

The meeting will begin shortly



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Please insert questions in chat or raise hand to speak.



This meeting is being recorded.

Cotton Bayou Watershed Implementation Plan Development

Annual Public Meeting
August 4, 2026

Meeting Outline



- Welcome & Introductions
- *Project Overview*
- *I-Plan Updates*
- *Next Steps*
- *Discussion*

Introductions



Texas Commission on Environmental Quality (TCEQ)

lead state environmental management agency



Houston-Galveston Area Council (H-GAC)

regional council of governments

Meeting Outline



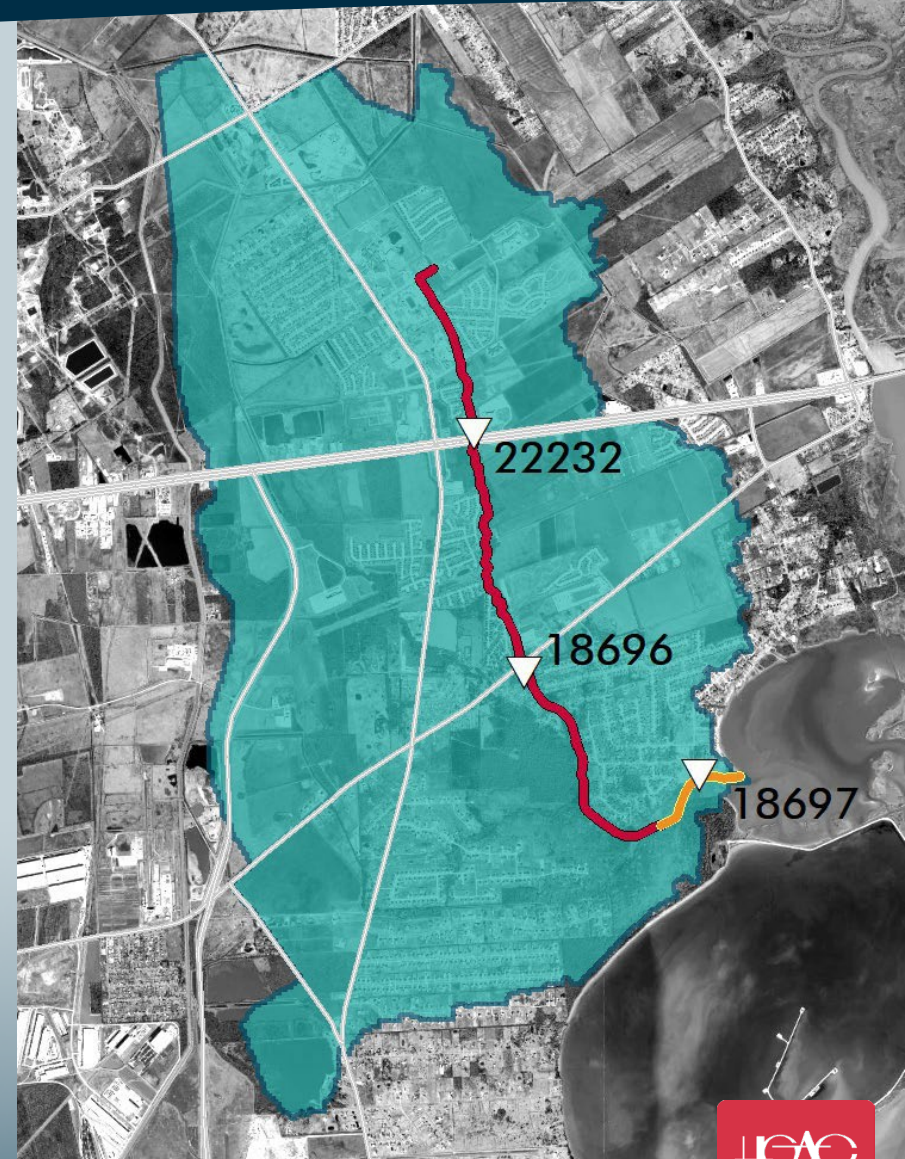
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Project Timeline



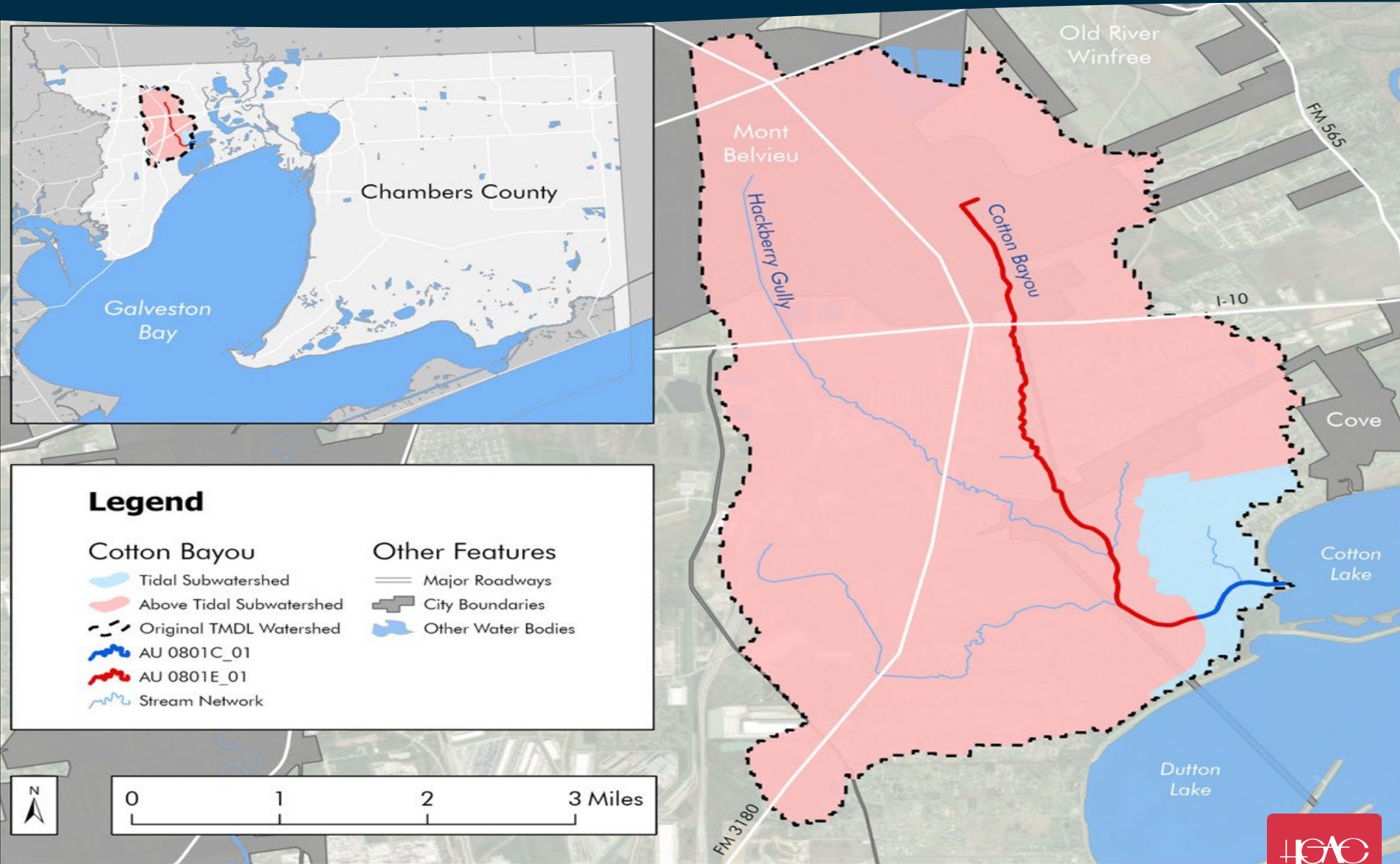
Historic Review of Water Quality

- Contact recreation use **impaired** due to high levels of fecal indicator bacteria (Enterococci) in surface water
- Other water quality **concerns** included low dissolved oxygen and high concentrations of nutrients
- Three monitoring sites, 22232 most recent



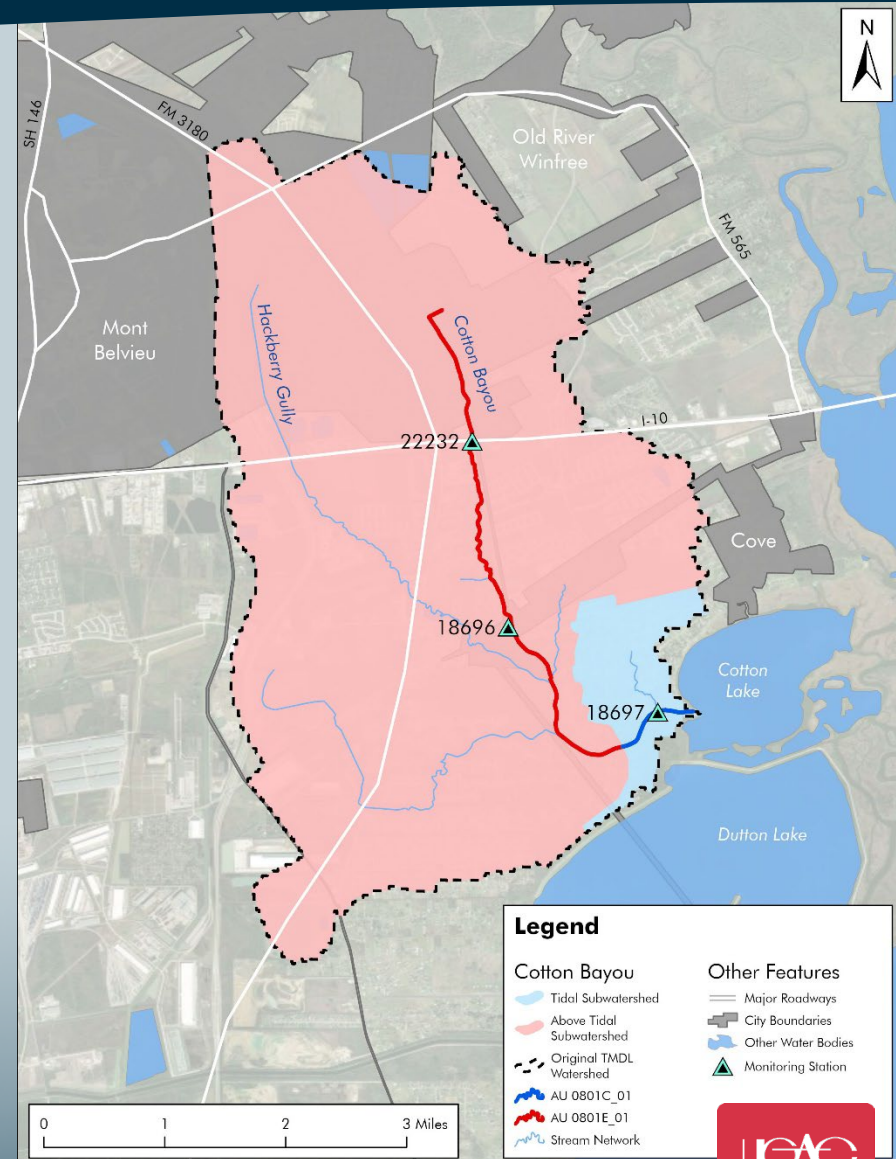
- Prepared original TMDL to address Enterococci impairment in the watershed
- *The Commission adopted this TMDL on May 22, 2024. EPA approved it on July 26, 2024, at which time it became an update to the state's Water Quality Management Plan*
- TCEQ asked HGAC to prepare an addendum for above tidal assessment unit due to its impairment documented from the 2024 IR.

Updated Project Map



Water Quality Based on TMDL Addendum

- Contact recreation use **impaired** due to high levels of fecal indicator bacteria (*E. coli*) in surface water
- Three monitoring sites originally established. Site 22232 replaced 18696 for active monitoring in Above Tidal subwatershed



Draft 2026 Texas IR Summary

Watershed	AU	Parameter	Criteria	SWQM Station	No. of Samples	Data Date Range	Geometric Mean (cfu/100 mL)
Cotton Bayou Above Tidal	0801E_01	<i>E. coli</i>	126 cfu/100mL	18696, 22232	44	12/01/17 to 11/30/24	163.81
Cotton Bayou Tidal	0801C_01	Enterococcus	35 cfu/100mL	18697	20	09/24/15 to 11/30/24	118.13

Bacteria Sources

■ Human Waste

- Wastewater
- Septic/Aerobic Systems
- Illicit Sewage

■ Domestic Animal Waste

- Pets
- Livestock

■ Wildlife/Feral Hog Waste

- Deer and Other Wildlife
- Feral Hogs



Addendum TMDL Calculations

- The TMDL is a calculation of the criterion load at the 95th percentile of flows
- The TMDL includes allocations for regulated and unregulated sources of pollution, future growth, and a 5% margin of safety by calculating the following components:

$$\text{TMDL} = \text{MOS} + \text{WLA}_{\text{wwtf}} + \text{WLA}_{\text{sw}} + \text{LA}$$

**Margin of Safety
(MOS)**

5% of the allowable
load at 95th percentile
of flows

**Wasteload Allocation
for WWTFs (WLA_{wwtf})**

regulated wastewater
treatment facility load;
includes allocation for
future growth

**Wasteload
Allocation for
Stormwater
(WLA_{sw})**

regulated
stormwater load

Load Allocation:

unregulated
source load

Cotton Bayou Above Tidal TMDL

Assessment Unit	TMDL	MOS	WLA _{wwtf} (includes future growth)	WLA _{sw}	LA
0801E_01	173.54	8.68	66.76	52.71	45.39

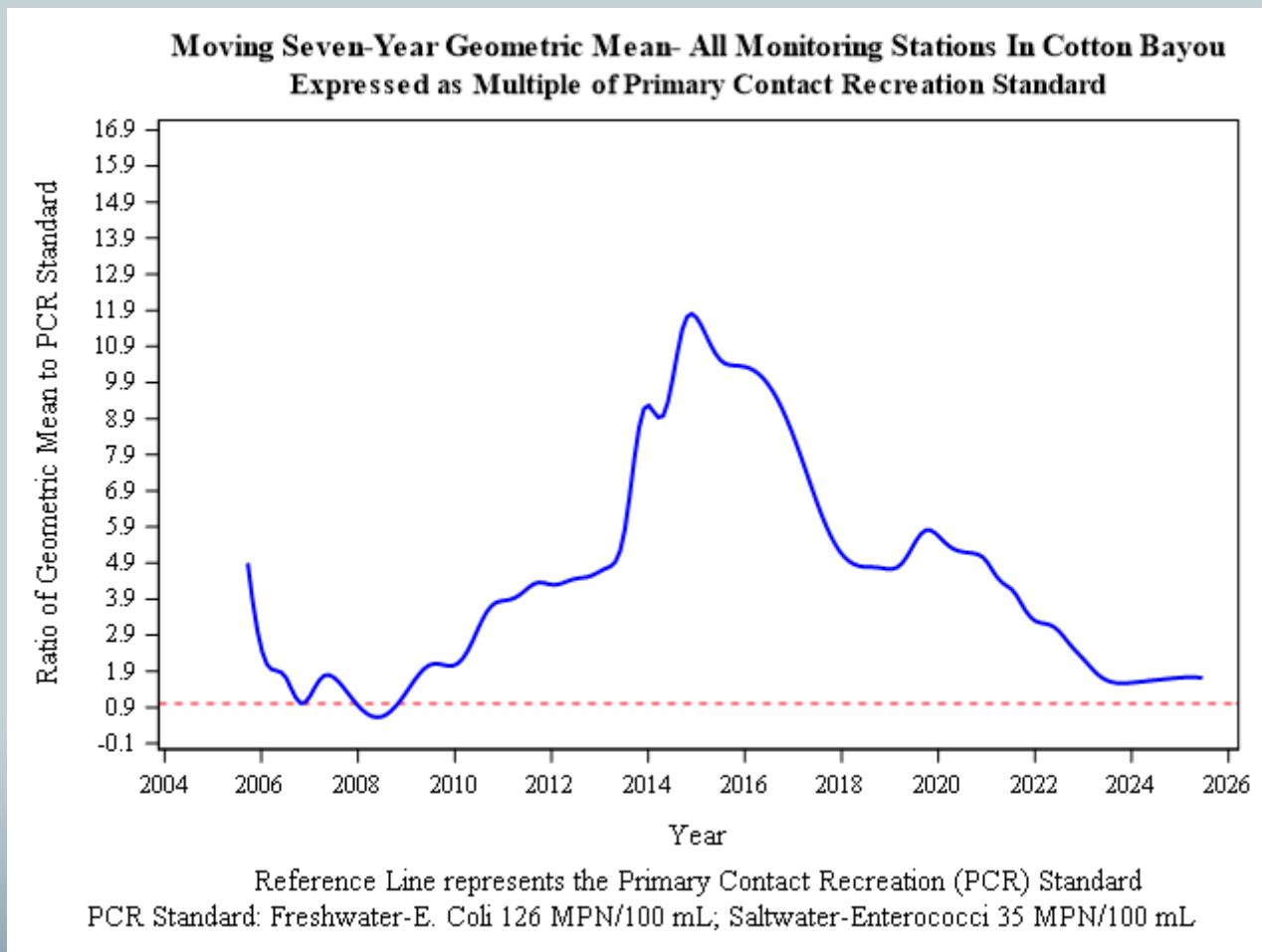
* Units for all values = billion cfu/day of *E. coli* *

Cotton Bayou Tidal TMDL

Assessment Unit	Total Allowable Load	Margin of Safety	Wastewater Allocation	Stormwater Allocation	Other Sources
	TMDL	MOS	WLA_{wwtf} (includes future growth)	WLA_{sw}	LA
0801E_01	89.17	4.46	15.25	24.39	45.10

* Units for all values = billion cfu/day of *E. coli* *

Cotton Bayou Geomean Bacteria Trend Analysis

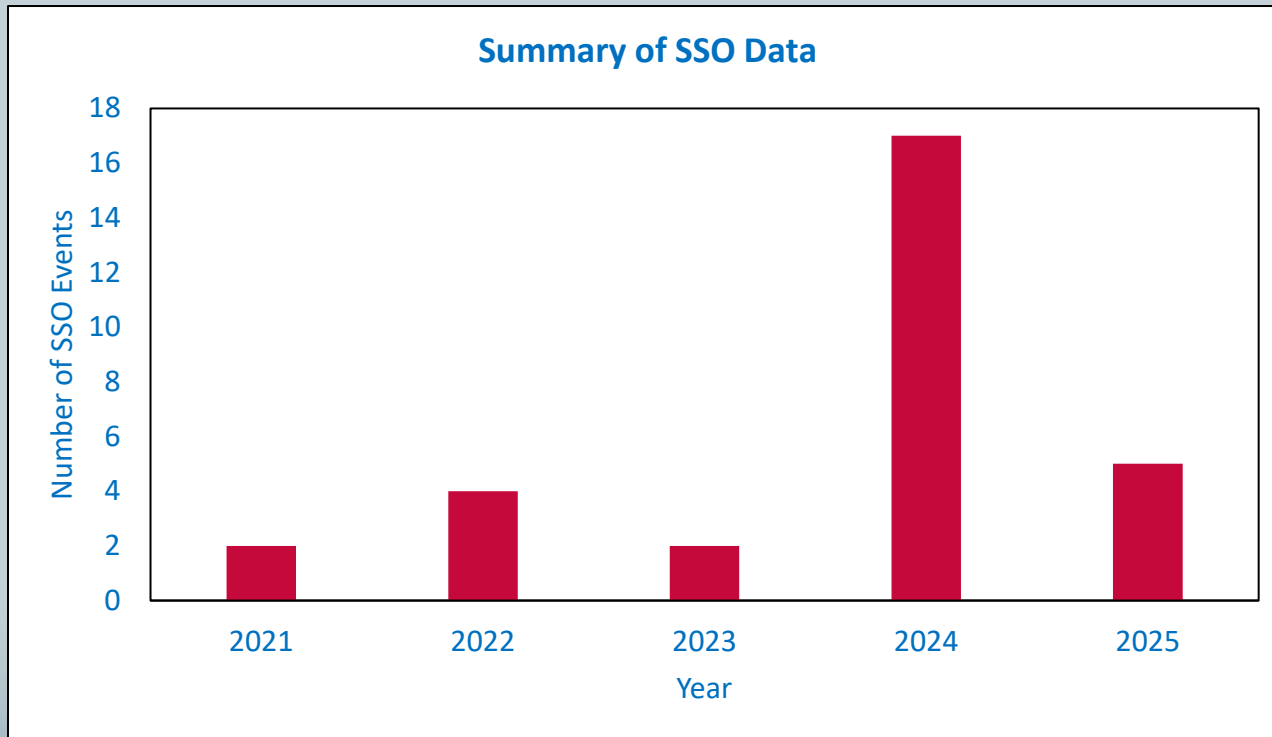


Sanitary Sewer Overflows

- SSOs reported to TCEQ
- Reports from October 2021 – August 2025
 - Assessed for totals (volume, number, causes), volume by cause, number by cause
- Data may not reflect full extent of SSOs



Summary of SSO Data



SSOs By Number and Volume

Year	Number of SSOs Reported	Estimated Volume (Thousand Gallons)
2021	2	6
2022	4	30
2023	2	3
2024	17	235
2025	5	250

SSOs By Causes, Number, and Volume

Year	Cause	Number of SSOs Reported	Estimated Volume (Thousand Gallons)
2021	Blockage in Collection System-Other Cause	1	0.7
2021	Lift Station Failure	1	5
2022	Lift Station Failure	1	0.2
2022	Rain / Inflow / Infiltration	1	5
2022	Unknown Cause	2	24.3
2023	Line Blockage - Fats/Grease	1	0.1
2023	WWTP Operation or Equipment Malfunction	1	3
2024	Collection System Structural Failure	1	0.7
2024	Lift Station Failure	8	19.602
2024	Rain / Inflow / Infiltration	6	214.2
2024	Severe Weather/Natural Disaster	1	0.001
2024	WWTP Operation or Equipment Malfunction	1	0.5
2025	Blockage in Collection System-Other Cause	1	12
2025	Collection System Structural Failure	1	216
2025	Lift Station Failure	2	12
2025	Unknown Cause	1	10

Wastewater Facilities

- Data source – Discharge Monitoring Reports, TCEQ
- Assessed 2020-2025
- Out of 40 results reported, 6 exceedances



Wastewater Facilities 2025

WWTF Data Source	WWTF Number
Permittees in TCEQ Outfall Layer	8
Permittees in EPA Registry	7
Permittees Submitting DMR Data (any type)	4
Permittees Submitting DMR Bacteria Data	4

Wastewater Facilities 2025 DMRs

Variable	Geometric Mean	Daily Maximum or Grab Sample
Total Results Reported	28	40
Total Exceeding Limit	.	6
Percent Exceedance	.	15

Wastewater Facilities 2020-2025 DMR Bacteria Analysis

Year	Total Grab/Max Results Reported from Permittees with Limits In Permits	Samples Exceeding Grab/ Max Limit	Percent Samples Exceeding Grab/Max Limit	Grab/Max Percent Compliance
2020	28	1	3.6	96.4
2021	28	1	3.6	96.4
2022	28	.	.	.
2023	26	5	19.2	80.8
2024	28	6	21.4	78.6
2025	40	6	15.0	85.0

Onsite Sewage Facilities

- Business, Residential Use, etc.
Efficient and effective however...
- Aging or improperly maintained
units run risk of failing



2025 OSSF Estimated Numbers

Segment	Permitted OSSFs	Non-Registered OSSFs	Total
Cotton Bayou Above Tidal	578	1,713	2,291
Cotton Bayou Tidal	98	387	485

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- Implementation Plan approved by TCEQ Commission on July 9th, 2025
- TSD for Cotton Bayou Above Tidal public comment period ended on June 9, 2026

Strategies

- Voluntary actionable items to address bacteria reduction for a specific management measure
- Identify priority areas to implement actions supporting the management measure
- List parties responsible for each action and their obligations

What to work on

Where to work

Who does the work
and how they do it

Milestones and Schedule



- Measurable goals to reflect progress of strategies
- Implementation schedule details which milestones should be accomplished in the next five years and at what point

Adaptive Management



- Stakeholders periodically assess plan measures for efficiency and effectiveness
- Metrics:
 - Milestones
 - Schedule
 - Water quality data

Management Measures



Strategy Ranking

Reduce stormwater sources such as pet wastes and illegal dumping

Promote safe OSSF use and maintenance

Support land management initiatives

Promote feral hog management

Maintain and improve WWTF and collection system function

Stormwater and Runoff

WHAT

Goal: Reduce stormwater sources of fecal wastes, including pet waste and illegal dumping

Potential Strategies:

- Educate/engage on appropriate pet waste disposal
- Install and maintain waste bag dispensers and collection stations
- Support control of feral animal population
- Identify and reduce illegal dump sites
- Develop stormwater/riparian demonstration project

WHERE

Priority Areas:

- Developed areas
- Watershed-wide (education)

WHO

Responsible Parties:

- Watershed coordinator
- Local governments
- H-GAC
- Texas A&M AgriLife Extension
- Texas Parks and Wildlife Department



On-Site Sewage Facilities

WHAT

Goal: Reduce fecal waste from failing on-site sewage facilities (OSSFs)

Potential Strategies:

- Educate/engage on appropriate OSSF maintenance
- Support home inspector and homeowner workshops
- Identify resources to repair or replace failing OSSFs
- Where possible, connect to centralized wastewater systems

WHERE

Priority Areas:

- Watershed areas south of I-10

WHO

Responsible Parties:

- Watershed Coordinator
- Authorized Agents
- H-GAC
- Real estate agents
- Texas A&M AgriLife Extension
- Texas General Land Office
- USDA Rural Utilities Service



Land Management

WHAT

Goal: Reduce bacteria loading from livestock and support nutrient reduction initiatives

Potential Strategies:

- Implement best management practices to reduce livestock exposure to waterway
- Support voluntary adoption of water quality management plans (WQMPs) and conservation management plans (CMPs)
- Manage/protect riparian corridors
- Support agricultural and riparian workshops
- Develop stormwater/riparian demonstration project

WHERE

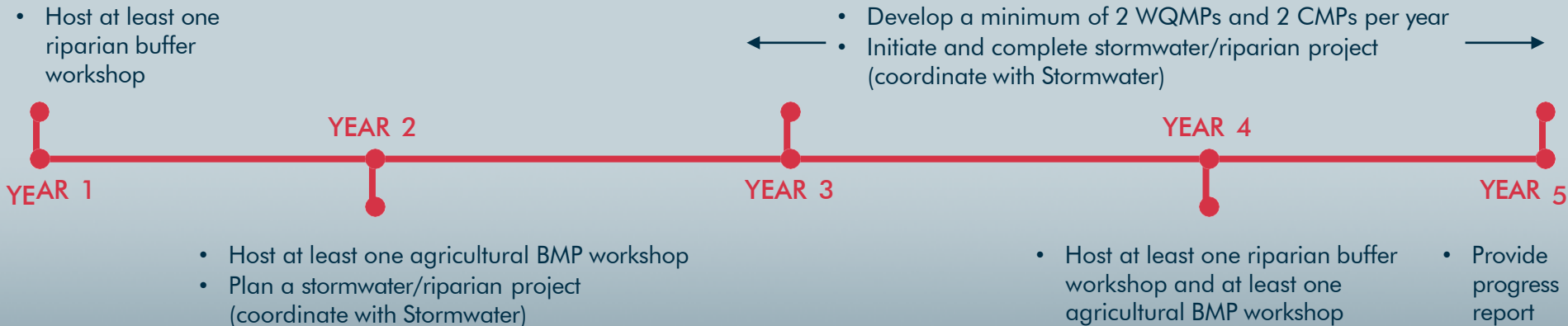
Priority Areas:

- Watershed areas with rural land cover

WHO

Responsible Parties:

- Watershed coordinator
- Landowners and producers
- Texas State Soil and Water Conservation Board
- Natural Resources Conservation Service
- Soil and Water Conservation District
- Texas A&M AgriLife Extension
- Texas Parks and Wildlife Department



Invasive Species

WHAT

Goal: Reduce fecal deposition by feral animal populations, specifically feral hogs

Potential Strategies:

- Manage feral hog population
- Educate/engage on best practices to discourage feral hog utilization of fringe areas

WHERE

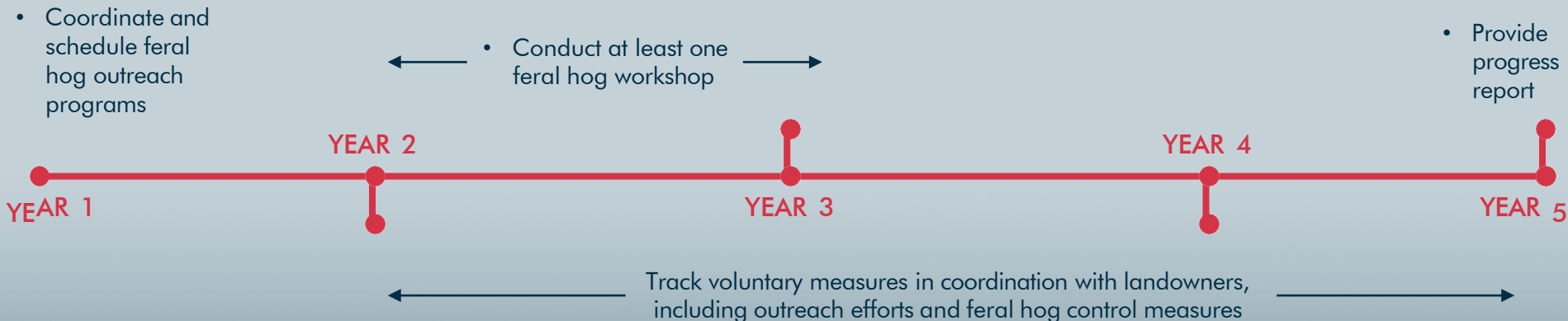
Priority Areas:

- Areas of natural land cover (for direct management)
- Watershed-wide (education)

WHO

Responsible Parties:

- Watershed coordinator
- Texas A&M AgriLife Extension



Wastewater Treatment

WHAT

Goal: Develop and implement strategies that reduce fecal waste from wastewater treatment facilities (WWTFs) and sanitary sewer collection systems in priority areas

Potential Strategies:

- Educate/engage on WWTF and collection system maintenance
- Support operator workshops and training programs
- Develop and conduct a fats, oils, grease, and wipes (FOG) prevention campaign

WHERE

Priority Areas:

- Watershed-wide

WHO

Responsible Parties:

- Watershed Coordinator
- Local Governments
- TCEQ
- H-GAC
- Texas A&M Engineering Extension
- USDA Rural Utilities Service
- Water Professional Associations

- Conduct a technical assistance workshop on technology, rules and regulation changes, operation and maintenance, reuse, and program assistance

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Texas Waters Careers



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Next Steps

- Prioritize implementation strategies for Year 1 and beyond. Gather implementation status updates from stakeholders
- Continue funding discussions with stakeholders
- Continue to build stakeholder list



2025 Cotton Bayou Implementation Status

Date of Status Report:
/I-Plan Approval Date: 07/09/25
TCEQ Project Manager: Jazmyn Milford

Responsible Parties and Common Abbreviations

- BMPs – Best Management Practices

GBF – Galveston Bay Foundation

HARC – Houston Advanced Research Center

HC – Harris County

HCFCDD – Harris County Flood Control District

H-GAC – Houston-Galveston Area Council

JTF –Joint Task Force
- OSSF – Onsite Sewage Facilities

SSO – Sanitary Sewer Overflows

TCEQ – Texas Commission on Environmental Quality

TPWD – Texas Parks and Wildlife Department

TSSWCB – Texas State Soil and Water Conservation Board

WISE – Water Innovation Strategy of Excellence Awards

WWTFs – Wastewater Treatment Facilities

Management Measures

Implementation Strategy 1: Wastewater Treatment Facilities

Responsible Party	Implementation Measure	Metric	Implementation Milestone	Status
	1.1.	▪	▪	
		▪		

Natural Resources Advisory Committee Meeting

1:30PM – 3:30PM

08/06/26



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Discussion and Questions

For more information, please contact:

Cornell Evans, Jr.

713-499-6666

cornell.evans@h-gac.com

Visit our project website at:



You may find the approved I-Plan at:



This project is funded by the Texas Commission on Environmental Quality and facilitated locally by the Houston-Galveston Area Council.