



SAN ANTONIO
RIVER AUTHORITY

The San Antonio River Basin TMDL Program

Thursday, May 4, 2023



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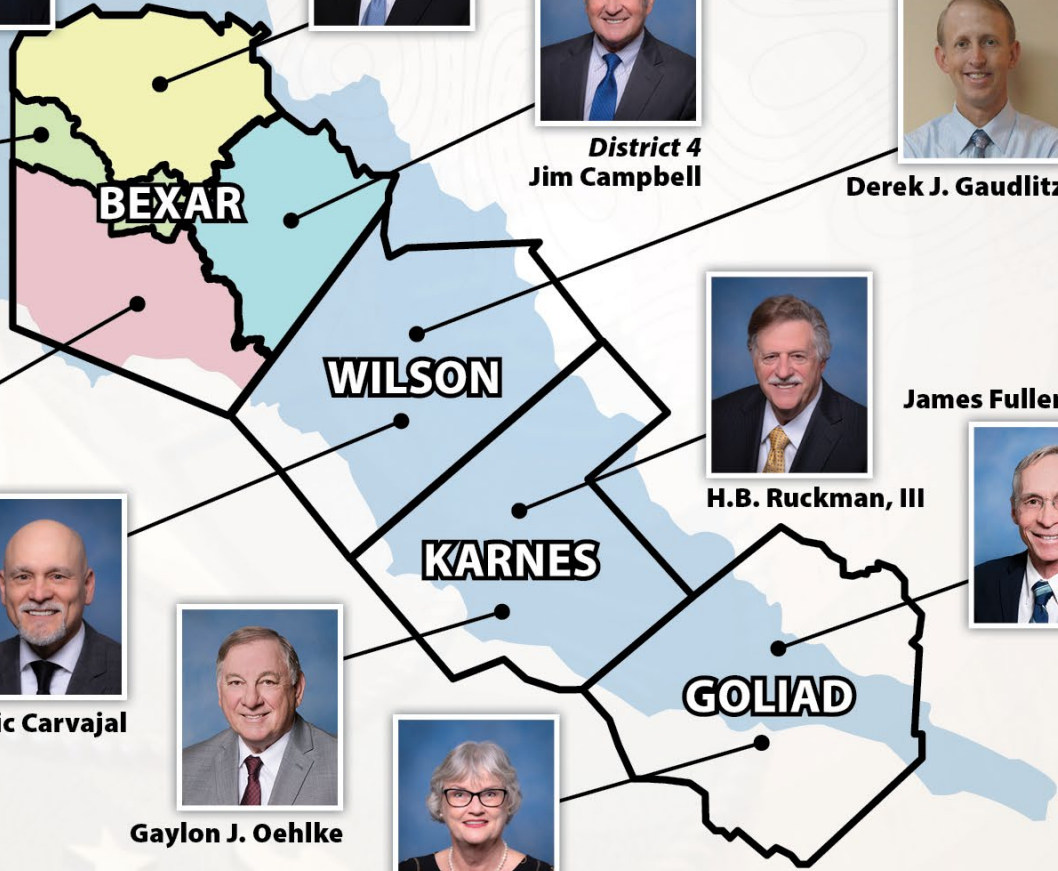
Alicia Lott Cowley



H.B. Ruckman, III



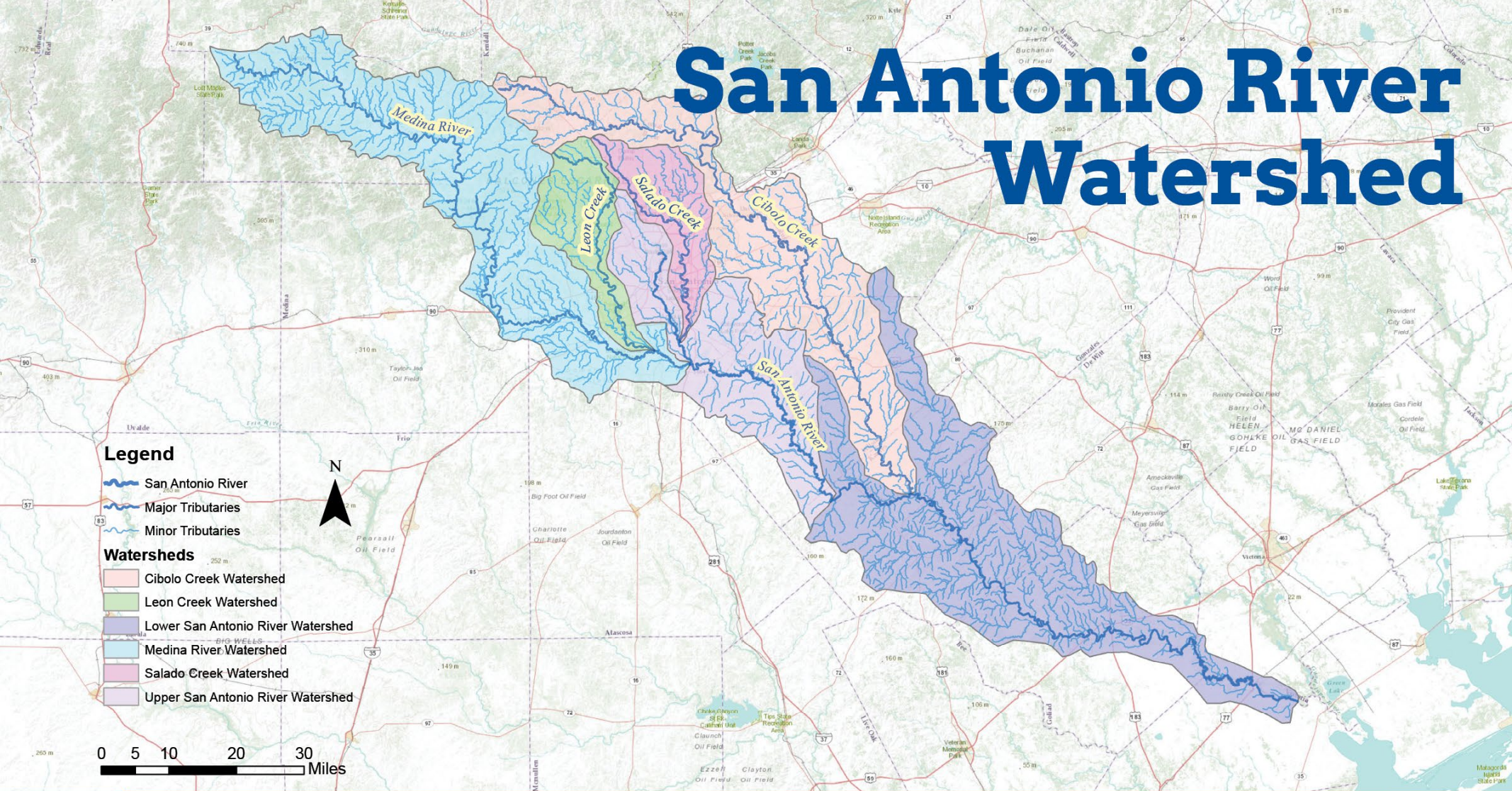
James Fuller, M.D.



Committed to Safe, Clean, Enjoyable Creeks and Rivers.

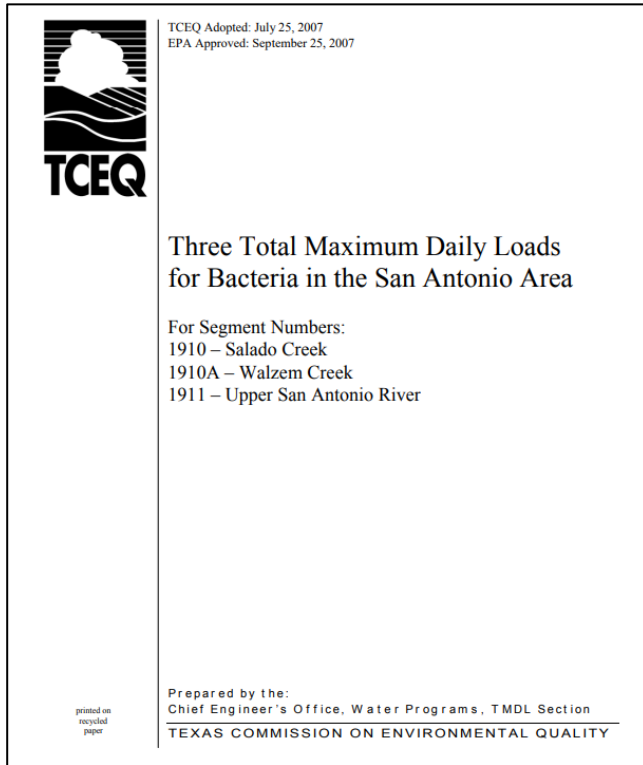


San Antonio River Watershed



Committed to Safe, Clean, Enjoyable Creeks and Rivers.

Upper San Antonio River (USAR) TMDL



- Approved Sept. 2007
- Bacteria impairments in three segments:
 - Salado Creek
 - Four assessment units (AU)
 - Walzem Creek
 - USAR
 - Nine AU's



Upper San Antonio River

- Attaining water quality standards required:
 - 50% reduction in non-point sources (NPS) loading
 - 30% reduction in stormwater loading
 - 99.9% reduction from SA ZOO





Salado and Walzem Creeks



- Attaining water quality standards required:
 - 90% reduction in NPS loading
 - 60% reduction in stormwater loading



Salado and Walzem Creeks

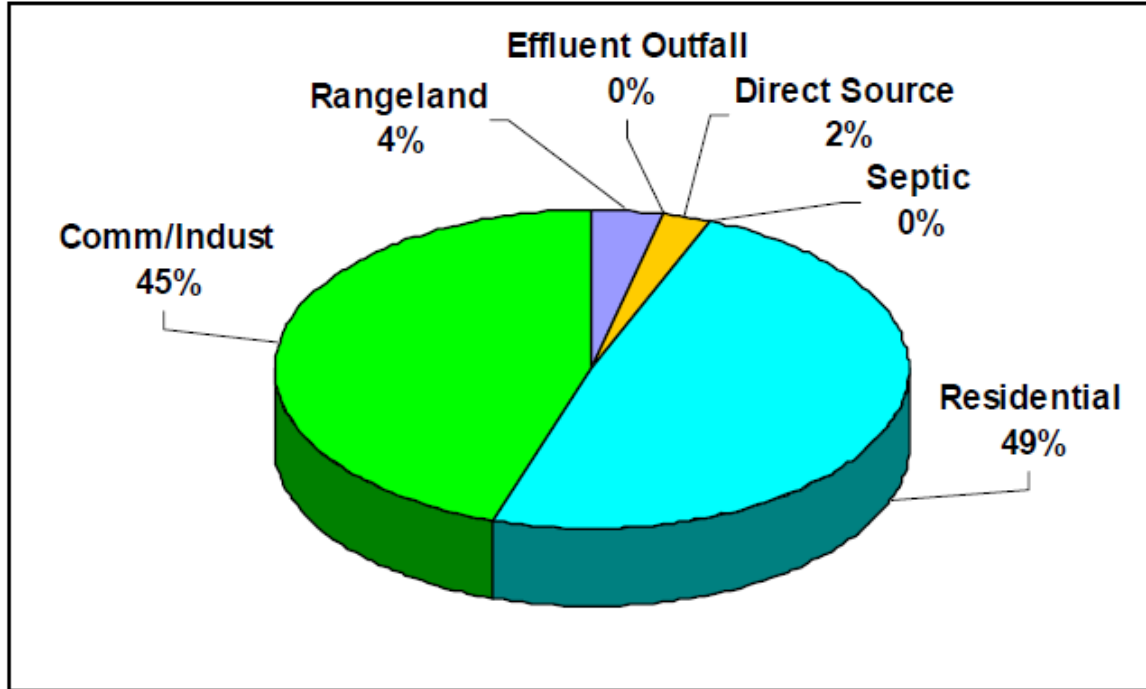



Figure 9: Comparison of Fecal Coliform Sources for Salado Creek



Lower San Antonio River (LSAR) TMDL

- Approved Oct. 2008
- Bacteria impairments in one segment
 - Six AU's



Adopted August 2008
EPA Approved October 20, 2008

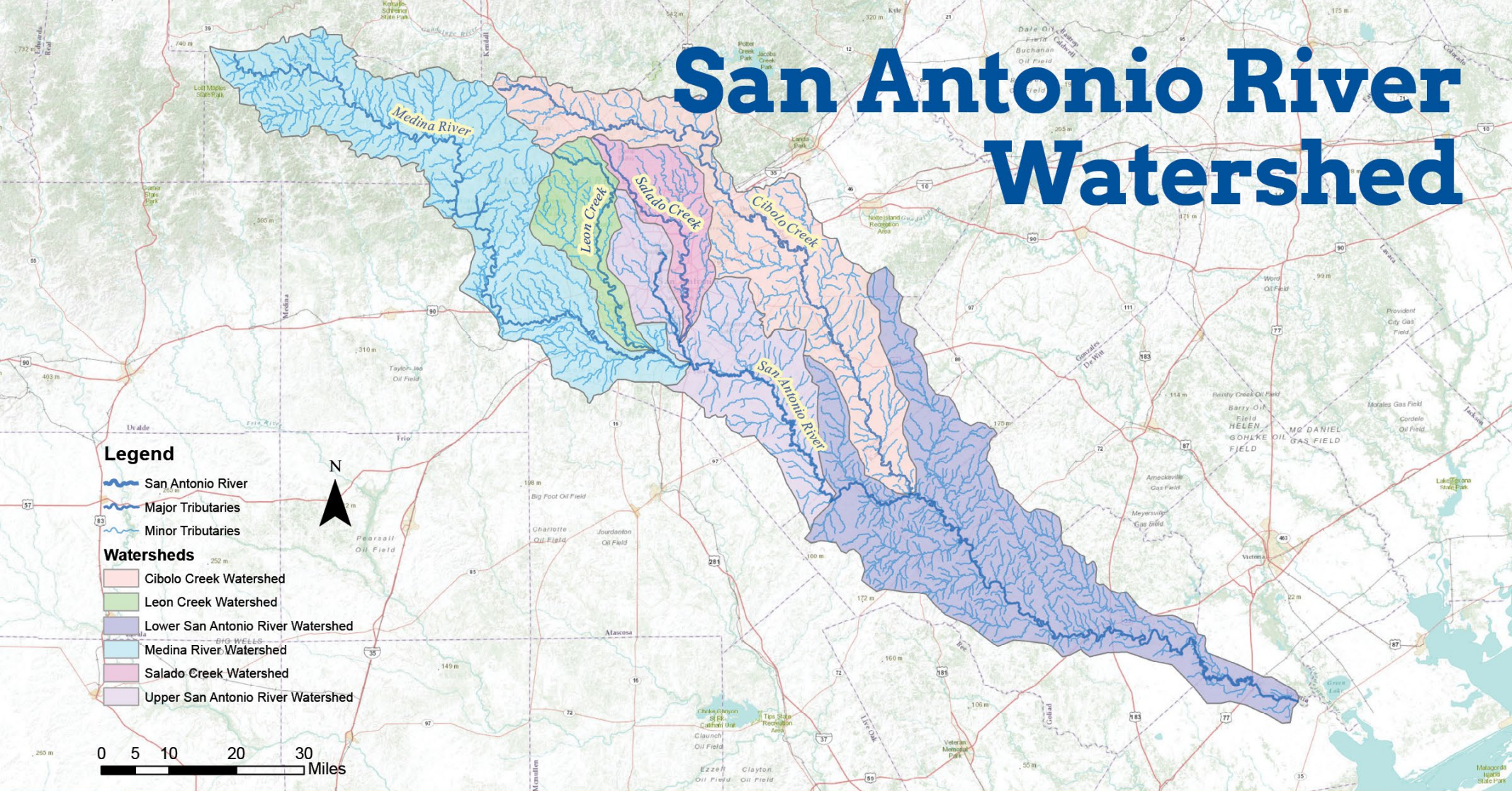
One Total Maximum Daily Load
for Bacteria in the
Lower San Antonio River

For Segment 1901

Prepared by the:
Chief Engineer's Office, Water Programs, TMDL Section
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



San Antonio River Watershed



Committed to Safe, Clean, Enjoyable Creeks and Rivers.

LSAR TMDL

- Attaining water quality standards required:
 - 0-51% reduction of NPS loading in wet-weather conditions, and;
 - 63% reduction in point source loading



USAR TMDL I-Plan

- Approved April 2016
 - 30 management measures,
0 control actions



Approved April 6, 2016

Implementation Plan for
Three Total Maximum Daily Loads
for Bacteria in the Upper San
Antonio Watersheds

Segments: 1910, 1910A, 1911

Water Quality Planning Division, Office of Water
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Management Measures

- Mission Reach Ecosystem Restoration and Recreation Project
 - Initiated in 2008, completed 2013
 - More than 9 miles of restored river
 - Measurable ecological benefits









Weir 1

Erosion at Lone Star Blvd

Erosion at Mitchell Street

San Juan Pump Slip

5th Pedestrian Bridge

Erosion at Old CPS
Bridge



Lone Star Erosion Repair



Downstream of Lone Star Blvd.



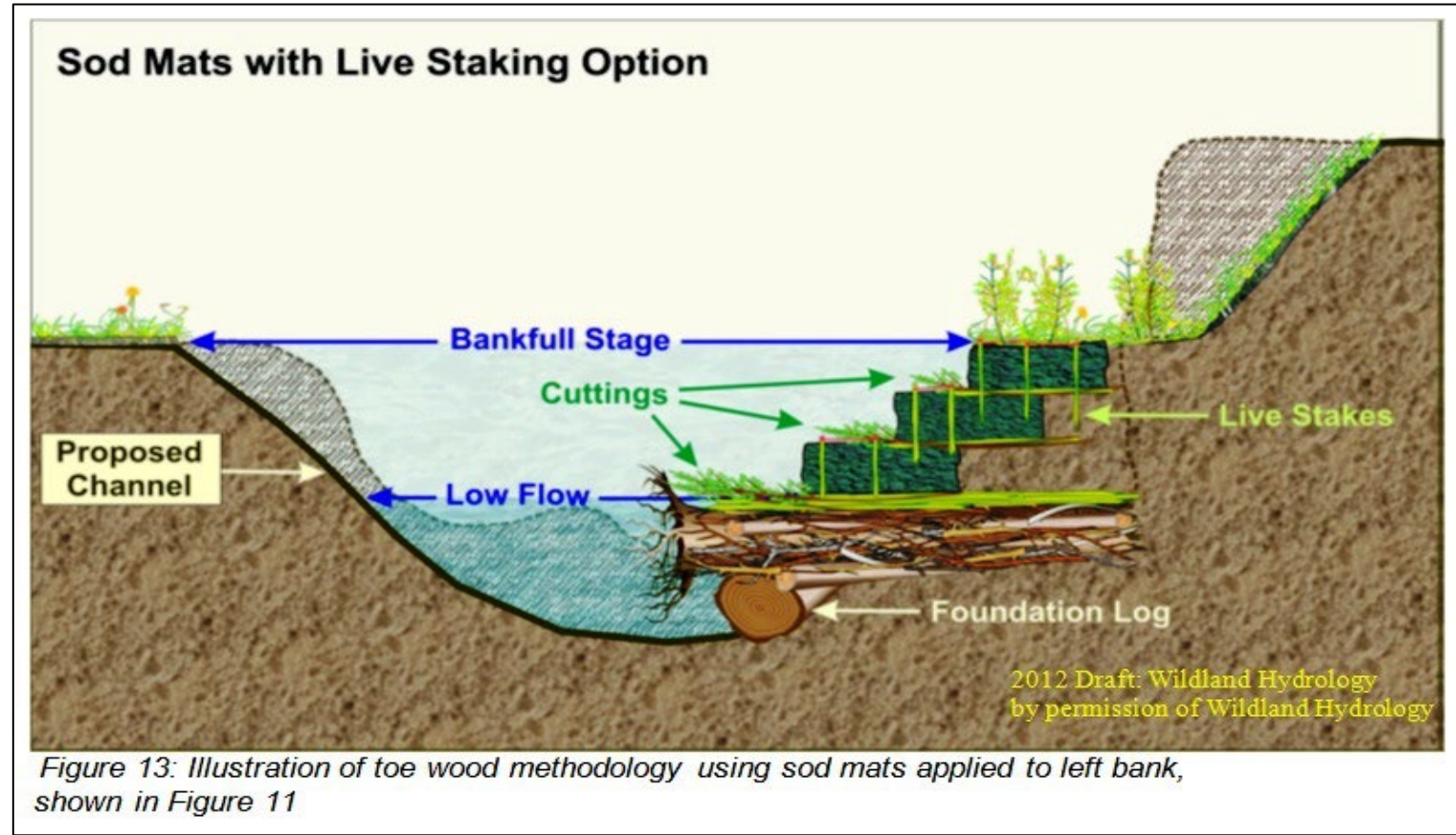


Bank Erosion



Natural Channel Design

- Bank structural restoration using toe wood
- Habitat restoration
- Reduced sediment load



Before



After



Construction: May – July 2020



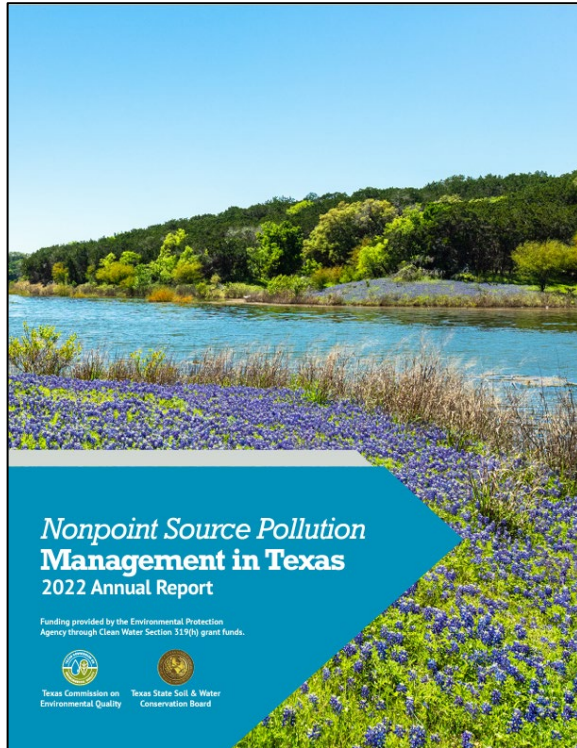
Management Measures

- BMP Assessment and Pilot Studies:
 - School Grant Projects
 - Initial BMP inspection (24)
 - Follow-up inspection (27)
 - Rebate Projects
 - Initial BMP inspection (26)
 - Follow-up inspection (10)



Success(?) Story


Success Story Highlights Implementing BMPs and Low Impact Development Improves Water Quality in the Upper San Antonio River Water Quality Improved



AU	2014 IR Geomean (cfu/100mL)	2020 IR Geomean (cfu/100 mL)	% Change
1911_09	437	561	+28.4
1911_08	205	252	+22.9
1911_07	145	119	-21.8



LSAR TMDL I-Plan



Approved August 8, 2018

Implementation Plan for
Five Total Maximum Daily
Loads for Bacteria in the
Lower San Antonio River
Watershed

Segment 1901
Assessment Units 1901_01, 1901_02, 1901_03,
1901_04, 1901_05

Prepared by the San Antonio River Stakeholders
With Support from the TMDL Team, Water Quality Planning Division,
Office of Water
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

- Approved August 2018
 - Nine management measures, two control actions



Management Measures

- Promote the Reduction of Illicit Dumping and the Proper Disposal of Waste
 - Yearly hazardous household waste (HHW) collection events:
 - >80 tons of HH
 - >5,000 tires
 - >50 tons of e-waste
 - Immeasurable goodwill w/downstream constituents



Management Measures



LSAR Bacteria Data Summary

Assessment Unit	2014 IR Geomean (cfu/100mL)	2020 IR Geomean (cfu/100 mL)	% Change
1901_05	111	98	-11.7
1901_04	196	188	-4.1
1901_03	148	149	0.7
1901_02	183	184	0.5
1901_01	110	127	15.5
1901_06	74	53	-28.4



LSAR Tributaries Bacteria Data Summary

Assessment Unit	2014 IR Geomean (cfu/100mL)	2020 IR Geomean (cfu/100 mL)	% Change
Escondido Creek – 1901A_01	917	784	-14.5
Cabeza Creek – 1901B_01	552	328	-40.6
Hord Creek – 1901C_01	21	No Data	NA
Lost Creek – 1901D_01	82	No Data	NA
Manahuilla Creek – 1901E_01	No Data	130	NA
Ecleto Creek – 1901F_01	No Data	164	NA



Lessons Learned

- Numerous committed partners
- Engage the community early and often, even if they aren't partners
- Bacterial Source Tracking
 - Urban/rural bacteria sources are very similar
- Celebrate when you can





To learn more about the San Antonio River Authority, visit sariverauthority.org