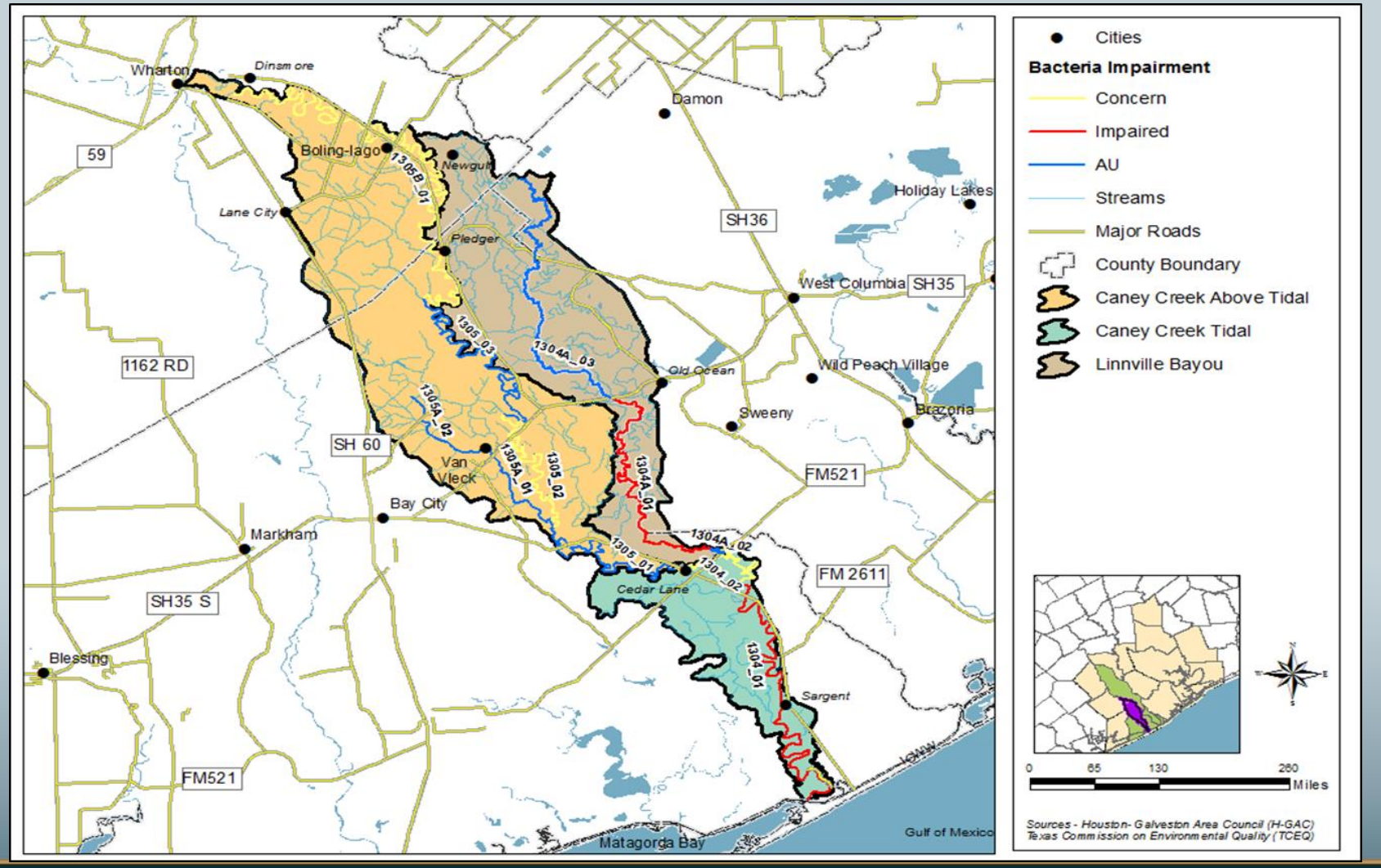
CANEY CREEK TMDL PROJECT

Caney Creek CC Meeting
March 17, 2020

Tonight's Agenda

- 5:30 – 5:35 Welcome – Open Meeting
- 5:35 – 5:45 Project Review
- 5:45 – 6:45 Review/Discuss Draft Management Measures
- 6:45 – 7:15 Discuss Interest in Watershed Protection Plan
- 7:15 – 7:25 Review/Discuss Implementation
- 7:25 – 7:30 Meeting Wrap Up/Next Steps
- Adjourn

Why Are We Here?



Project Review

- 05/14/2018 CC Meeting #1
- 02/21/2019 CC Meeting #2
- 07/11/2019 CC Meeting #3
- 12/10/2019 CC Meeting #4
- 03/17/2020 CC Meeting #5

Caney Creek TMDL Update

- Technical Support Document Revised
  - Submitted in 2018
  - Resubmitted to TCEQ August 2019
- TMDL Document
  - Submitted in July 2019
  - Resubmitted to TCEQ for review September 2019
- Draft Implementation Plan
  - Submitted in January 2020
  - Addressing Comments

Technical Support Document for Two Total Maximum Daily Loads for Indicator Bacteria in the Caney Creek Watershed

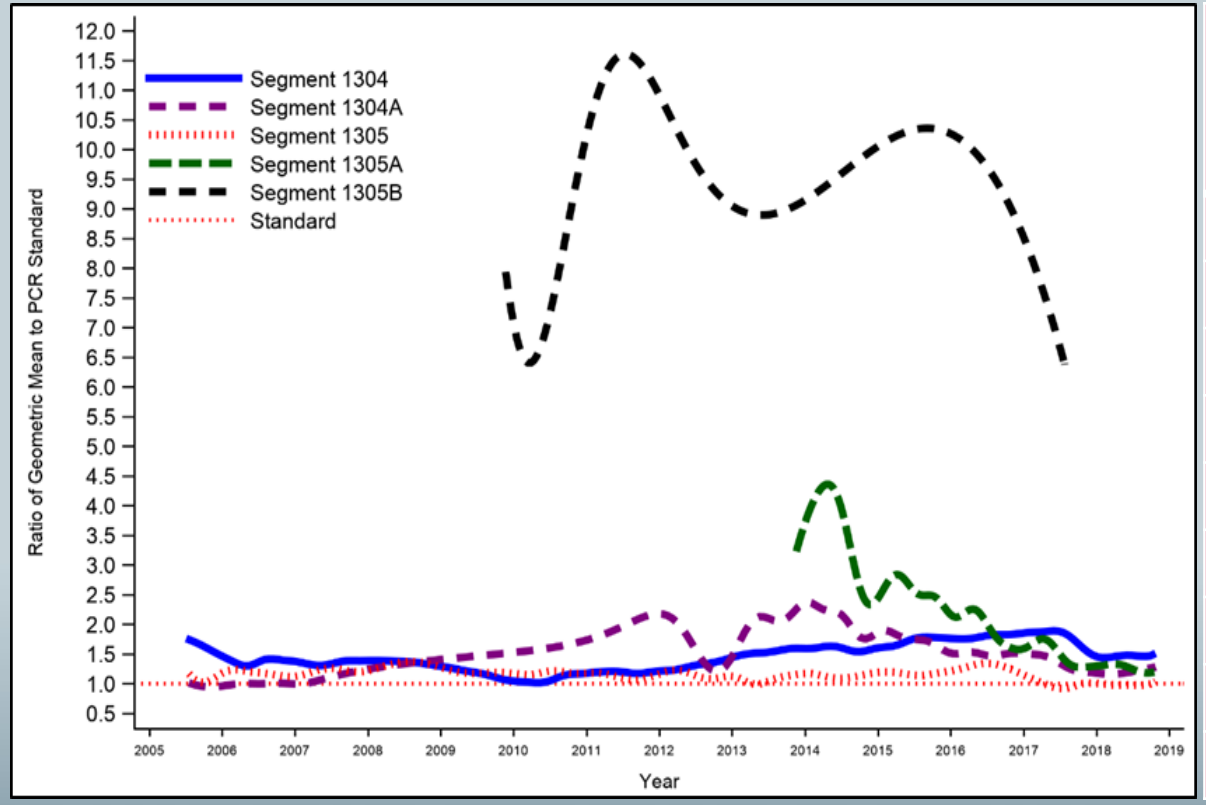
Segments: 1304 and 1304A
Assessment Units 1304_01 and 1304A_01

https://www.tceq.texas.gov/assets/public/waterquality/tmdl/115caneycreek/115-caneycreek-tsd-2019aug.pdf

August 2019

Bacteria Geometric Mean

Contact Recreation Standards:
Escherichia coli (E. coli) – 126 cfu/100 mL
Enterococci – 35 cfu/100 mL



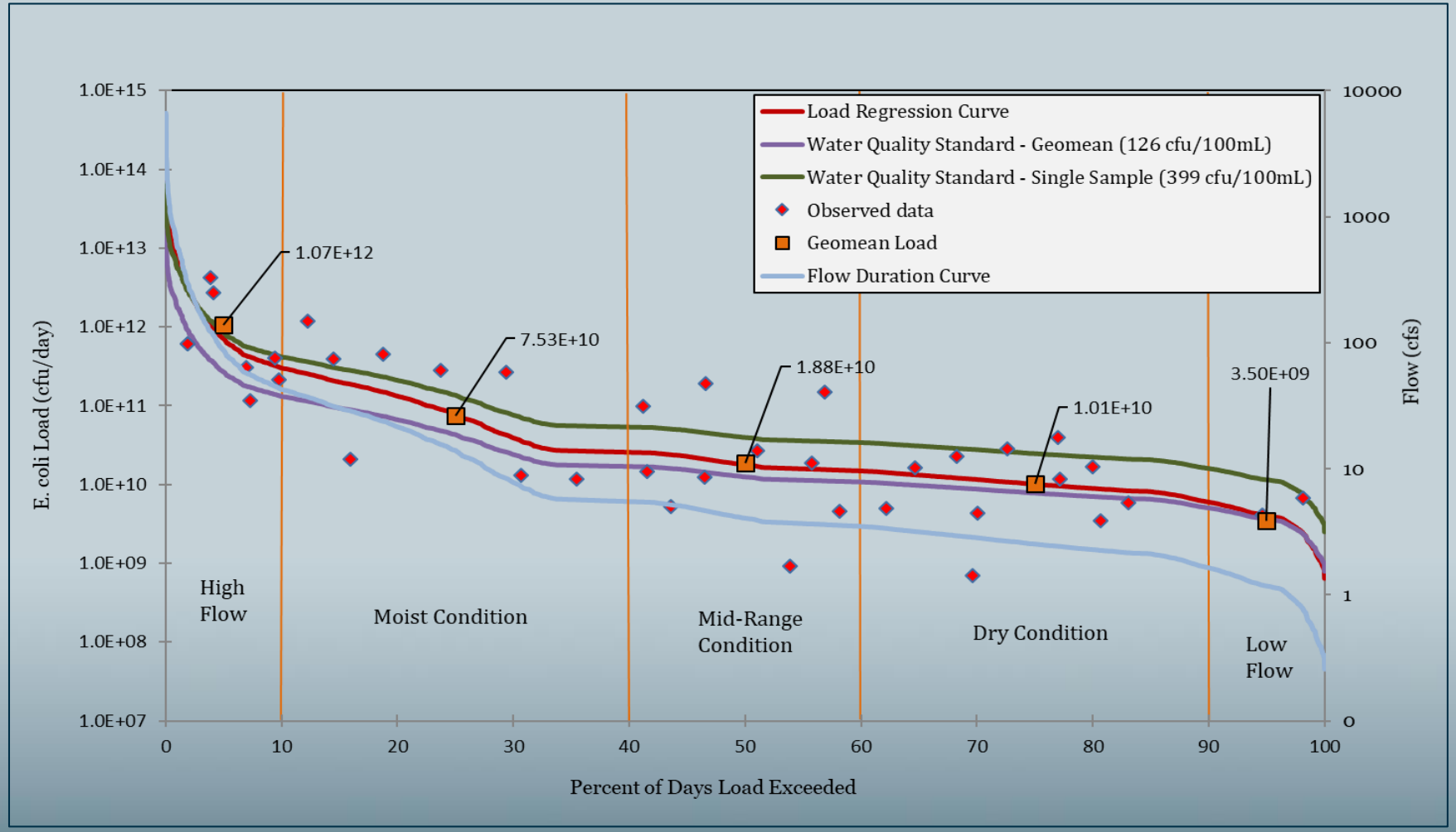
AU	SID	Indicator	Earliest Date	Most Recent Date	Samples	Geometric Mean (cfu/100 mL)
1304_01	12148	Enterococci	1/7/2004	10/25/2018	105	47.8
1304_02	12151	Enterococci	4/20/2004	10/18/2018	28	53.7
1304A_01	12141	*E. Coli*	1/7/2004	10/25/2018	38	205
1304A_02	12138	*E. Coli*	4/8/2014	7/26/2017	2	5.6
1305_01	12153	*E. Coli*	2/2/2017	10/18/2018	10	55.5
1305_02	12154	*E. Coli*	1/7/2004	10/25/2018	58	147.4
1305_03	12155	*E. Coli*	2/2/2017	8/22/2017	9	243.1
1305A_01	12135	*E. Coli*	11/19/2013	10/18/2018	21	68.8
1305B_01	20468	*E. Coli*	11/23/2009	8/22/2017	15	664.6

2016 Texas Integrated Report - Fecal Bacteria

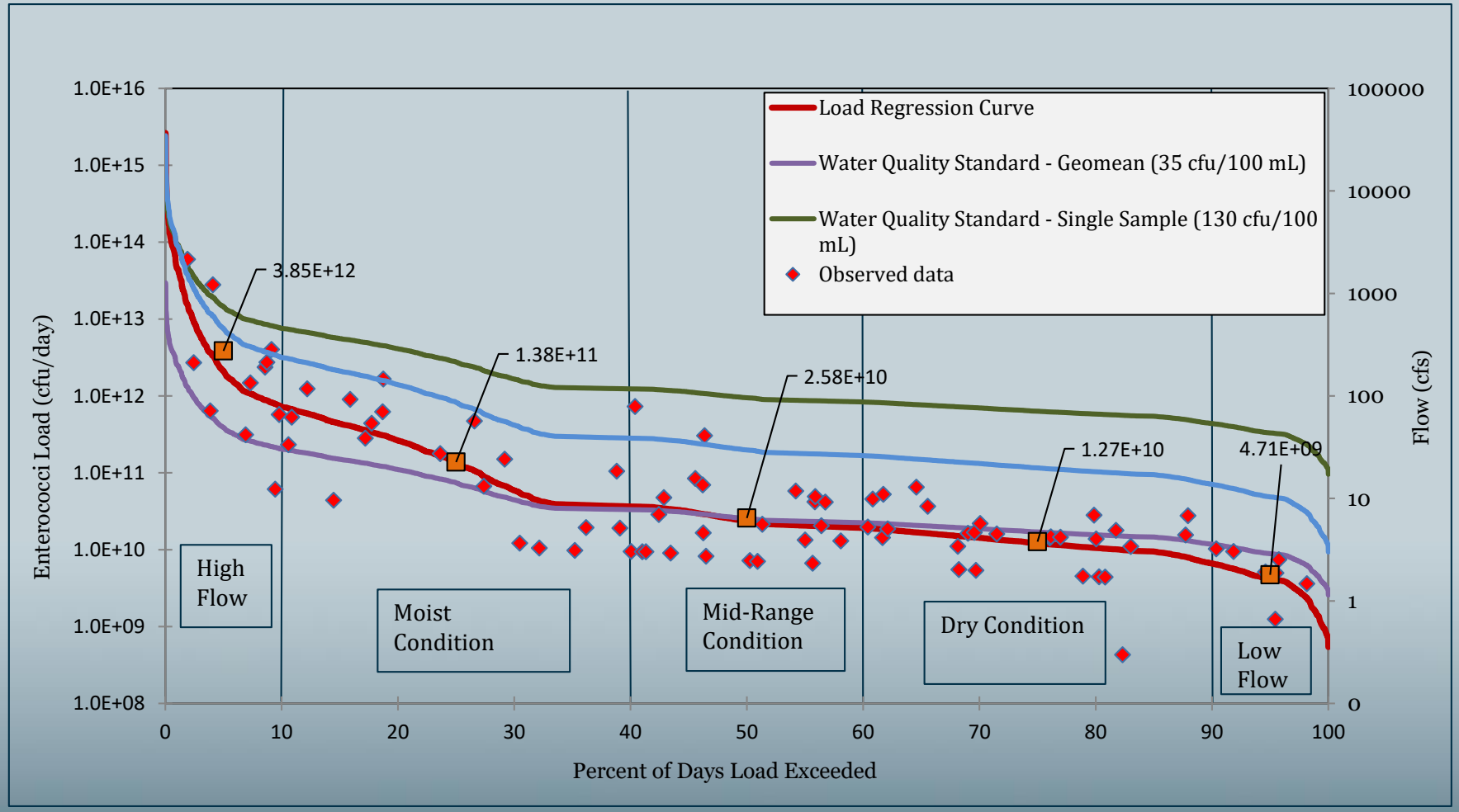
Name	AU	Parameter	Data Date Range	No. Samples	Geometric Mean (cfu/100 mL)	Status
Caney Creek Tidal	1304_01	Enterococcus	12/1/2007 - 11/30/2014	35	54.25	NS
Caney Creek Tidal	1304_02	Enterococcus	12/1/2007 - 11/30/2014	4	81.67	CN
Linnville Bayou	1304A_01	E. coli	12/1/2007 - 11/30/2014	11	176.97	NS
Caney Creek Above Tidal	1305_02	E. coli	12/1/2007 - 11/30/2014	26	122.91	FS
Caney Creek Above Tidal	1305B_01	E. coli	12/1/2007 - 11/30/2014	6	1,136.15	CN

Contact Recreation Standards:
Escherichia coli (E. coli) – 126 cfu/100 mL
Enterococci – 35 cfu/100 mL

Load Duration Curve for Station 12141 at SH 35 (1304A_01)



Load Duration Curve for Station 12148 at Chambless Rd. (1304_01)



Percent Load Reductions

			1304_01		1304A_01
			Enterococci		*E. coli*
			35 cfu/100mL		126 cfu/100 mL
Flow Condition	Exceedance Range	Geometric Mean (cfu/100mL)	Required Percent Reduction	Geometric Mean (cfu/100mL)	Required Percent Reduction
High Flow	(0-10%)	239.64	85.39%	356.93	64.70%
Moist	(10-40%)	64.92	46.09%	228.62	44.89%
Mid-Range	(40-60%)	33.62	0.00%	181.01	30.39%
Dry	(60-90%)	25.97	0.00%	163.89	23.12%
Low Flow	(90-100%)	17.24	0.00%	151.42	16.79%

TMDL

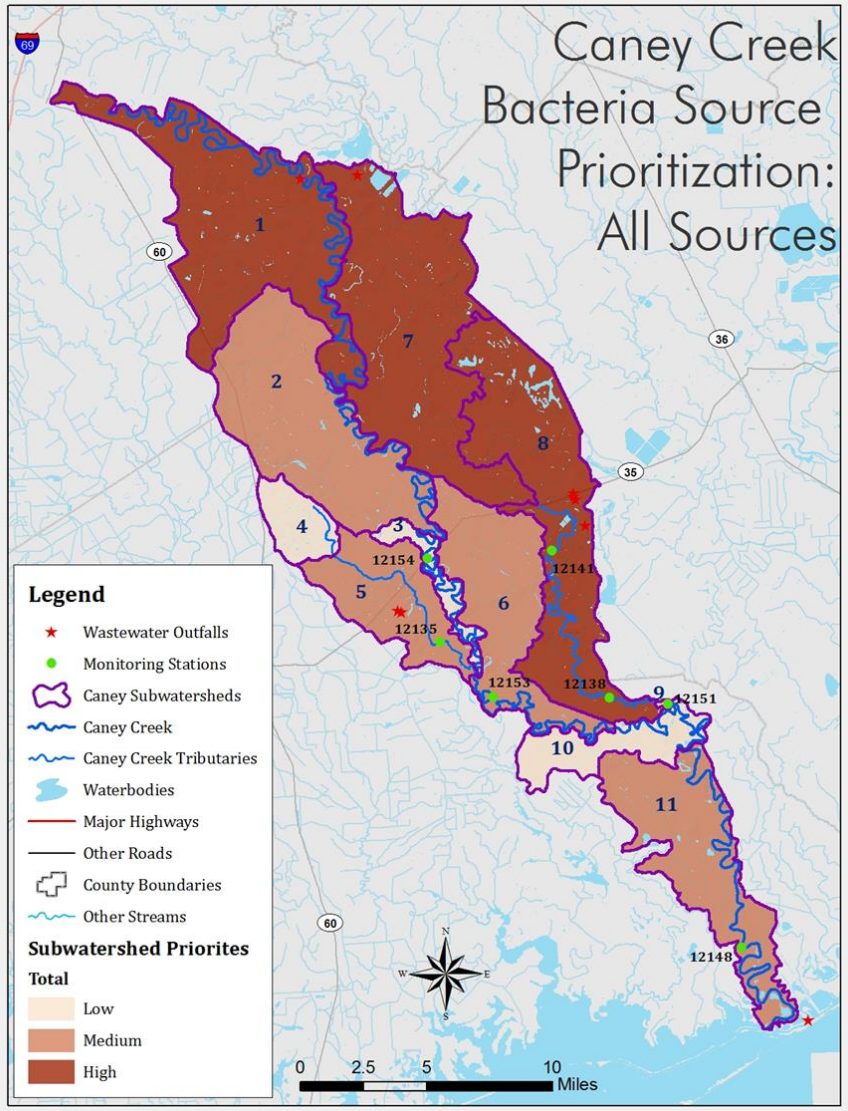
$$TMDL = WLA_{wwtf} + WLA_{sw} + LA + MOS$$

AU	Indicator Bacteria	TMDL (Billion cfu/day)	MOS (Billion cfu/day)	WLA_{wwtf} (Billion cfu/day)	WLA_{sw} (Billion cfu/day)	LA (Billion cfu/day)
1304_01	Enterococci	387.70	2.32	0.60	0.93	383.85
1304A_01	*E. coli*	268.66	13.43	0.24	9.08	245.91

Draft Caney Creek I-Plan

- Refers readers to the TMDL/TSD documents
- Prioritizes Sources
- Identifies Management Measures
- Identifies Implementing Partners
- Identifies Potential Funding Sources

Priorities and Subwatersheds



AU	SW_ID
1305B_01	1
1305_03	2
1305_02	3
1305A_02	4
1305A_01	5
1305_01	6
1304A_03	7
1304A_01	8
1304A_02	9
1304_02	10
1304_01	11

- Divided Segments 1304, 1304A and 1305 watersheds into 11 subwatersheds
- Calculate an estimate source load
- Weighted each Fecal Bacteria Source within subwatershed

Source Load Representative Unit

Bacteria Source	Representative Unit	Representative Unit Daily Load (cfu/day)
Onsite Sewage Facility (OSSF)	1 Failing OSSF	3.70E+09
Sanitary Sewer Overflows (SSOs)	1 SSO	4.93E+09
Cattle	1 Cow	2.70E+09
Sheep/Goats	1 Sheep/Goat	2.10E+08
Horses	1 Horse	9.00E+09
Deer	1 Deer	1.75E+08
Feral Hogs	1 Feral Hog	4.45E+09
Dogs	1 Dog	2.50E+09

Potential Fecal Load By Source
(cfu/day or cfu/acre)

SW_ID	OSSF	Cattle	Sheep/Goats	Horses	Deer	Feral Hogs	SSOs	Dogs	Total	Load per acre
1	1.41E+11	1.04E+13	1.42E+12	3.16E+10	2.21E+11	4.58E+11	Medium	1.83E+12	1.45E+13	4.20E+08
2	1.48E+10	6.00E+12	8.19E+11	1.82E+10	1.80E+11	4.14E+11		1.48E+12	8.92E+12	3.19E+08
3	1.11E+10	1.03E+12	1.41E+11	3.14E+09	2.34E+10	4.90E+10		1.31E+11	1.39E+12	4.20E+08
4	7.42E+09	1.01E+12	1.38E+11	3.07E+09	2.04E+10	7.12E+10		2.82E+11	1.53E+12	3.28E+08
5	2.04E+11	3.49E+12	4.76E+11	1.06E+10	8.33E+10	1.65E+11	High	5.65E+11	4.99E+12	3.99E+08
6	5.94E+10	6.70E+12	9.15E+11	2.03E+10	1.55E+11	2.54E+11		5.21E+11	8.62E+12	4.65E+08
7	5.94E+10	1.13E+13	1.55E+12	3.44E+10	2.59E+11	5.03E+11		1.66E+12	1.54E+13	4.40E+08
8	6.31E+10	7.74E+12	1.06E+12	2.35E+10	2.12E+11	4.36E+11		1.07E+12	1.06E+13	3.50E+08
9	0.00E+00	4.08E+10	5.58E+09	1.24E+08	8.13E+08	8.90E+09		2.33E+09	5.86E+10	6.06E+08
10	7.42E+09	2.51E+12	3.43E+11	7.63E+09	6.14E+10	1.16E+11		8.36E+10	3.13E+12	4.05E+08
11	2.19E+11	5.21E+12	7.12E+11	1.58E+10	1.34E+11	2.89E+11	Low	1.48E+11	6.73E+12	3.28E+08
Total	7.87E+11	5.55E+13	7.58E+12	1.69E+11	1.35E+12	2.76E+12		7.76E+12	7.59E+13	3.89E+08

Load Reduction by Source
(billion cfu/day)

SW	OSSF	Cattle	Sheep/Goats	Horses	Deer	Feral Hogs	Dogs	SSOs	Total
1	3.77	278.17	38.00	0.85	5.91	12.24	48.79	0.00	387.73
2	0.40	160.18	21.88	0.49	4.80	11.06	39.47	0.00	238.27
3	0.30	27.62	3.77	0.08	0.62	1.31	3.51	0.00	37.22
4	1.95	265.30	36.24	0.81	5.34	18.68	74.05	0.00	402.37
5	20.04	342.47	46.79	1.04	8.19	16.17	55.47	0.00	490.16
6	0.40	45.05	6.15	0.14	1.05	1.71	3.51	0.00	58.00
7	0.79	150.03	20.50	0.46	3.44	6.66	21.93	0.00	203.79
8	0.96	118.35	16.17	0.36	3.24	6.67	16.38	0.00	162.14
9	0.00	52.73	7.20	0.16	1.05	11.49	3.01	0.00	75.65
10	0.31	106.25	14.52	0.32	2.60	4.90	3.54	0.00	132.44
11	3.49	83.01	11.34	0.25	2.14	4.61	2.36	0.00	107.20
Total	32.40	1,629.17	222.56	4.95	38.38	95.49	272.01	0.00	2,294.97

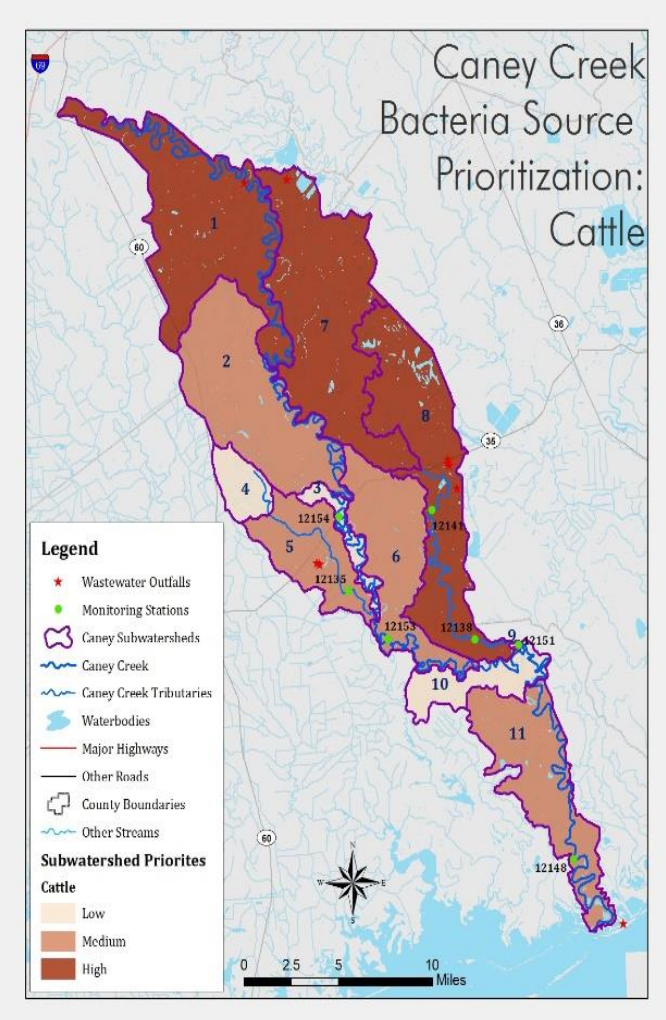
Management Measure Questionnaire

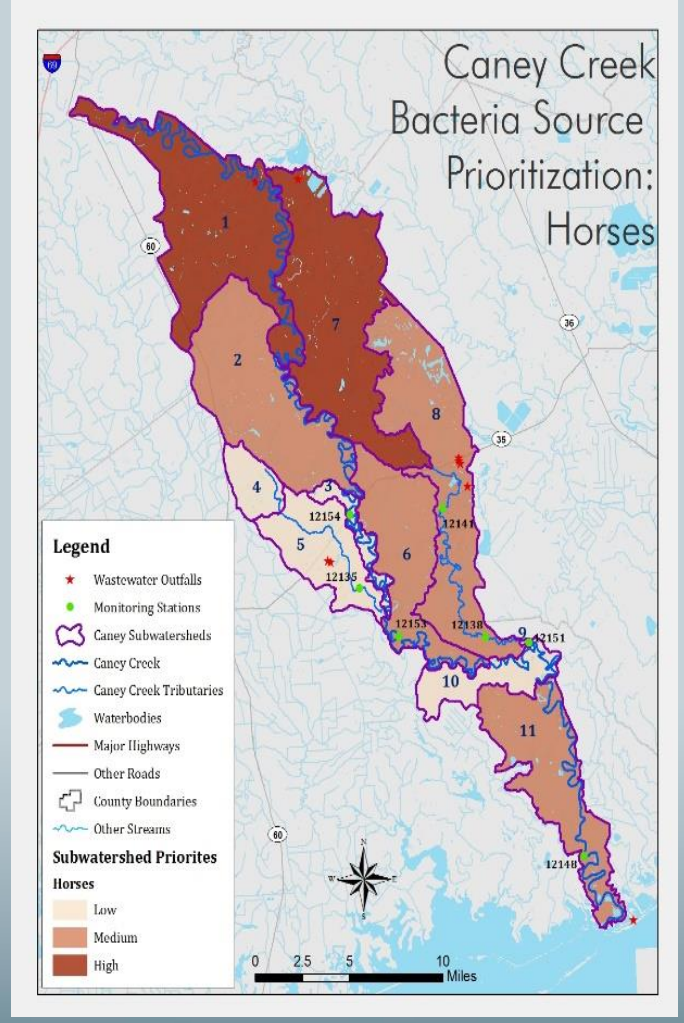
Fecal Source	Watershed Concern	Score	Priority
Domesticated Animals	Y	4.7	1
OSSF	Y	4.3	2
Feral Hogs	Y	4.3	2
Dumping	Y	3.1	3
Collection System	Y	3.0	3
Wastewater	Y	2.7	3
Concentrated Animal Feeding Operations	Y	2.4	4
Manure Application	N	1.6	4
Pet Waste	N	1.3	5

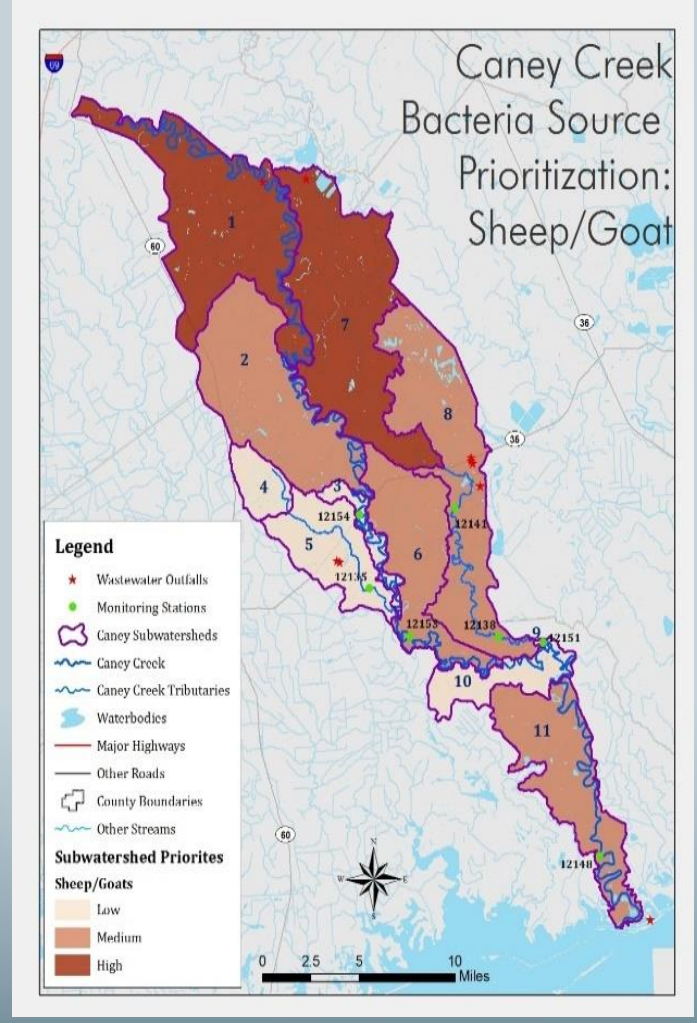
Management Measures (MM)

- *MM 1: Support Land Management Initiatives*
- *MM 2: Promote Safe OSSF Use and Maintenance*
- *MM 3: Address Fecal Deposition by Feral Hog Populations*
- *MM 4: Maintain and Improve Wastewater Treatment Facility and Collection System Function*
- *MM 5: Reduce Stormwater Sources*

MM 1: Support Land Management Initiatives







MM 1: Support Land Management Initiatives

Pasture Animal Load Reduction

SW	Cattle	Sheep/Goats	Horses	Total
1	278.17	38.00	0.85	317.01
2	160.18	21.88	0.49	182.55
3	27.62	3.77	0.08	31.48
4	265.30	36.24	0.81	302.35
5	342.47	46.79	1.04	390.30
6	45.05	6.15	0.14	51.34
7	150.03	20.50	0.46	170.98
8	118.35	16.17	0.36	134.88
9	52.73	7.20	0.16	60.09
10	106.25	14.52	0.32	121.09
11	83.01	11.34	0.25	94.61
Total	1,629.17	222.56	4.95	1,856.68

(*In billion cfu/day)

Estimated Unit(s) to Address

AU	Total Livestock Units to Address	Total Plans
1304_01	193	4
1304_02	100	2
1304A_01	274	5
1305_02	476	10
1305A_01	621	12
Total	1664	33

MM-1	**Support Land Management Initiatives** Objective: Increase the number of WQMPs, CMPs, and created, protected and/or enhanced riparian buffers while maintaining and/or increasing the yields of local agriculture producers and land owners.
Potential Load Reduction (in cfu/day *E. coli* and/or Enterococci	**1,856.68 billion cfu/day (cattle, horses, and sheep/goats)**
MM 1 seeks to develop and implement strategies to reduce fecal deposition of livestock and to support rural land management initiatives in priority areas of the Caney Creek watershed.	
Implementation Focus: High Priority Areas - 1, 7, and 8 (Figure 11)	

ACTIVITIES	SCHEDULE OF IMPLEMENTATION	IMPLEMENTATION COST
1.1 WQMPs 1.2 CMPs 1.3 Riparian Buffers 1.4 Technical/Outreach Workshops	1.1, 1.2, and 1.3 Years 3, 4 and 5: support development and/or implementation of three WQMPs, CMPs and/or riparian buffer projects.	$20,000 - $1 Million/yr.
	1.4 Years 1, 2 and 4: host a minimum of three workshops covering the benefits and uses of WQMPs, CMPs, and/or riparian buffers.	$0 - $10,000/workshop
	Year 5: provide one five-year MM 1 progress report.	$0 - $10,000

RESPONSIBLE IMPLEMENTERS AND FUNDERS

Future Watershed Partners (Agriculture Producers, Landowners, Drainage Districts, Local Governments) TCEQ H-GAC	NRCS Texas A&M AgriLife Extension TSSWCB

PERFORMANCE MEASURES

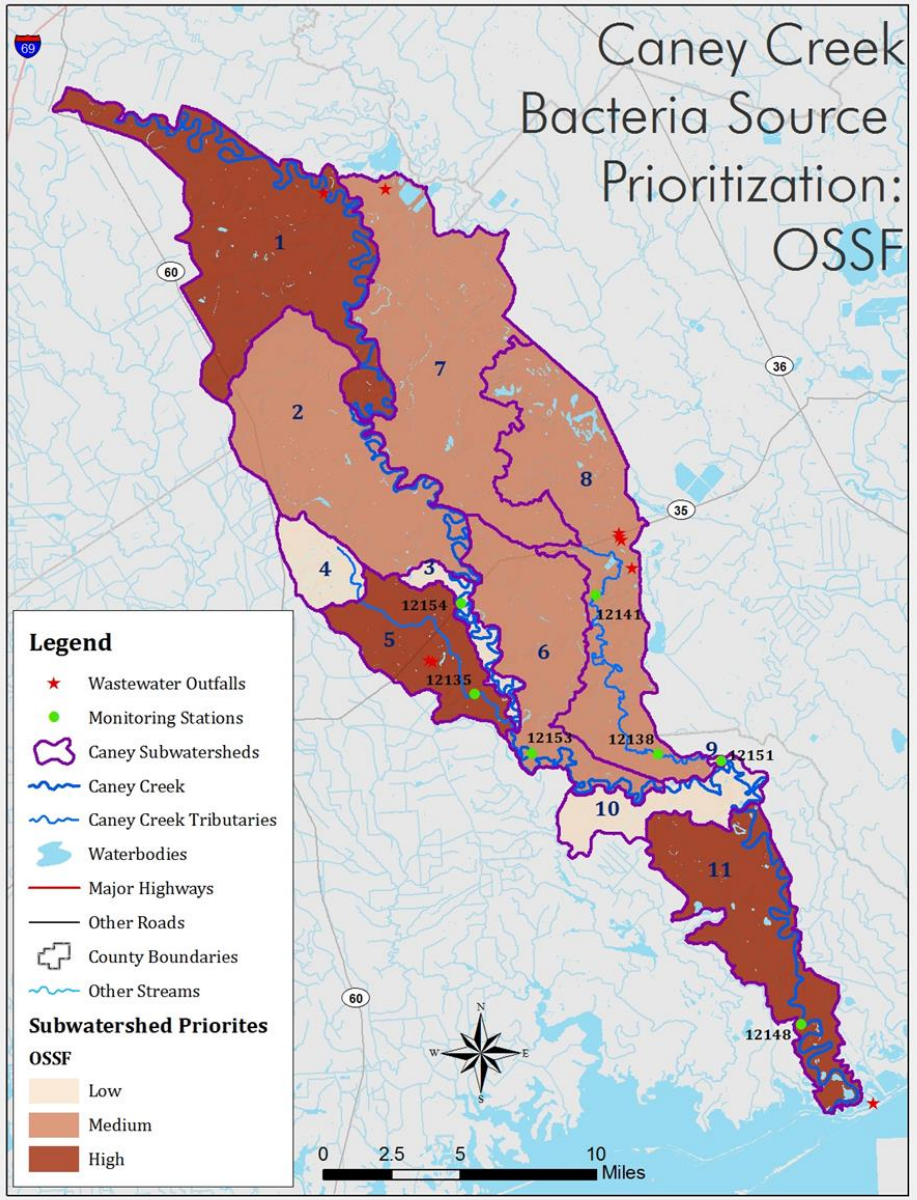
1. Number of WQMPs developed and / or implemented measuring number of projects and acres held.
2. Number of CMPs developed and / or implemented measuring number of projects and acres held.
3. Number of riparian buffers created, protected and / or enhanced measuring number of projects and acres held.
4. Number of technical and outreach workshops held measuring number held and attendees participating.

MONITORING

Programmatic: Watershed Coordinator

Environmental: CRP

MM 2: Promote Safe OSSF Use and Maintenance



OSSF Load Reduction

SW	OSSF
1	3.77
2	0.40
3	0.30
4	1.95
5	20.04
6	0.40
7	0.79
8	0.96
9	0.00
10	0.31
11	3.49
Total	32.40

(*In Billion cfu/day)

Estimated Unit(s) to Address

Bacteria Source	Representative Unit	Representative Unit Daily Load (cfu/day)	1304_01	1304_02	1304A_01	1305_02	1305A_01	Total
OSSF	1 Failing OSSF	3.70E+09	1	0	0	1	6	9

MM-2	Promote Safe OSSF Use and Maintenance Objective: Reduce the number of failing OSSFs.
Potential Load Reduction (in cfu/day *E. coli* and/or Enterococci	**32.4 billion cfu/day**
MM 2 seeks to develop and implement actions that reduce fecal waste from failing OSSFs in priority areas of the Caney Creek watershed.	
Implementation Focus: High Priority Areas - 1, 5, and 11 and Medium Priority Areas – 2, 6, 7 and 8 (Figure 12)	

ACTIVITIES	SCHEDULE OF IMPLEMENTATION	IMPLEMENTATION COST
2.1 Technical/Outreach Workshops 2.2 Inspect, Repair, Replace and/or abandoned (limited)	2.1 Years 1, 2 and 4: host a minimum of three workshops covering: 1) home owner maintenance and 2) home realtor and inspector.	$0 - $10,000/workshop
	2.2 Years 1-5: support at minimum, nine homeowners within the High or Medium priority area of the Caney Creek watershed to support through the SEP or similar program.	$5,000 - $100,000/yr.
	Year 5: provide one five-year MM 2 progress report.	$0 - 10,000

RESPONSIBLE IMPLEMENTERS AND FUNDERS

Future Watershed Partners (home owners, business, AAs, realtors, home inspectors) H-GAC Texas A&M AgriLife Extension TCEQ	TWDB TSSWCB TGLO USDA

PERFORMANCE MEASURES

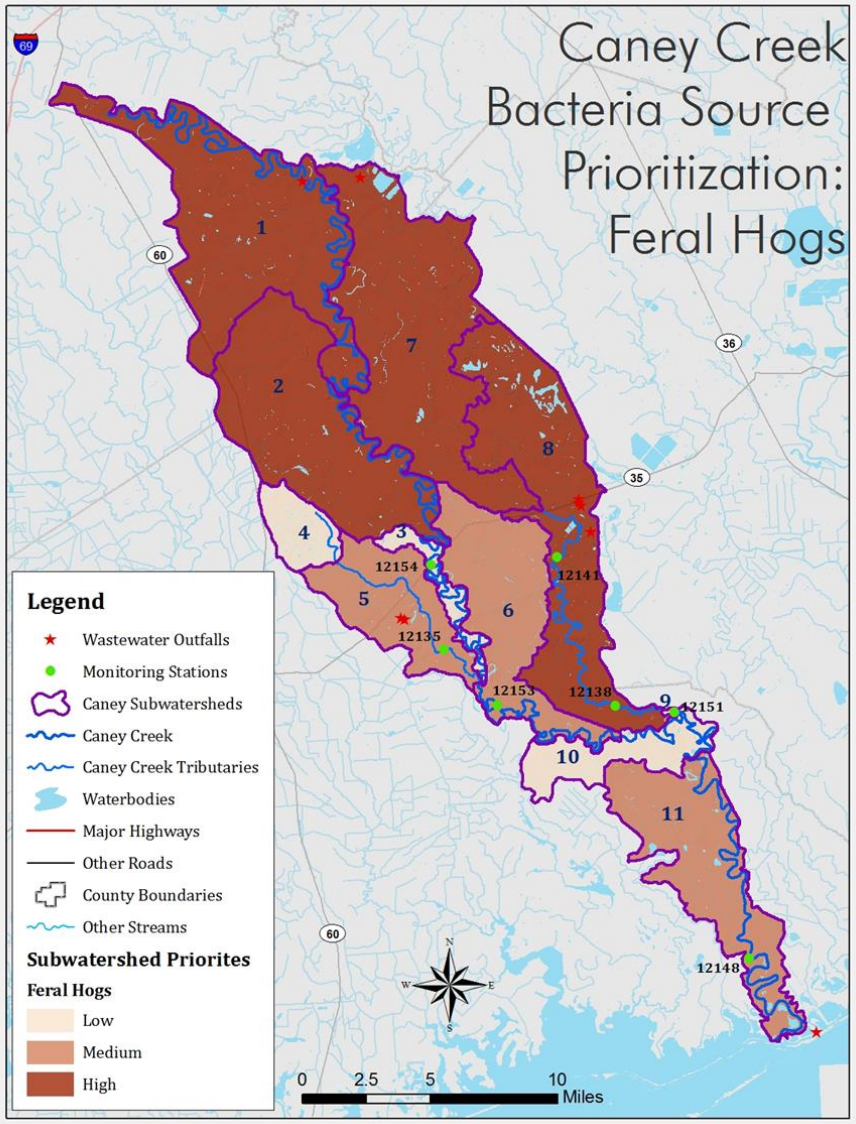
1. Number of OSSFs inspected, repaired, replaced and/or abandoned (Goal: Nine).
2. Number of technical assistance workshops held (Goal: Three).

MONITORING

Programmatic: Watershed Coordinator

Environmental: CRP

MM 3: Address Fecal Deposition by Feral Hog Populations



Feral Hog Load Reduction

SW	Feral Hogs
1	12.24
2	11.06
3	1.31
4	18.68
5	16.17
6	1.71
7	6.66
8	6.67
9	11.49
10	4.90
11	4.61
Total	95.49

(*In Billion cfu/day)

Estimated Unit(s) to Address

Bacteria Source	Representative Unit	Representative Unit Daily Load (cfu/day)	1304_01	1304_02	1304A_01	1305_02	1305A_01	Total
Feral Hogs	1 Feral Hog	4.45E+09	2.14	2.97	3.00	5.53	7.83	21.46

MM-3	**Address Fecal Deposition by Feral Hog Populations** Objective: Reduce direct and indirect fecal deposition by managing feral hog populations.
Potential Load Reduction (in cfu/day *E. coli* and/or Enterococci	**95.49 billion cfu/day**
MM 3 seeks to develop and implement strategies to reduce fecal deposition of feral animal populations, specifically feral hogs, in priority areas of the Caney Creek watershed.	
Implementation Focus: Feral Hogs High Priority Areas - 1, 2, 7, and 8 and Medium Priority Areas – 5, 6, and 11 (Figure 14)	

ACTIVITIES	SCHEDULE OF IMPLEMENTATION	IMPLEMENTATION COST
3.1 Voluntary feral hog reduction measures 3.2 Provide feral hog outreach.	3.1 Year 2 Identify volunteer landowners and begin implementation. Year 3-5 continue to track voluntary feral hog reduction measures.	$0 15,000
	3.2.Year 1 coordinate feral hog outreach schedule. Year 2 host one feral hog/wildlife management workshop. Begin tracking outreach numbers (materials created, disseminated and individuals reached). Year 3-5 continue to track outreach numbers.	$0-30,000/campaign $0 - 10,000/workshop
	Year 5: provide one five-year MM 3 progress report.	$0 - 10,000

RESPONSIBLE IMPLEMENTERS AND FUNDERS

Future Watershed Partners (land owners, local governments, and homeowners)	Texas A&M AgriLife Extension
Watershed Coordinator	TDA
H-GAC	TSSWCB

PERFORMANCE MEASURES

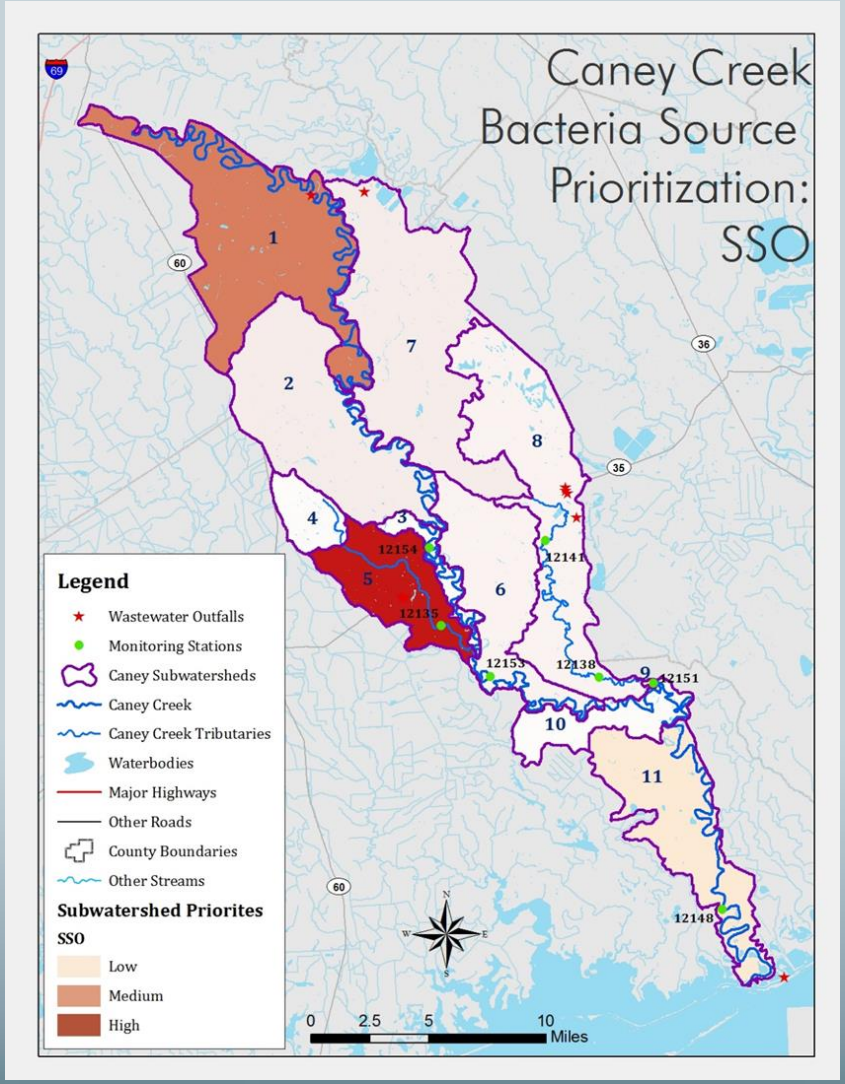
1. Develop, disseminate, and track outreach effort
2. Host one feral hog/wildlife management workshop.
3. Track the number of voluntary feral hog reduction measures used and number of feral hogs removed.

MONITORING

Programmatic: Watershed Coordinator

Environmental: CRP

MM 4: Maintain and Improve Wastewater Treatment Facility and Collection System Function



Estimated Unit(s) to Address

Bacteria Source	Representative Unit	Representative Unit Daily Load (cfu/day)	1304_01 (SW11)	1305A_01 (SW5)	1305B_01 (SW1)
SSOs	1 SSO	4.93E+09	1	1	1

MM-4	**Improve WWTF and Sanitary Collection System Function** Objective: Reduce the number and volume of untreated and partially treated human waste incidents from WWTFs and collection systems.
Potential Load Reduction (in cfu/day *E. coli* and/or Enterococci	**4.93 billion cfu/day. This is the unit loading value for one SSO**
MM 4 seeks to develop and implement strategies that reduce fecal waste from WWTFs and sanitary collection systems in priority areas of the Caney Creek watershed.	
Implementation Focus: High Priority Areas – 5; Medium Priority Areas – 1 and Low Priority Area – 11 (Figure 15)	

ACTIVITIES	SCHEDULE OF IMPLEMENTATION	IMPLEMENTATION COST
4.1 Identify WWTFs with chronic problems; reach out with technical assistance. Consider if reuse and / or regionalization are options. 4.2 Identify areas of collection system were I/I and aging infrastructure are a problem. Repair and Replace. Consider SSOI program. 4.3 Provide FOG information to utility customers.	4.1 Year 1 Identify chronic problems within priority areas. Year 2-4 provide two technical assistance workshops covering operations, maintenance and reuse.	$0 - $30,000/workshop
	4.2 Year 1 identify aging infrastructure. Year 2-4 Repair and replace. Year 2-4 provide two technical assistance workshops covering technology and SSOI program.	$0 - $30,000/workshop
	4.3 Year 1-5 target High and Medium priority areas with SSO issues, with FOG education campaign. Year 2 provide a minimum on one regional home and business owner workshop covering general watershed education.	$0-30,000/campaign $0 - 10,000/workshop
	Year 5: provide one five-year MM 4 progress report.	$0 - 10,000

RESPONSIBLE IMPLEMENTERS AND FUNDERS

Future Watershed Partners (utility operators, local governments, homeowners) H-GAC TEEX	Texas A&M AgriLife Extension TCEQ TWDB USDA

PERFORMANCE MEASURES

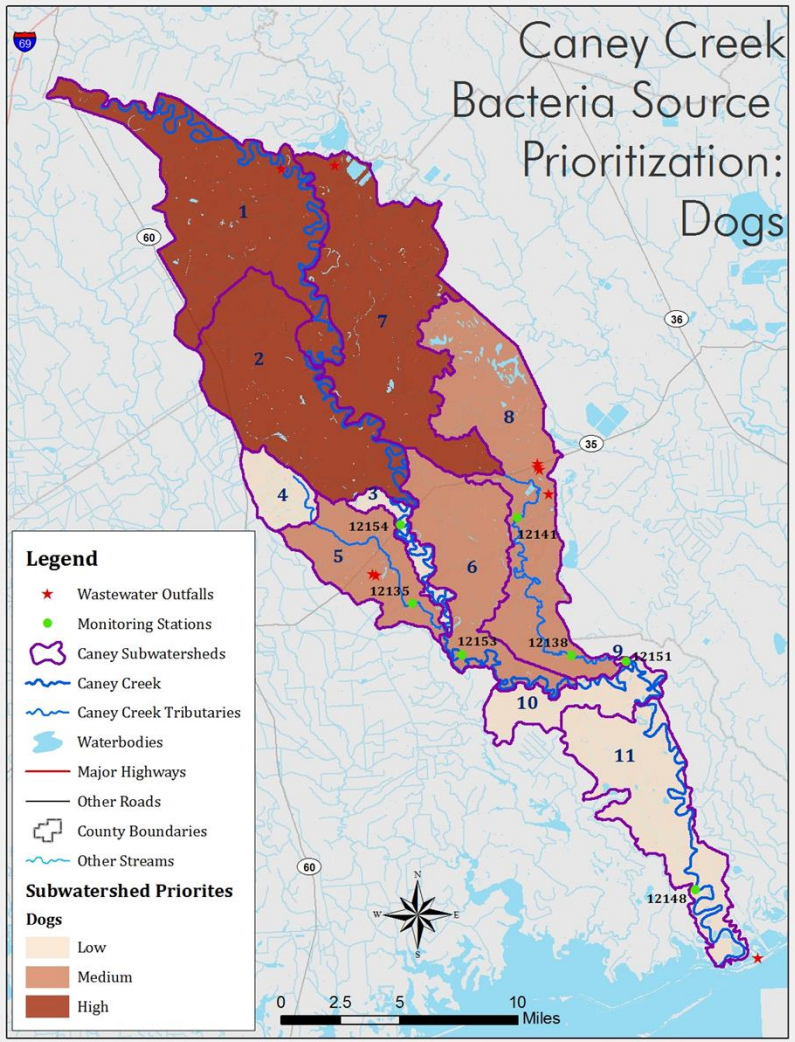
1. Develop permittee stakeholder list, emphasis on those with chronic problems.
2. Number of technical assistance workshops held (Goal: Two).
3. FOG outreach campaign and one general homeowner workshop (Goal: One)
4. Appreciable reduction in reported SSOs

MONITORING

Programmatic: Watershed Coordinator

Environmental: CRP

MM 5: Reduce Stormwater Sources



Pet Waste Load Reduction

SW	Dogs
1	48.79
2	39.47
3	3.51
4	74.05
5	55.47
6	3.51
7	21.93
8	16.38
9	3.01
10	3.54
11	2.36
Total	272.01

(*In billion cfu/day)

Bacteria Source	Representative Unit	Representative Unit Daily Load (cfu/day)	1304_01	1304_02	1304A_01	1305_02	1305A_01	Total
Dogs	1 Dog	2.5E+09	2.36	2.61	15.32	36.71	51.81	108.81

MM-5	Reduce Stormwater Sources Objective: Reduce the fecal bacteria contribution from pets by managing pet wastes and stormwater loads.
Potential Load Reduction (in cfu/day *E. coli* and/or Enterococci	**272.01 billion cfu/day**
MM 5 seeks to develop and implement strategies to reduce deposition of pet waste and stormwater loads in priority areas of the Caney Creek watershed.	
Implementation Focus: Pet waste in High Priority Areas - 1, 2 and 7 and Medium Priority Areas – 5, 6 and 8 (Figure 18)	

ACTIVITIES	SCHEDULE OF IMPLEMENTATION	IMPLEMENTATION COST
5.1 Pet Waste Station Installation 5.2 Deliver Pet Waste Management Education and Outreach. 5.3 Assist communities and County to identify opportunities to address stormwater and illegal dumping.	5.1 Year 1 identify willing partners to install pet waste stations in local parks. Seek funding to cover costs. Years 2-5 install pet waste stations at locations with high visibility and pet traffic.	$0 10,000/yr.
	5.2 Years 1-5 Deliver pet waste management education and outreach to community residents and business. Work with local governments to consider pet waste ordinances, including requiring installations of pet waste stations at apartment complexes.	$0 - $10,000/yr.
	5.3 Year 1 Identify locations to conduct channel investigations. Year 2 coordinate stormwater outreach with communities. Year 3-5 Conduct investigations and remove any illicit discharges or dumping found. Identify opportunities to address stormwater and potential riparian enhancement or conservation.	$100,000-200,000/yr.
	Year 5: provide one five-year MM 5 progress report.	$0 - 10,000

RESPONSIBLE IMPLEMENTERS AND FUNDERS	
Future Watershed Partners (local governments, homeowners, apartment management) Watershed Coordinator H-GAC	TCEQ TWDB Natural Resource Conservation Service

PERFORMANCE MEASURES
1. Develop, disseminate and track outreach effort 2. Track number of pet waste stations installed 3. Track Illegal Dumping and Discharges

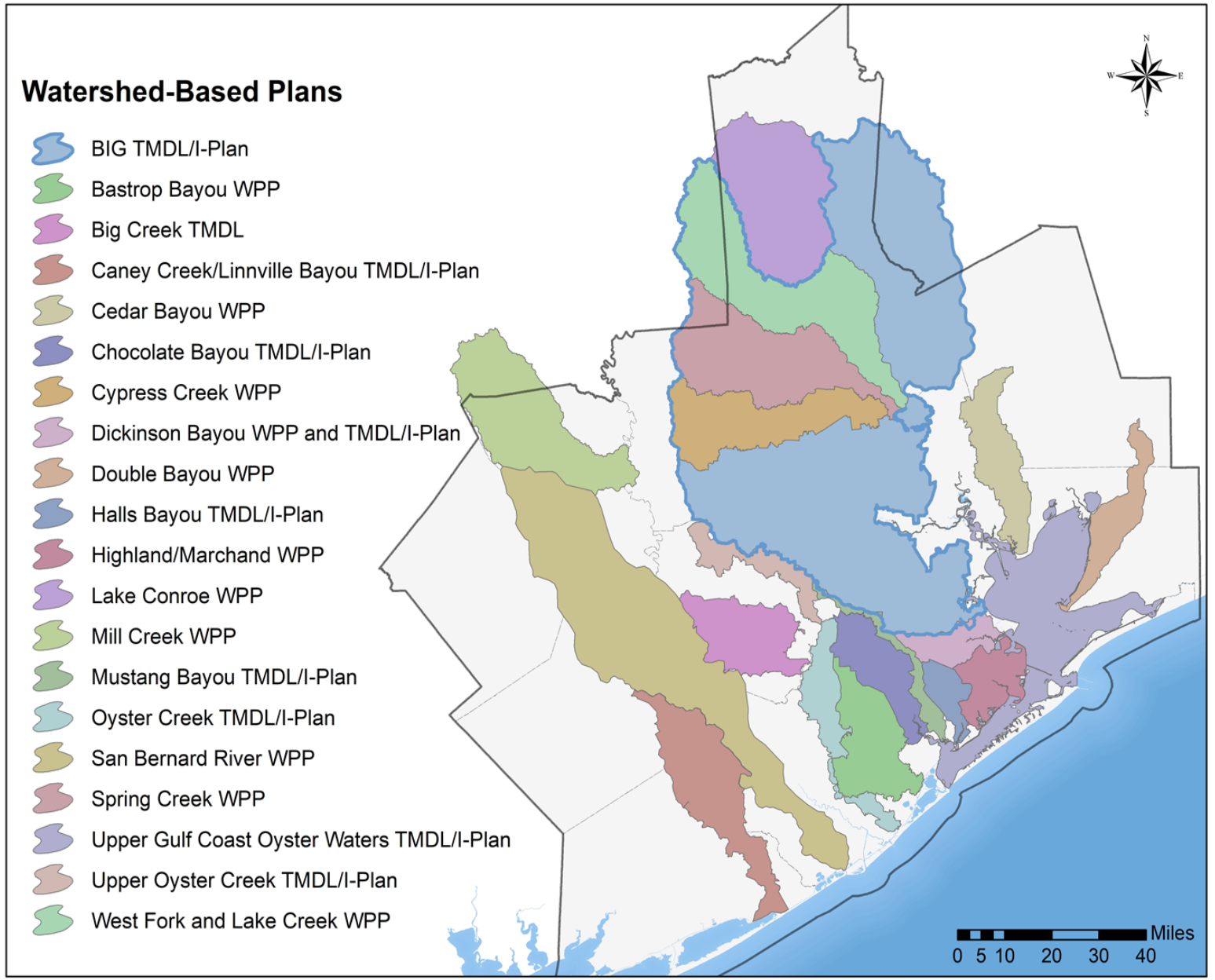
MONITORING
Programmatic: Watershed Coordinator **Environmental:** CRP

What are your thoughts?

- Five Management Measures:
  - *MM 1: Support Land Management Initiatives*
  - *MM 2: Promote Safe OSSF Use and Maintenance*
  - *MM 3: Address Fecal Deposition by Feral Hog Populations*
  - *MM 4: Maintain and Improve Wastewater Treatment Facility and Collection System Function*
  - *MM 5: Reduce Stormwater Sources*
- *Individual Tasks/Activities for Each Measure*
- *Responsible Organizations*
- *Cost*

Watershed Protection Plan

- Do we need one?



Aquatic Life Parameters in the Caney Creek Watershed

Name	Assessment Unit	Parameter	Data Date Range	Criteria	No. Samples	Exceedance Value	Category
Caney Creek Tidal	1304_01	Dissolved Oxygen Grab	12/1/2007 - 11/30/2014	4	54	2.83	CS
Caney Creek Tidal	1304_02	Dissolved Oxygen Grab	12/1/2007 - 11/30/2014	4	4	3.55	CS
		Total Phosphorus	12/1/2007 - 11/30/2014	0.66	4	1.14	CS
Linnville Bayou	1304A_01	Dissolved Oxygen Grab	12/1/2007 - 11/30/2014	4	19	1.8	CS
		Chlorophyll-a	12/1/2007 - 11/30/2014	14.1	14	32.8	CS
Caney Creek Above Tidal	1305_02	Habitat	12/1/2007 - 11/30/2014	20	1	15	CS
Caney Creek Above Tidal	1305_03	Dissolved Oxygen 24hr. Average	12/1/2007 - 11/30/2014	5			NS
		Dissolved Oxygen 24hr. Minimum	12/1/2007 - 11/30/2014	3			CN
		Total Phosphorus	12/1/2007 - 11/30/2014	0.69			CS
Caney Creek Above Tidal	1305B_01	Total Phosphorus	12/1/2007 - 11/30/2014	0.69	6	0.85	CS

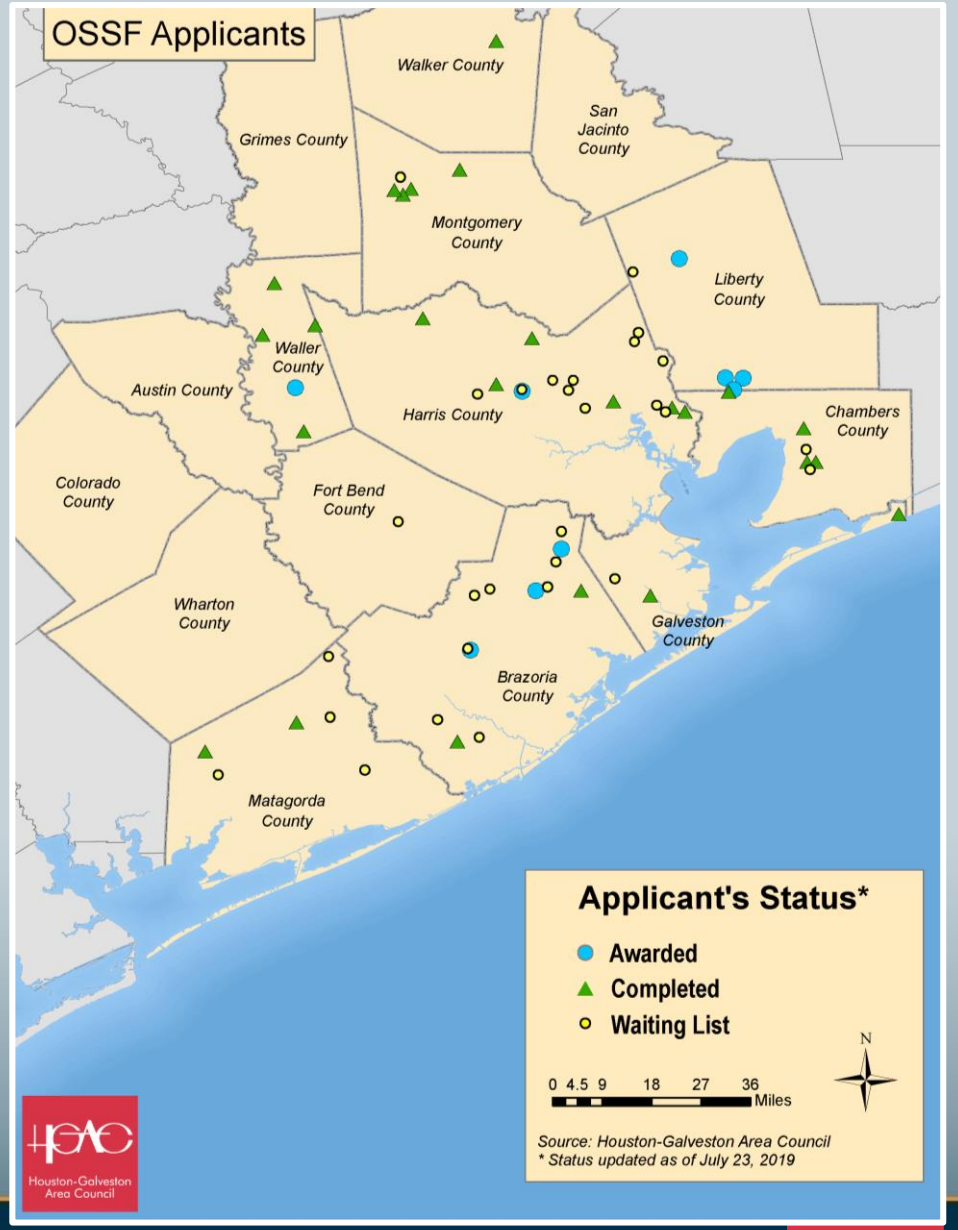
2018 - 2019 Implementation

- Outreach
  - September – Texas Stream Team Training
  - October – OSSF workshop Brazosport College

- Structural
  - Pet Waste Stations (19)

OSSF Supplemental Environmental Project

County	OSSF Replacement	OSSF Repair	Waiting List
Brazoria	3	3	8
Chambers	4	-	2
Fort Bend	-	-	1
Galveston	1	1	1
Harris	7	2	11
Liberty	-	4	1
Matagorda	2	-	4
Montgomery	2	2	1
Walker	-	1	-
Waller	4	-	-
TOTAL	23	13	29

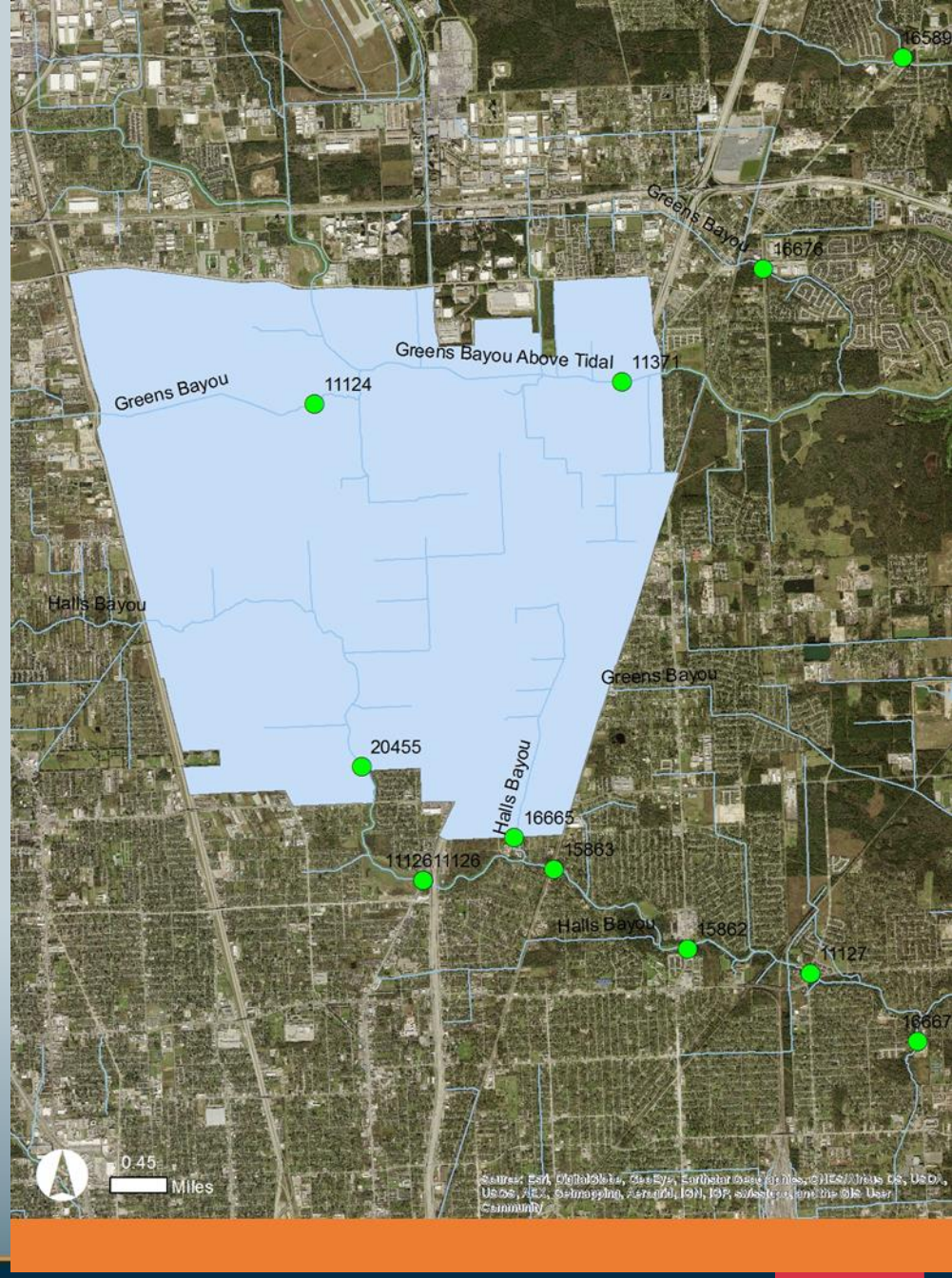


Van Vleck OSSF Repair

Success Story

ALDINE WESTFIELD: CASE STUDY

- Coordinated Partner Effort
  - Harris County
  - East Aldine Management District
- Monitoring Sites
  - Halls Bayou
  - Greens Bayou



THANK YOU!

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