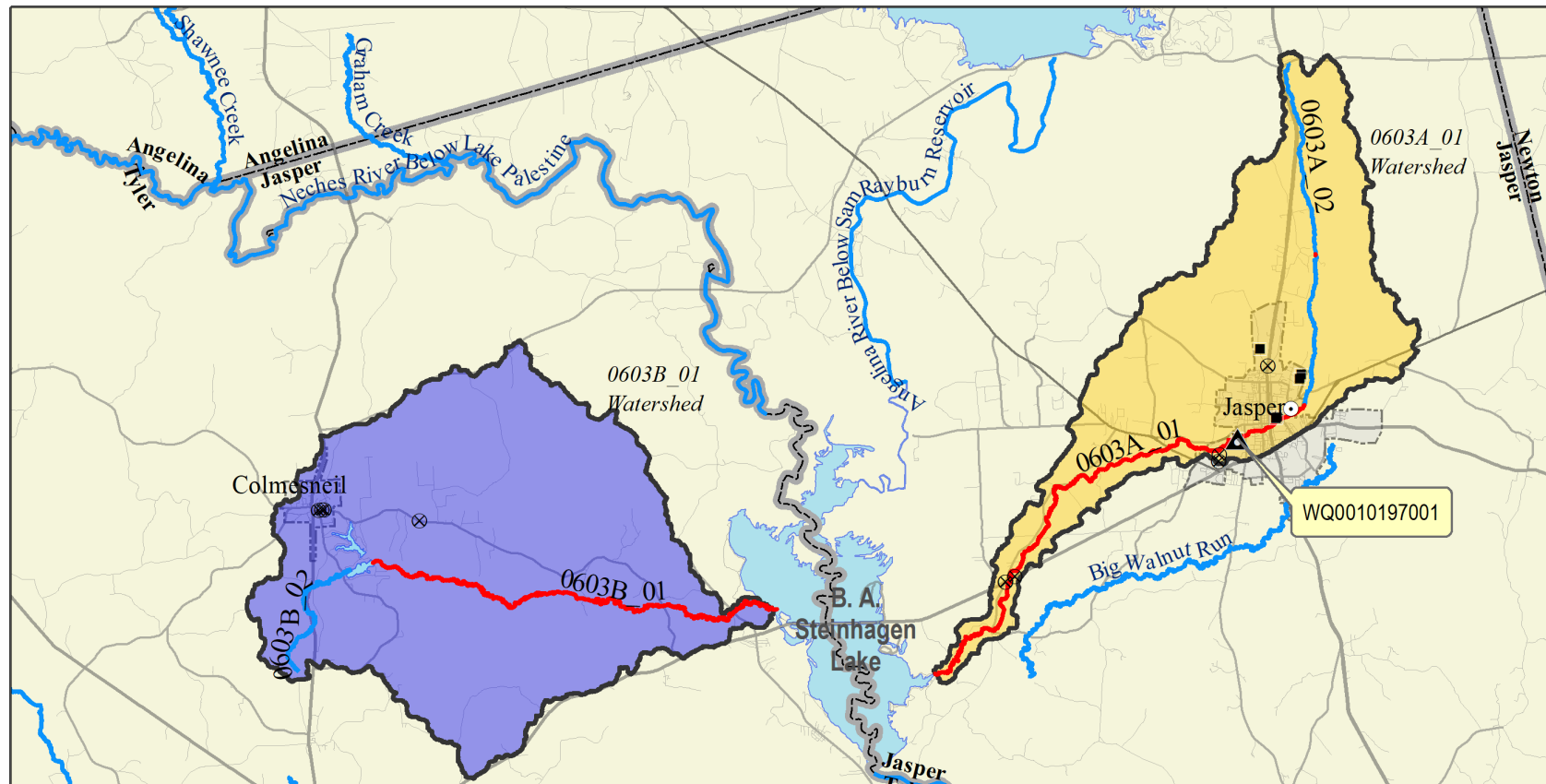
No exceedances of the daily average limit from 2015-2018; Three exceedances of the daily max (out of 48 reports)

- WWTF Permit
- Concrete Production Permit
- MSGP Permit
- Construction (2003-2018)
- Stream
- Impaired
- Sandy Creek Watershed
- Wolf Creek Watershed
- County Boundaries
- Cities



Permitted Point Sources

AU	Facility	Held By	Annual Average Permitted Discharge (MGD ⁺)	Recent Discharge (MGD)*
0603A_01	City of Jasper WWTF	City of Jasper	3.25	1.23



General Wastewater Permits:
 One concrete production facility
 in Sandy Creek (no bacteria)

No TPDES permitted discharges
 in Wolf Creek

- ▲ WWTF Permit
- Concrete Production Permit
- MSGP Permit
- ⊗ Construction (2003-2018)
- Stream
- Impaired
- Sandy Creek Watershed
- Wolf Creek Watershed
- County Boundaries
- Cities



Sanitary Sewer Overflows

	No. of incidents	Total Volume	Average Volume	Minimum Volume	Maximum Volume
Sandy Creek	196	947,860	4,989	10	240,000
Wolf Creek	4	8,500	2,125	1,500	3,000



Data from TCEQ regional and statewide database 2005-2018

Regulated Stormwater

- Less than 1% of each watershed is under regulated stormwater.
- Sandy Creek:
 - Six industrial facilities
 - One concrete production facility
 - ~36 acres per year under construction permits
- Wolf Creek:
 - ~7 acres per year under construction permits

Unregulated Sources

- Agriculture activities (non-CAFO)
- OSSF (Septic systems)
- Pets
- Wildlife

Livestock

	Cattle and Calves	Hogs and Pigs	Goats and Sheep	Horses
Sandy Creek	856	16	72	68
Wolf Creek	1,827	46	201	111



Derived from USDA Agriculture Census data

Household Pets

	Estimated Number of Households	Estimated Dog Population	Estimated Cat Population
Sandy Creek	3,447	2,013	2,199
Wolf Creek	1,077	629	687

0.614 dogs/household

0.457 cats/household

Wildlife

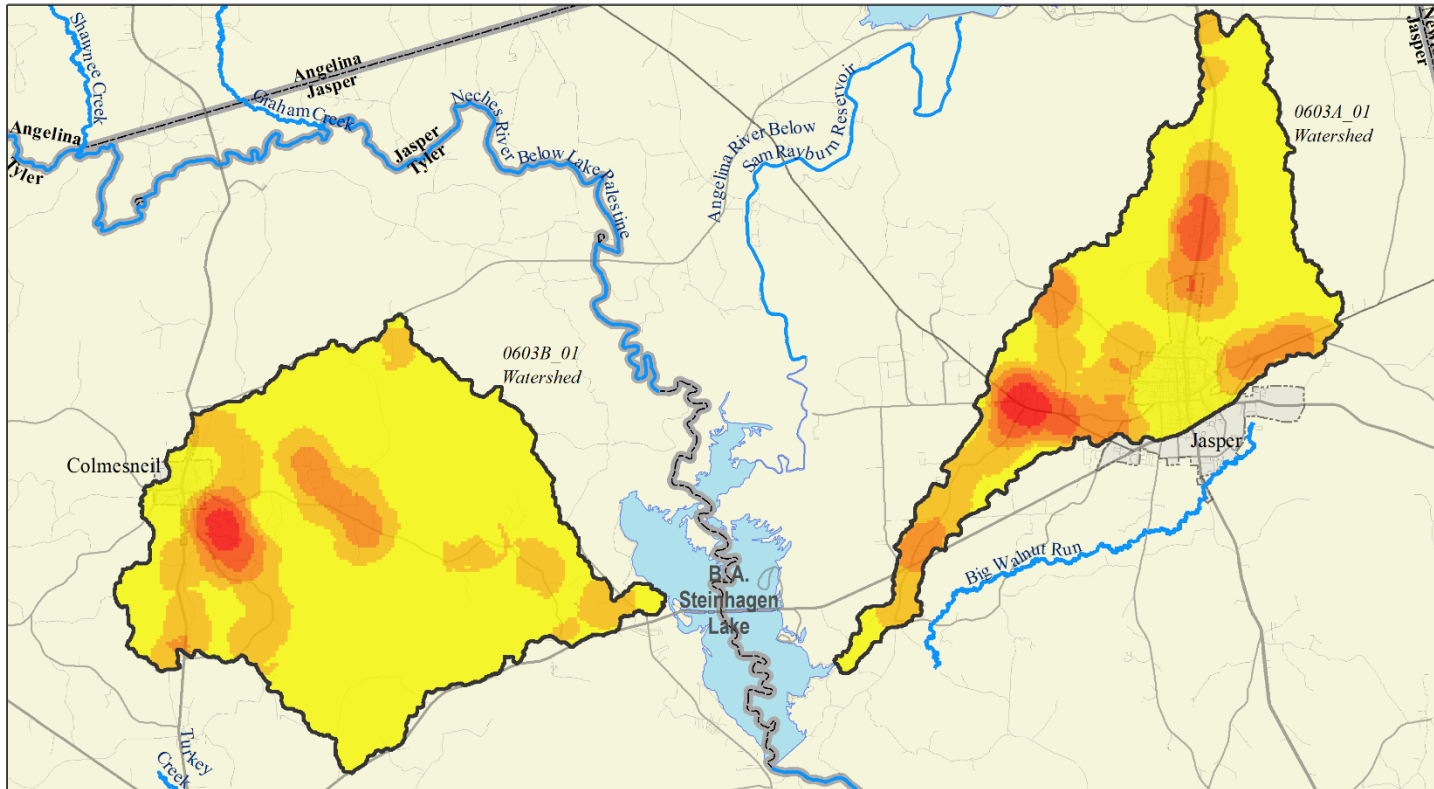
	Deer	Feral Hogs
Sandy Creek	634	789
Wolf Creek	1,036	1,288

1 deer/48.49 acres
1 hog/39 acres



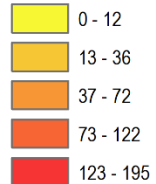
Derived from TPWD and AgriLife Extension data

Septic Systems (OSSFs)



Estimated OSSF Density

OSSFs per Square Mile



- Watersheds
- County Boundaries
- Cities
- Stream



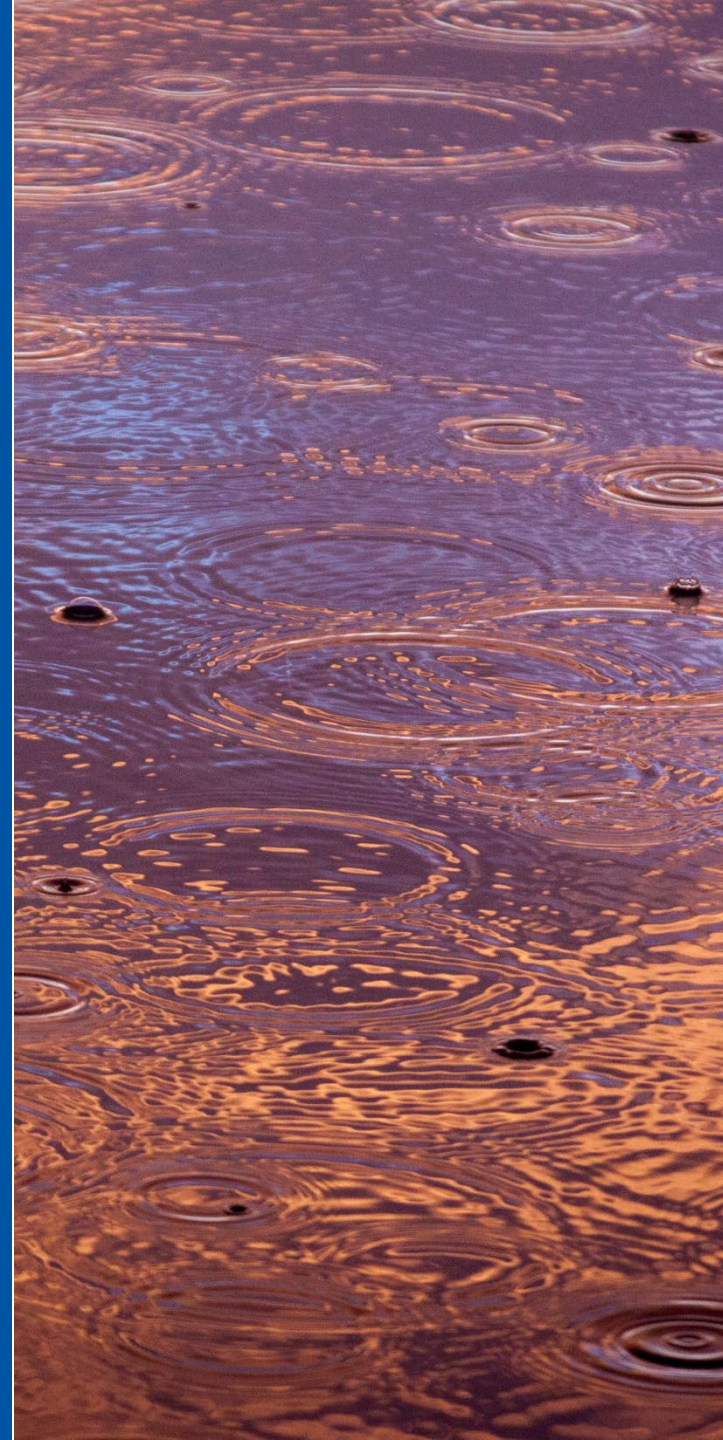
	Estimated OSSFs
Sandy Creek	1,433
Wolf Creek	1,037

Estimated failure rate = 19%

Reed, Stowe, and Yanke, LLC. (2001). Study to Determine the Magnitude of, and Reasons for, Chronically Malfunctioning On-site Sewage Facility Systems in Texas.

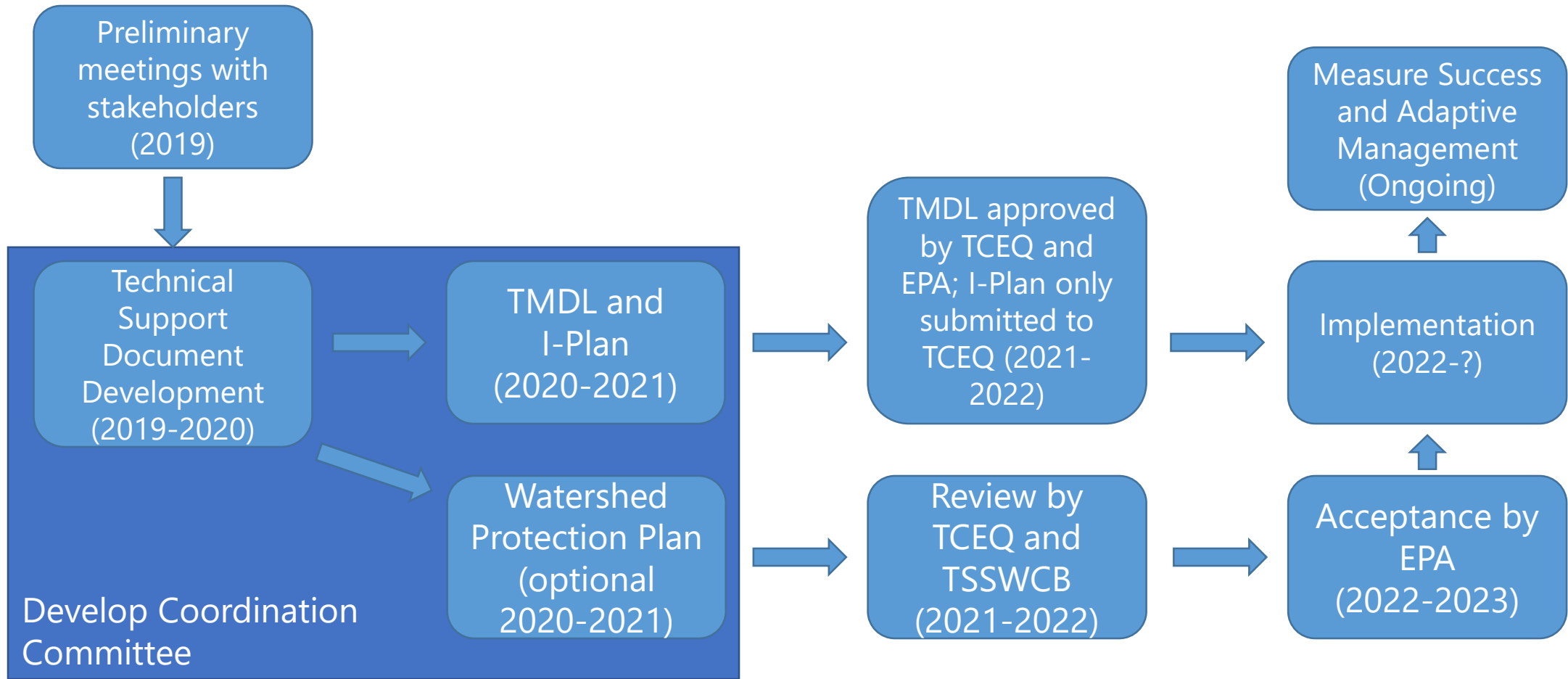
<https://www.tceq.texas.gov/assets/public/compliance/compliance_support/regulatory/ossf/StudyToDetermine.pdf>

- Summary
 - Highest exceedances occur under high-flow
 - Moderate reductions needed under moist and mid-range conditions
 - Dry and low flow conditions are generally good, correspond with the lack of point source discharges
 - Regulated stormwater accounts for less than 1% of Wolf Creek and less than 4% of Sandy Creek drainages
 - Unregulated stormwater likely accounts for the majority of high-flow related loadings





What is next?



Take a step back and look at planning needs:

- A. Identification of causes and sources
- B. Estimate of load reductions to achieve water quality goals
- C. Description of management measures
- D. Estimate of technical and financial assistance needed
- E. Education and outreach
- F. Implementation schedule
- G. Interim, measurable milestones
- H. Indicators of progress toward load reduction goals
- I. Monitoring for effectiveness

What is next?

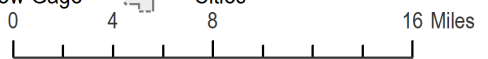
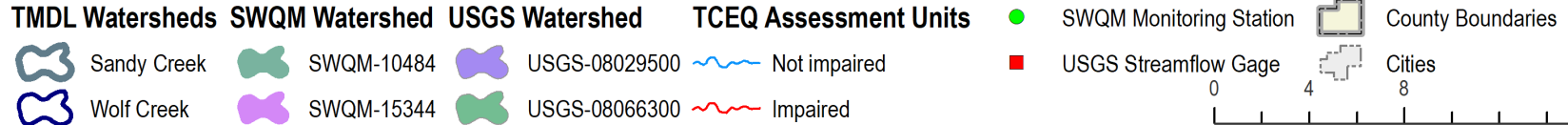
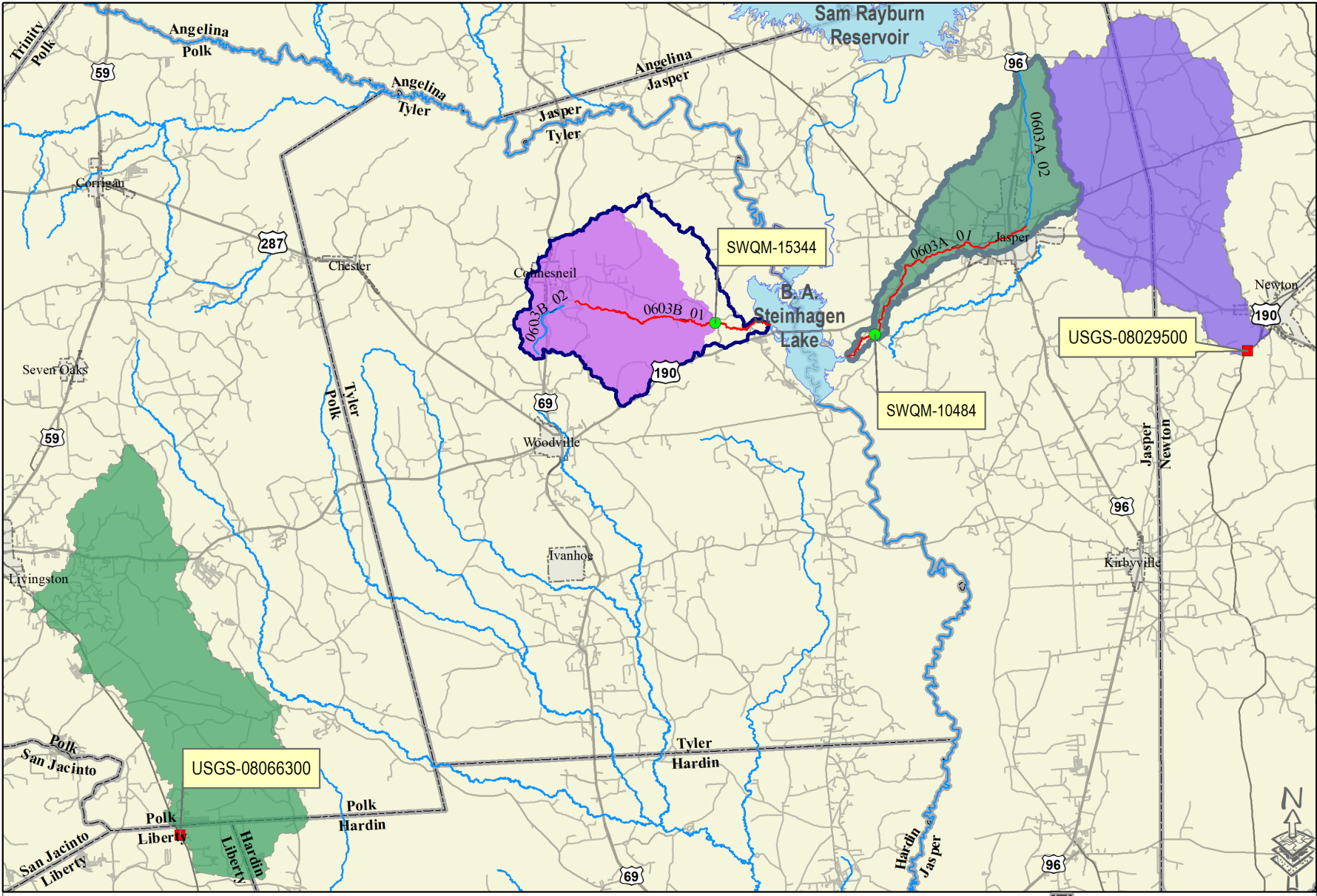
- Discuss I-Plan and WPP options.
- Discuss potential management measures.
- Education and outreach needs.
- What else would you like covered in the next meeting?

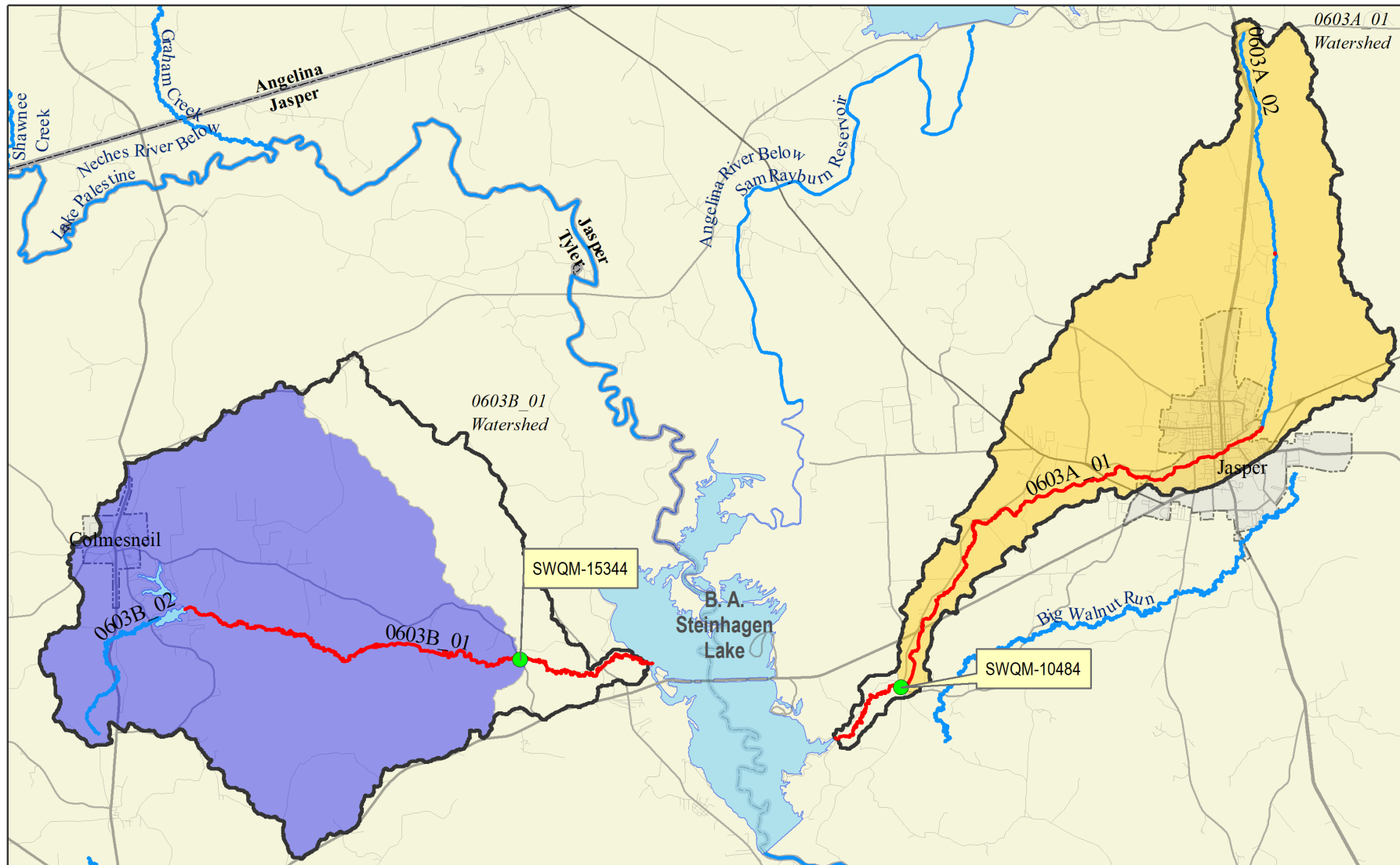


Extra Slides



Water Body	AU	Station	Station Location	No. of Samples	Data Date Range	Geomean	Percent exceeding single sample criterion
Sandy Creek	0603A_01	10484	Sandy Creek at FM 777	68	10/16/2001 – 10/17/2018	188.76	17.6
Wolf Creek	0603B_01	15344	Wolf Creek at FM 256	68	10/16/2001 - 10/17/2018	194.56	20.6

Gage Number	Site Description	Drainage Area (square miles)	Daily Streamflow Record
08029500	Big Cow Ck nr Newton, TX	128.18	01-01-2000 – 12-31-2018
08066300	Menard Ck nr Rye, TX	147.48	01-01-2000 – 12-31-2018










SWQM Watershed

-  SWQM-10484
-  SWQM-15344

TMDL Watersheds

-  Stream
-  Impaired

SWQM Monitoring Station

-  SWQM Monitoring Station
-  County Boundaries
-  Cities

0 1.75 3.5 7 Miles

