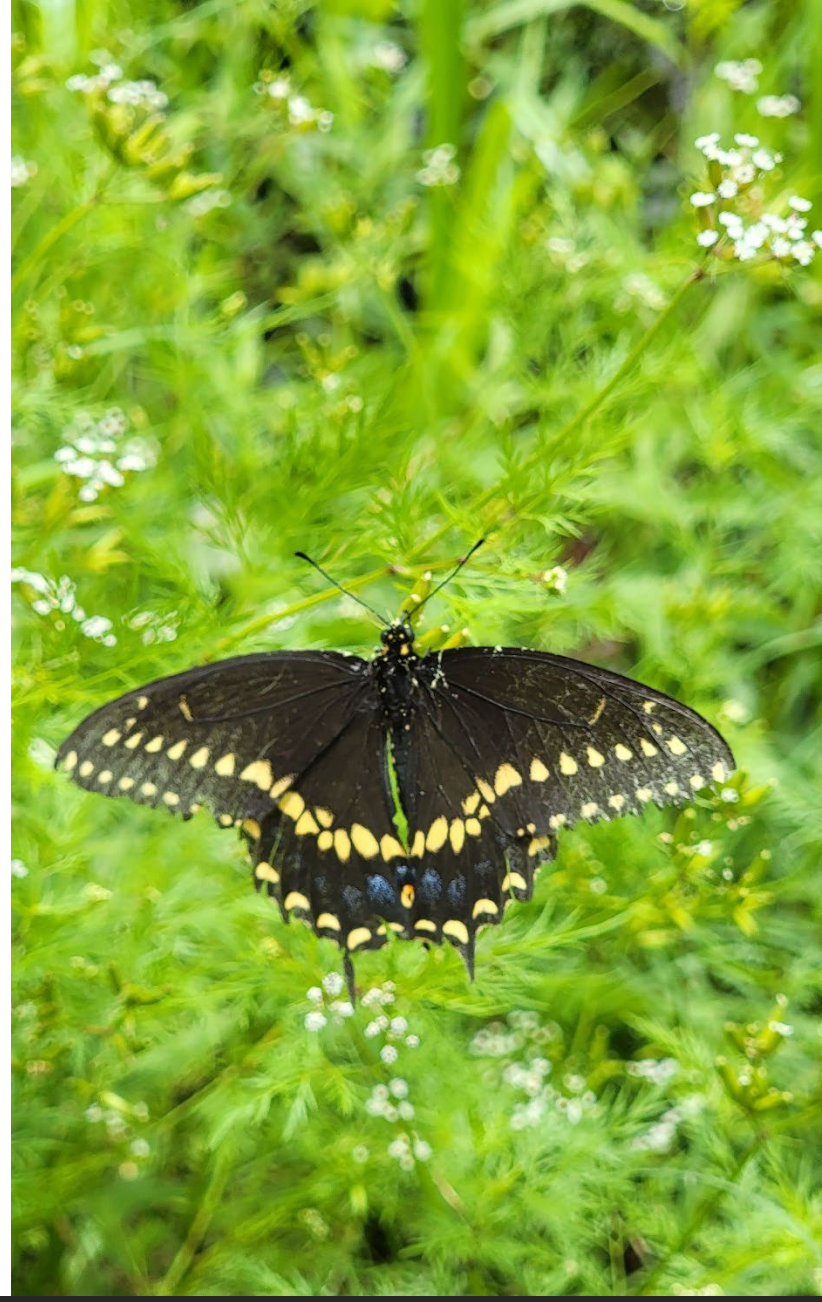
Upper Oyster Creek TMDL Implementation Plan

Annual Meeting August 7, 2024

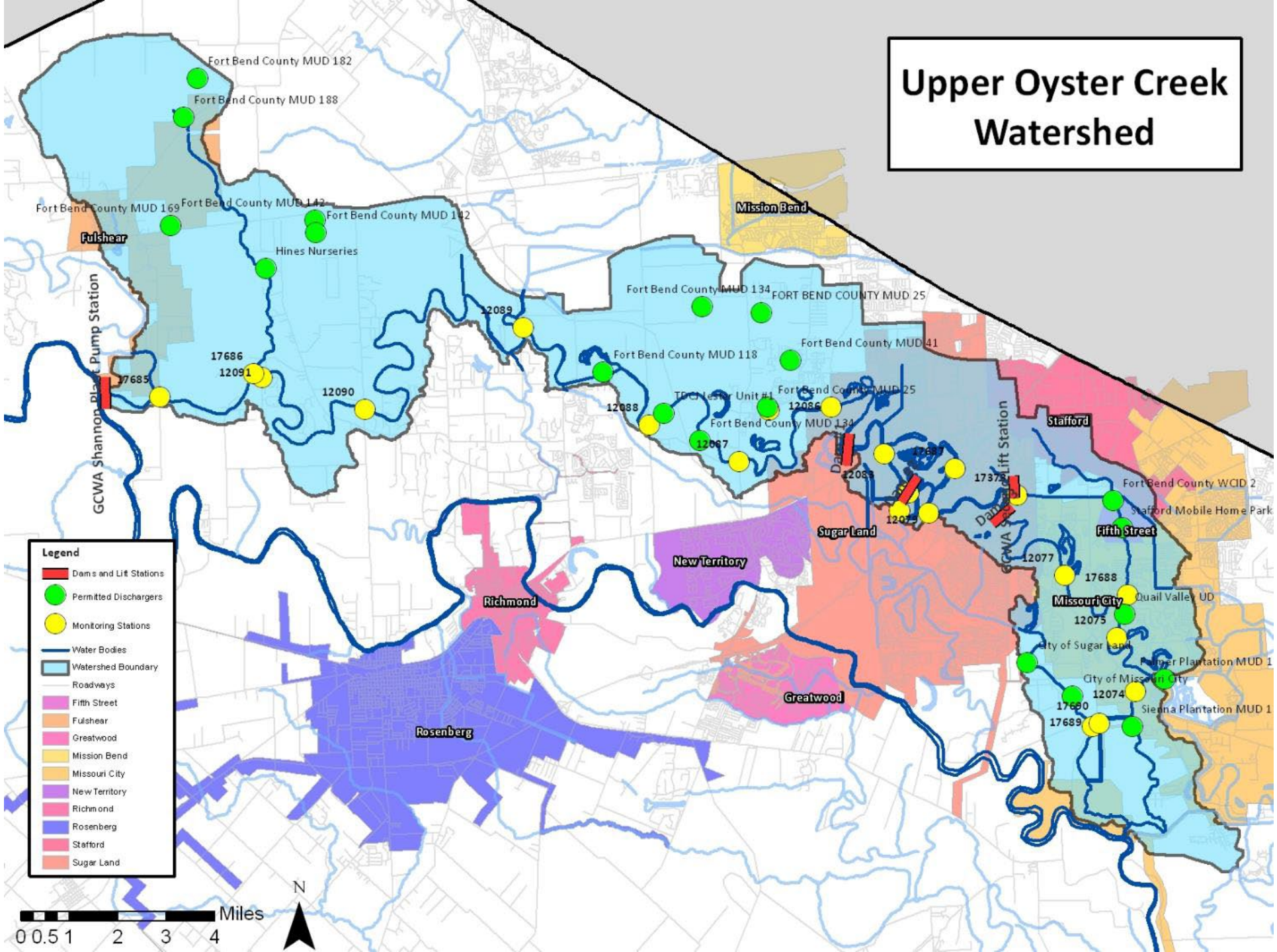
Houston-Galveston Area Council

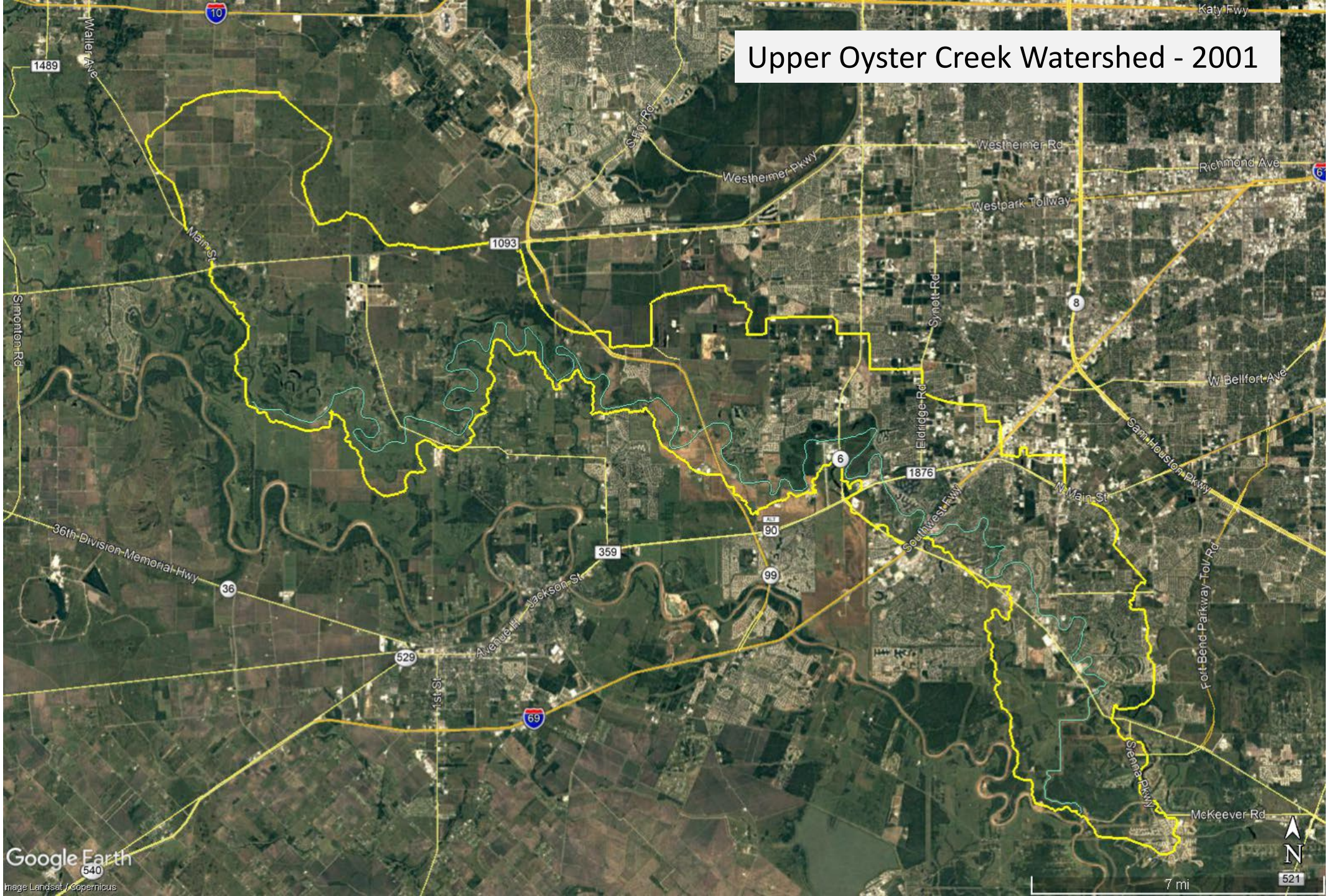
Agenda

- Welcome and Introductions
- History and Water Quality Review
- Dissolved Oxygen Project Update - TIAER
- Implementation Progress
  - 2023 Review
  - OSSF Implementation Opportunities
  - Outreach and Education Opportunities
- Plans for 2024/2025 and Open Discussion



Project History

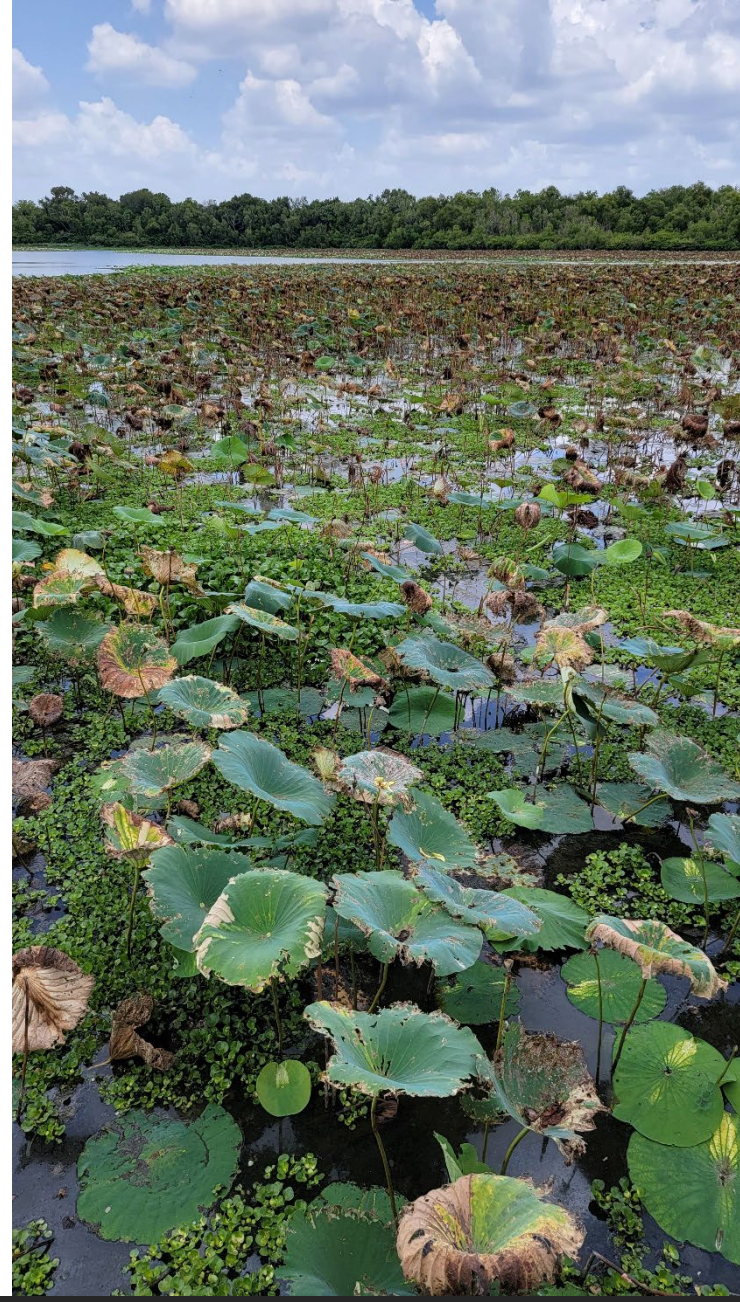

Upper Oyster Creek Watershed
Fort Bend County MUD 182
Fort Bend County MUD 188
Fort Bend County MUD 169
Fort Bend County MUD 142
Fort Bend County MUD 142
Fulshear
Hines Nurseries
GCWA Shannon Place Pump Station
17686
12091
17685
12090
12089
Mission Bend
Fort Bend County MUD 134
FORT BEND COUNTY MUD 25
Fort Bend County MUD 41
Fort Bend County MUD 118
TDCJ Lester Unit #1
12088
12086
Fort Bend County MUD 134
12067
Stafford
17687
12083
17373
Fort Bend County WCID 2
Stafford Mobile Home Park
Fifth Street
Sugar Land
New Territory
Richmond
12077
17688
Missouri City
Quail Valley UD
12075
City of Sugar Land
Palmer Plantation MUD 1
City of Missouri City
12074
17690
17689
Sienna Plantation MUD 1
Greatwood
Rosenberg
Legend
Dams and Lift Stations
Permitted Dischargers
Monitoring Stations
Water Bodies
Watershed Boundary
Roadways
Fifth Street
Fulshear
Greatwood
Mission Bend
Missouri City
New Territory
Richmond
Rosenberg
Stafford
Sugar Land
N
Miles
0 0.5 1 2 3 4


Upper Oyster Creek Watershed - 2001
Katy Fwy
Waller Ave
1489
10
S Fwy Rd
Westheimer Pkwy
Westheimer Rd
Richmond Ave
Westpark Tollway
Main St
1093
Simonton Rd
Synott Rd
8
Eldridge Rd
W Bellfort Ave
6
1876
Sam Houston Pkwy
N Main St
Southwest Fwy
90
359
99
36th Division Memorial Hwy
36
Avenue H
Jackson St
529
1st St
69
Fort Bend Parkway Tol Rd
Sienna Pkwy
McKeever Rd
540
521
N
7 mi
Google Earth
Image Landsat / Copernicus


Upper Oyster Creek Watershed - 2020
Waller Ave
S Fry Rd
Westheimer Pkwy
1093
Richmond Ave
Westpark Tollway
Main St
359
Simonton Rd
Synott Rd
Eldridge Rd
W Sam Houston Pkwy S
W Bellfort Ave
Sam Houston Pkwy
1876
90
69
8
36th Division Memorial Hwy
99
Avenue H
Jackson St
1st St
Fort Bend Parkway Toll Rd
529
36
Sienna Pkwy
6
McKeever Rd
N
540
521
7 mi
Google Earth
Image Landsat / Copernicus

Water Quality Challenges

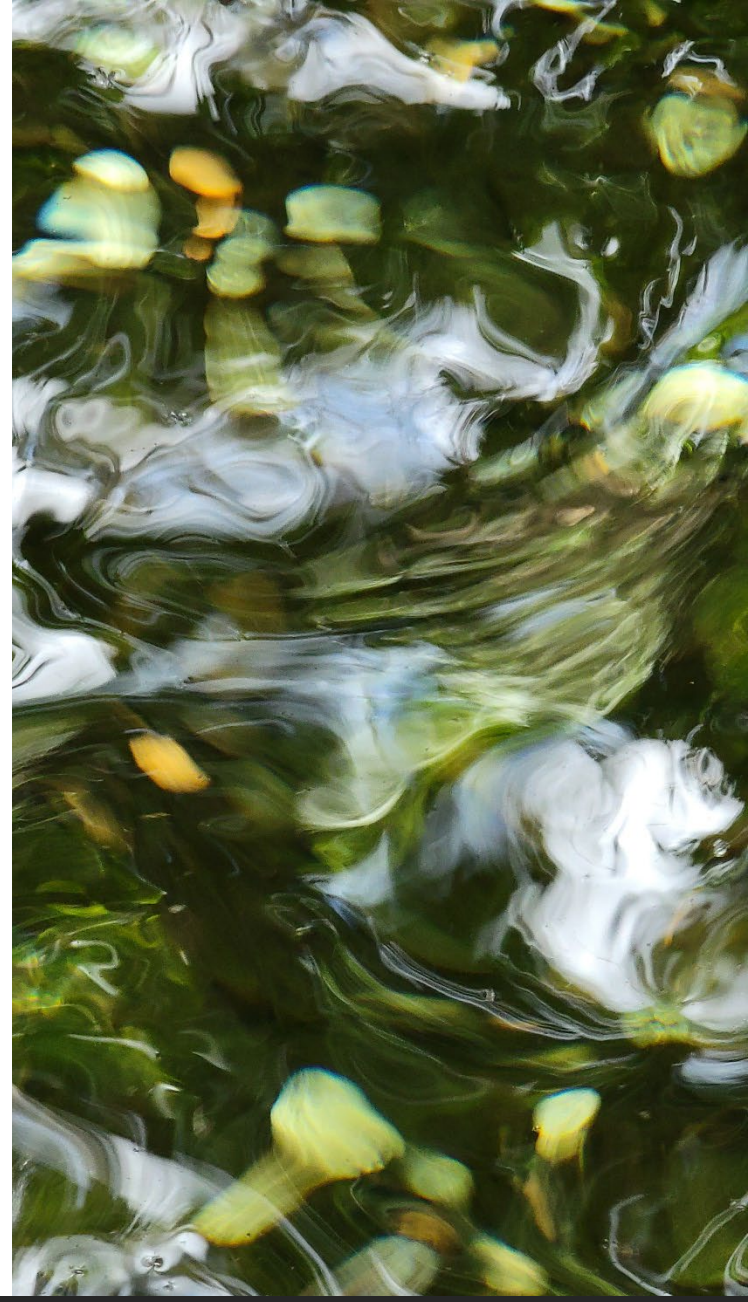
- Historic and current issue supporting some uses:
  - Contact recreation (fecal waste)
  - Aquatic life (dissolved oxygen)
  - General (nutrients, chlorophyll-a)
- Invasives, flow changes



Planning for Water Quality

- Total Maximum Daily Loads –
  - Specific constituents (*E. coli*; CBOD5, NH^3-N); reduction needs
- Implementation Plan
  - Answers "how, when, where, who, what"
  - Locally led, reviewed annually
  - Year 10 of implementation

https://h-gac.com/watershed-based-plans/upper-oyster-creek-tmdl-and-implementation-plan



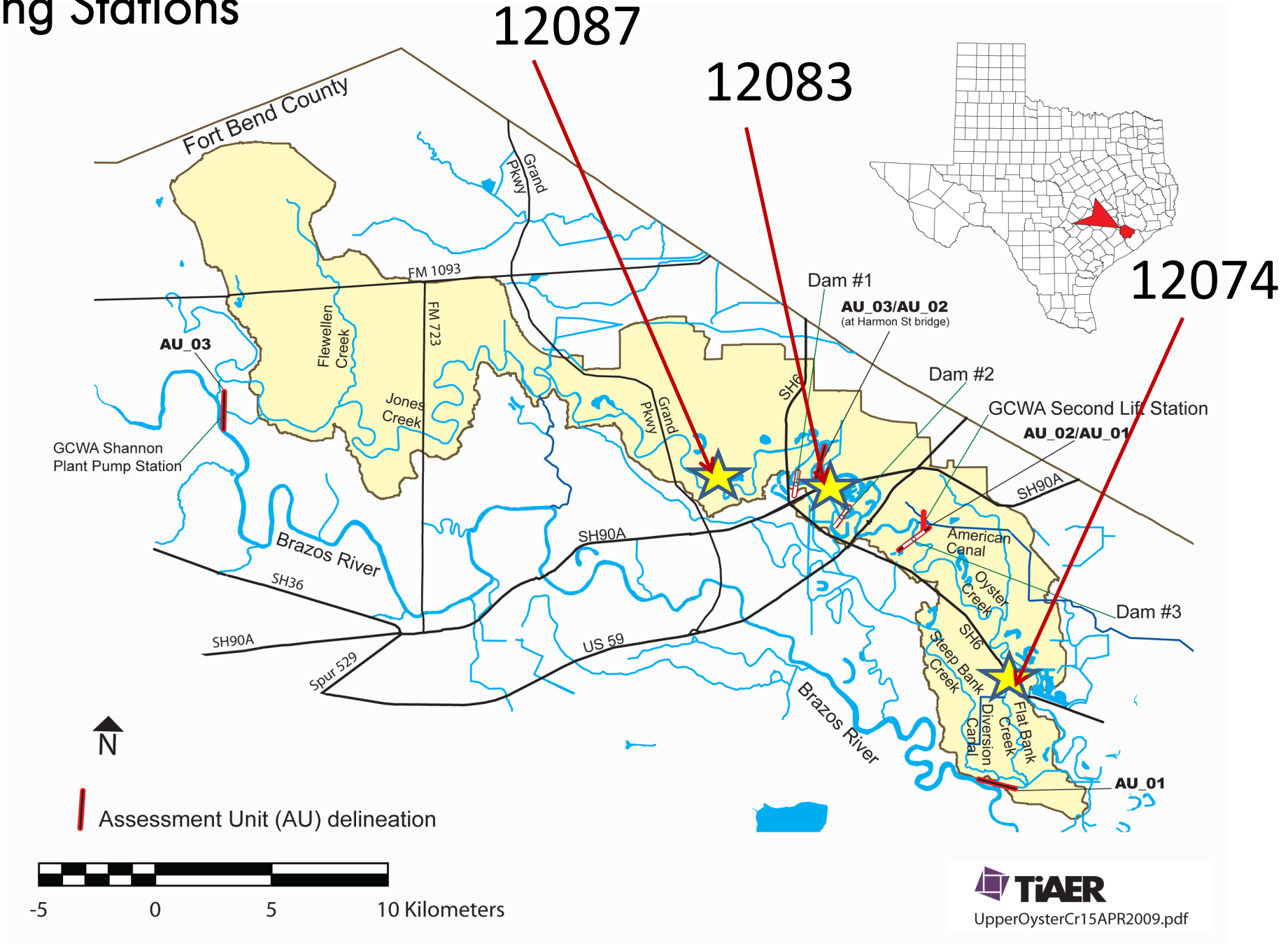
Water Quality Status

Water Quality Status

- Regulatory status (Draft 2024 Integrated Report)
  - 2024 Texas IR Basin 12 Report - Texas Commission on Environmental Quality - www.tceq.texas.gov

- "Update on Dissolved Oxygen Modeling of Upper Oyster Creek" – Dr. Partheeban, Research Scientist Texas Institute for Applied Environmental Research

Monitoring Stations

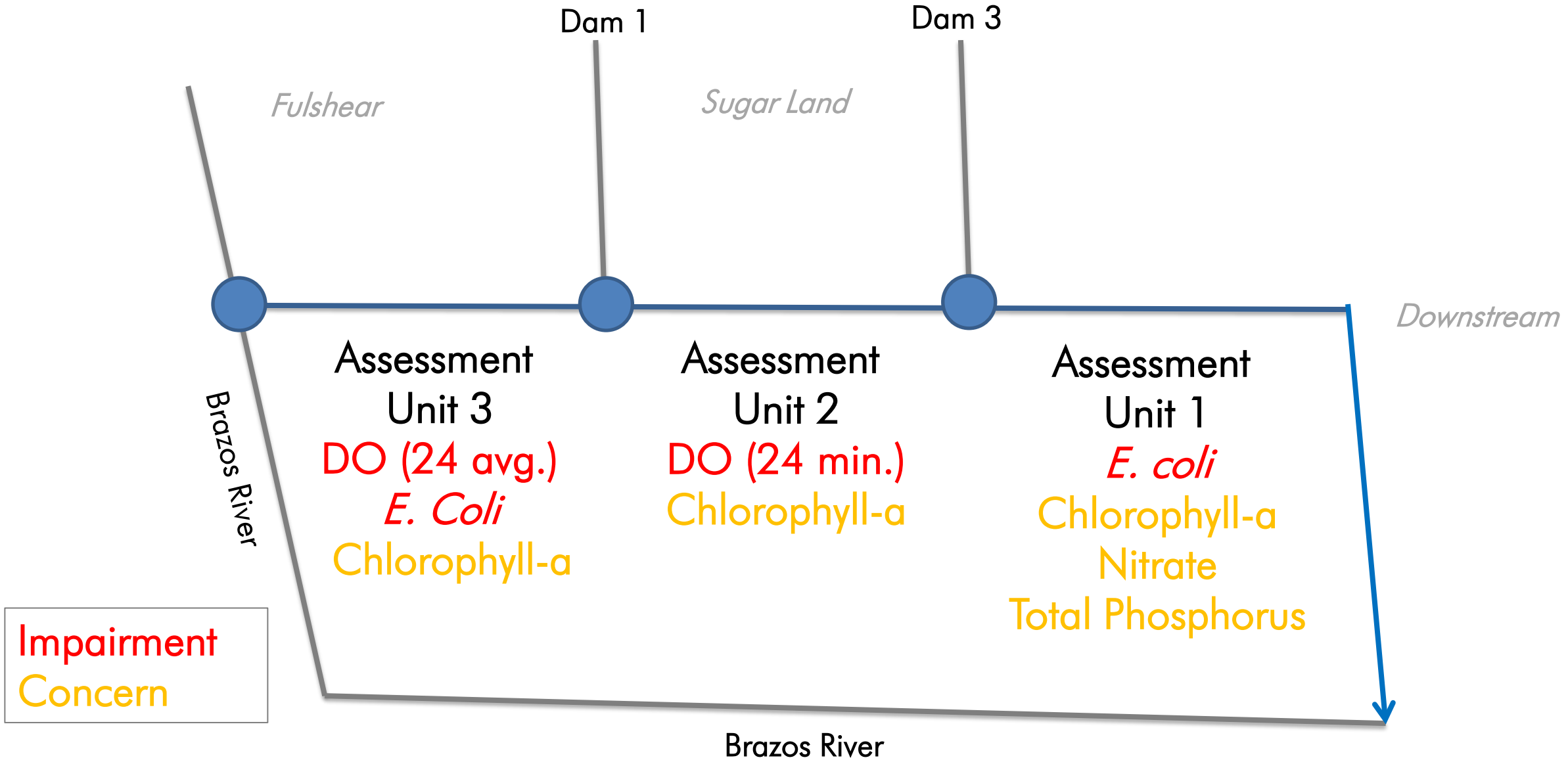


Regulatory Status Draft 2024 Texas Integrated Report

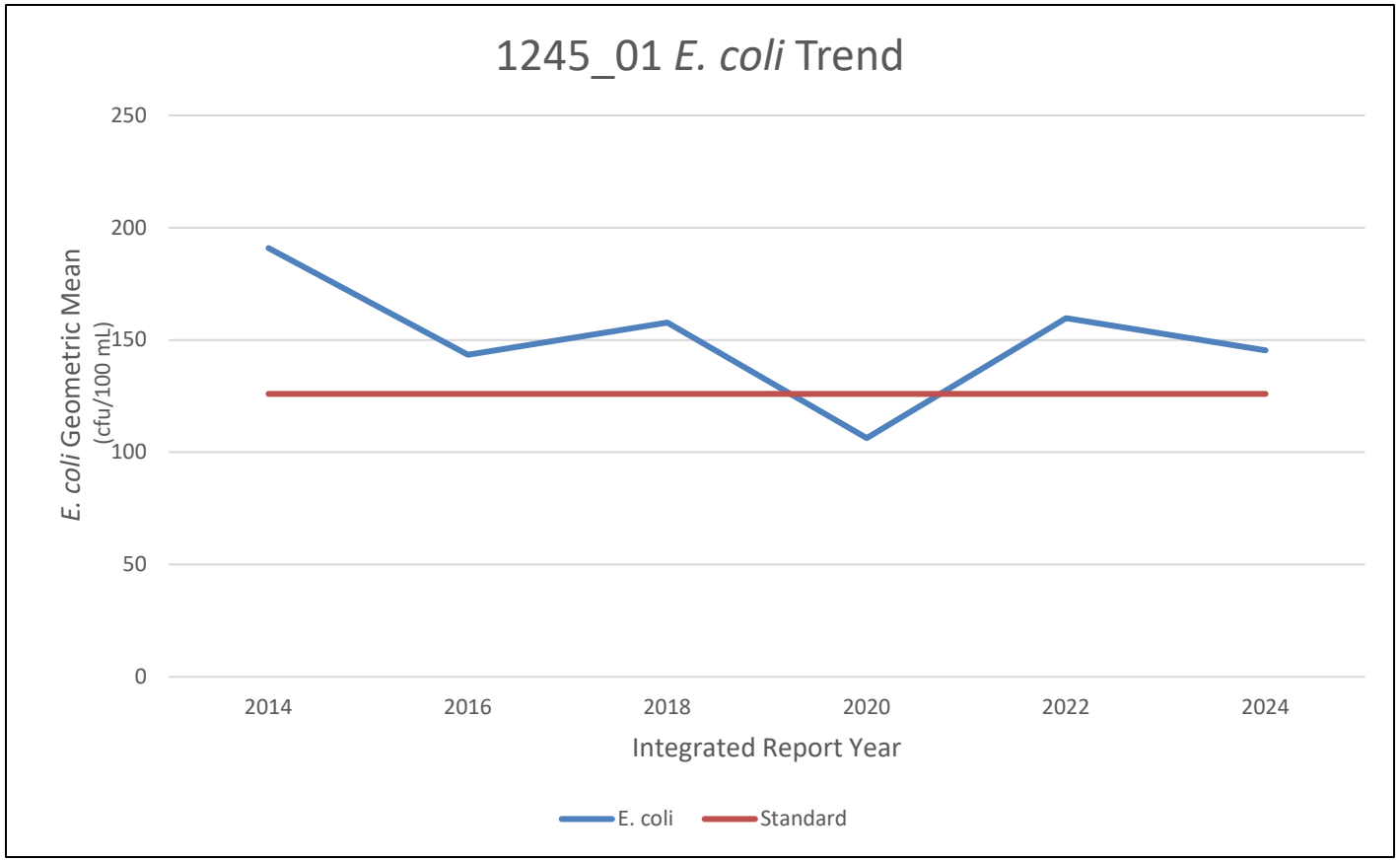
Assessment Unit	Parameter	Station	Criteria	Status	Average Result*
1245_01	*E. coli*	12091, 12090, 12748, 12088, 12087, 12086	126 cfu/100mL	NS	155.61 cfu/100 mL
	Total Phosphorus		0.69 mg/L	CS	1.23 mg/L
	Nitrate		1.95 mg/L	CS	5.68 mg/L
	Chlorophyll-a		14.1	CS	40.30
1245_02	*E. coli*	12083, 12079	126 cfu/100mL	FS	110.91 cfu/100 mL
	Chlorophyll-a		14.1	CS	41.01
1245_03	*E. coli*	12077, 12074	126 cfu/100mL	NS	208.6 cfu/100 mL
	Chlorophyll-a		14.1	CS	33.73

*Geometric means calculated for all bacteria data, screening level exceedances are the average for data above the criteria.

Regulatory Status - Main Channel



Regulatory Status Trends



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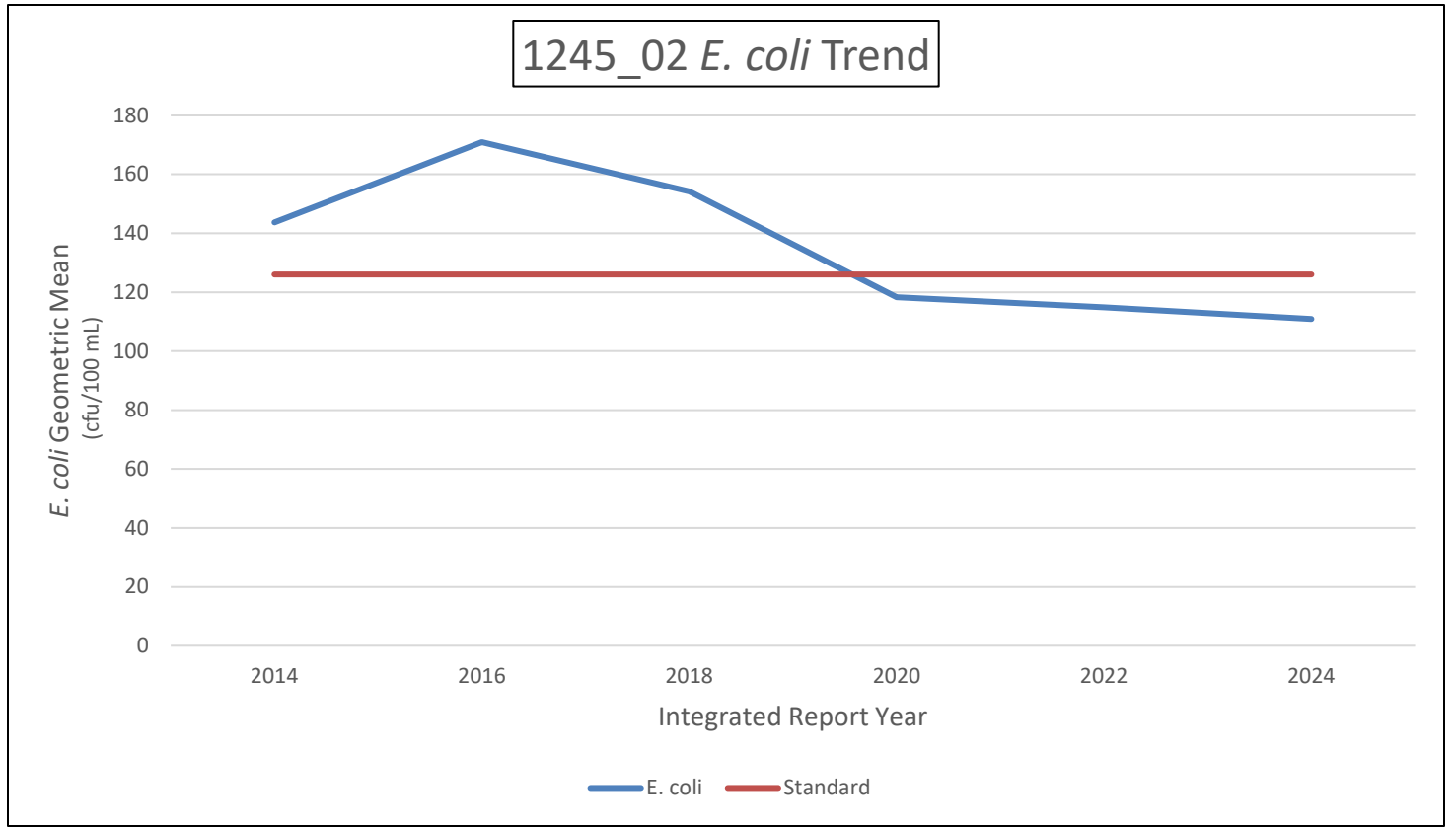

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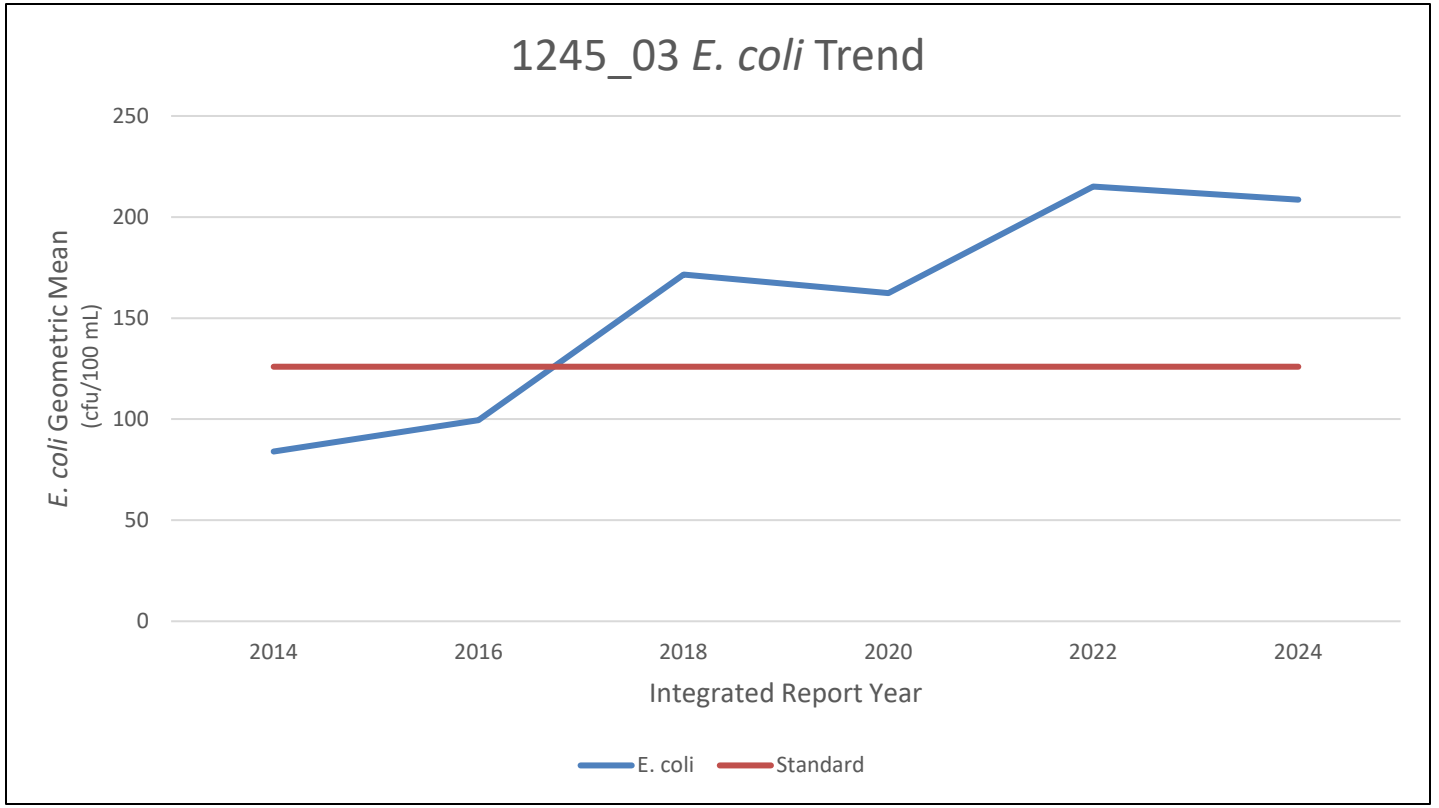
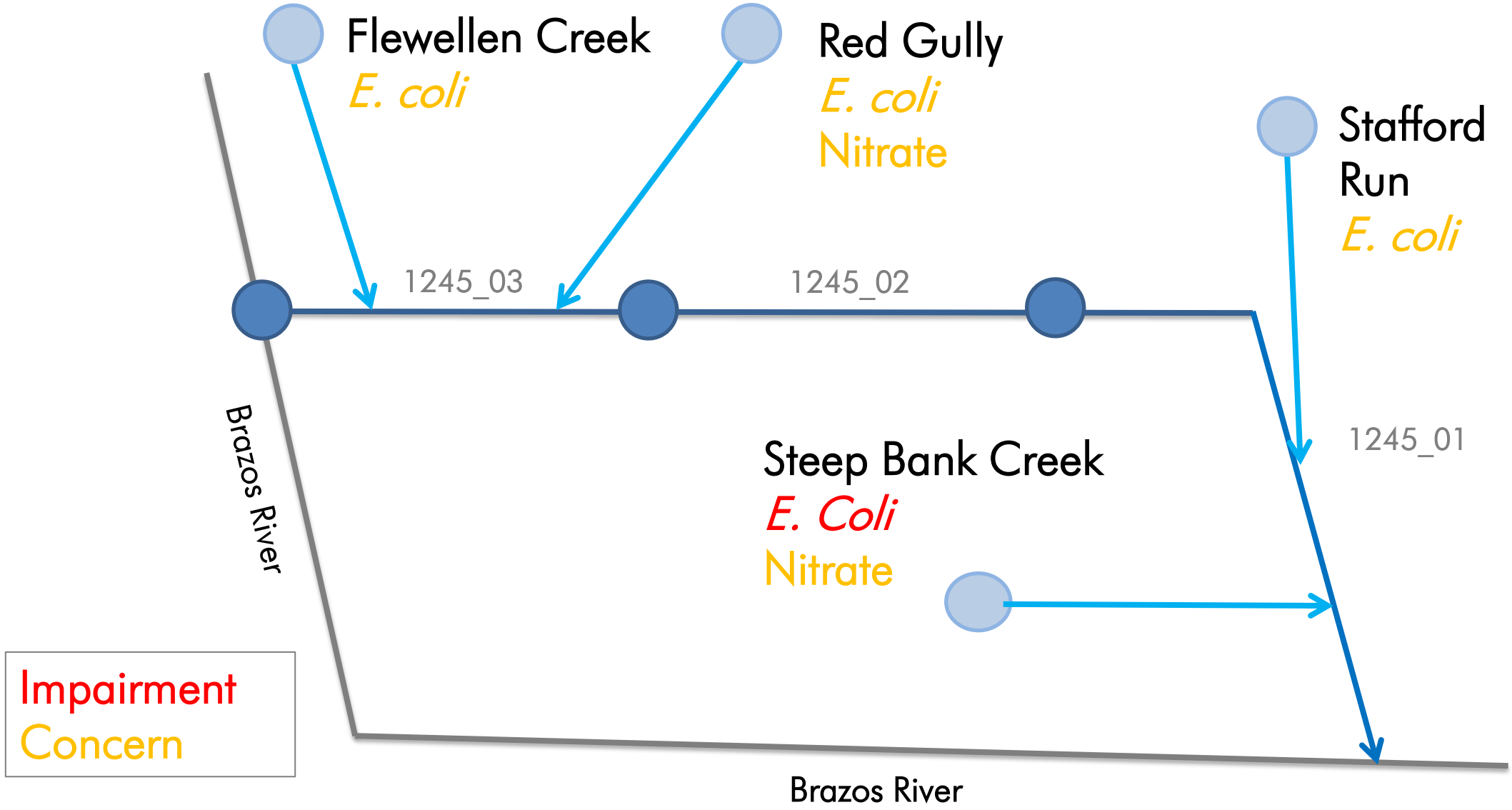


Regulatory Status - Tributaries



Water Quality Status

"Update on Dissolved Oxygen Modeling of Upper Oyster Creek"

– Dr. Partheeban, Research Scientist
Texas Institute for Applied Environmental Research

Implementation Progress

Implementation Plan

- Five Big Strategies
  1. Monitoring and Research
  2. Education and Outreach
  3. Urban Nonpoint Sources (MS4s, general)
  4. Agriculture, Invasives and Wildlife
  5. Human Waste (WWTFs, SSOs, and OSSFs)

- What was new in 2023? Successes? Ideas for improving existing programs 2024/25 and moving forward?

1. Monitoring and Research

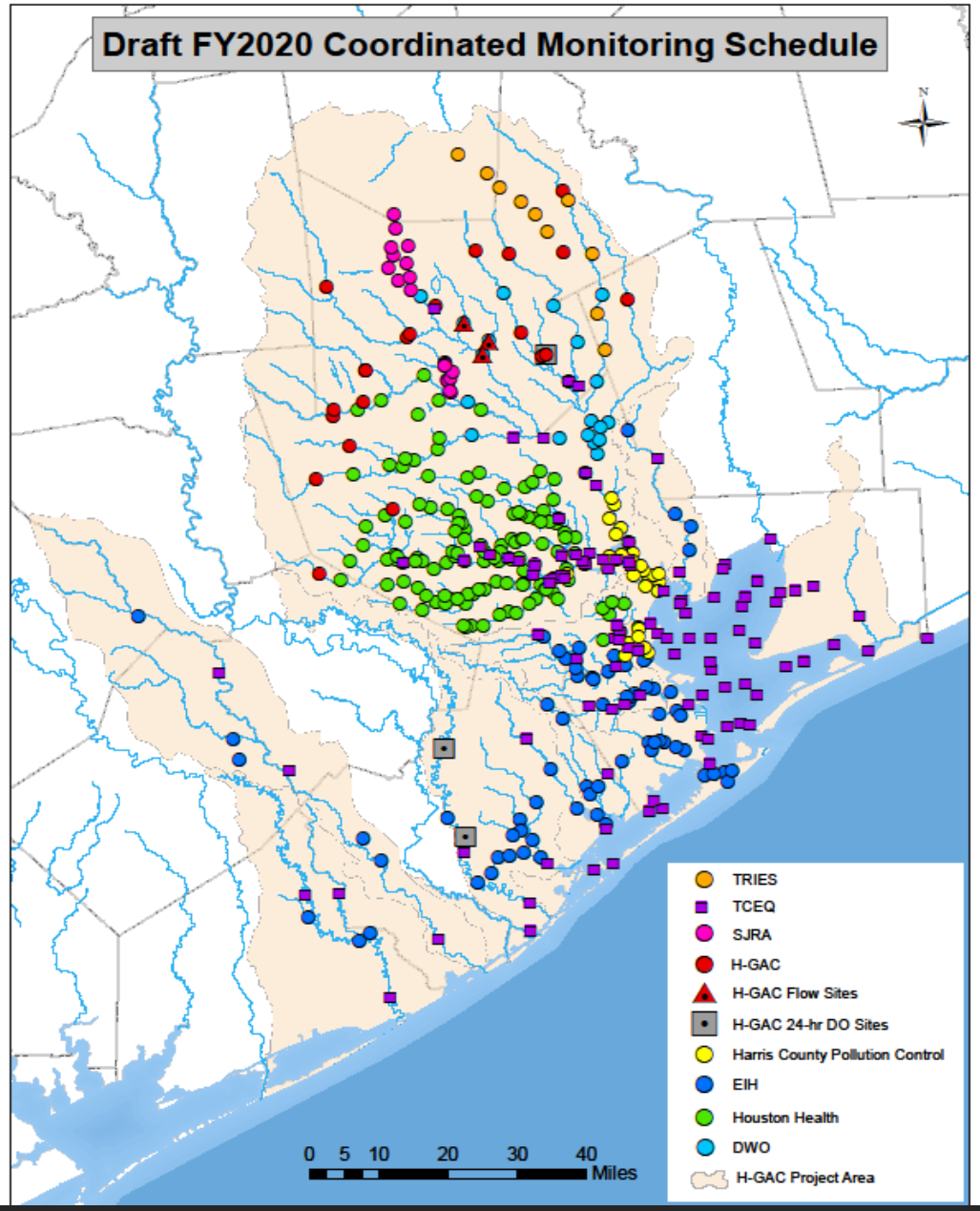
- MS4 monitoring?

- Partner Efforts
  - Clean Rivers Program
  - TIAER - DO project
  - Onsite Sewage Facility
  - Feral Hog Research
  - Green Infrastructure/Low Impact Development
  - Targeted Monitoring

Are there other monitoring or research needs?
  - Monitor those tributaries?

Clean Rivers Monitoring Program

- Multiple Partners
  - Texas Commission on Environmental Quality's Field Operations
- Numerous Parameters
  - Bacteria
  - Nutrients
  - Dissolved Oxygen
- H-GAC's Water Resources Information Map



2. Outreach and Education

- MS4 Efforts?

- Kendall Guidroz
  - Non-MS4 Outreach efforts
  - H-GAC's Outreach and Education Support
  - Texas Stream Team

- Clean Waters Initiative Workshops
  - Topical – Texas Stream Team, LID/GI, Wastewater, OSSF (8/22),etc.

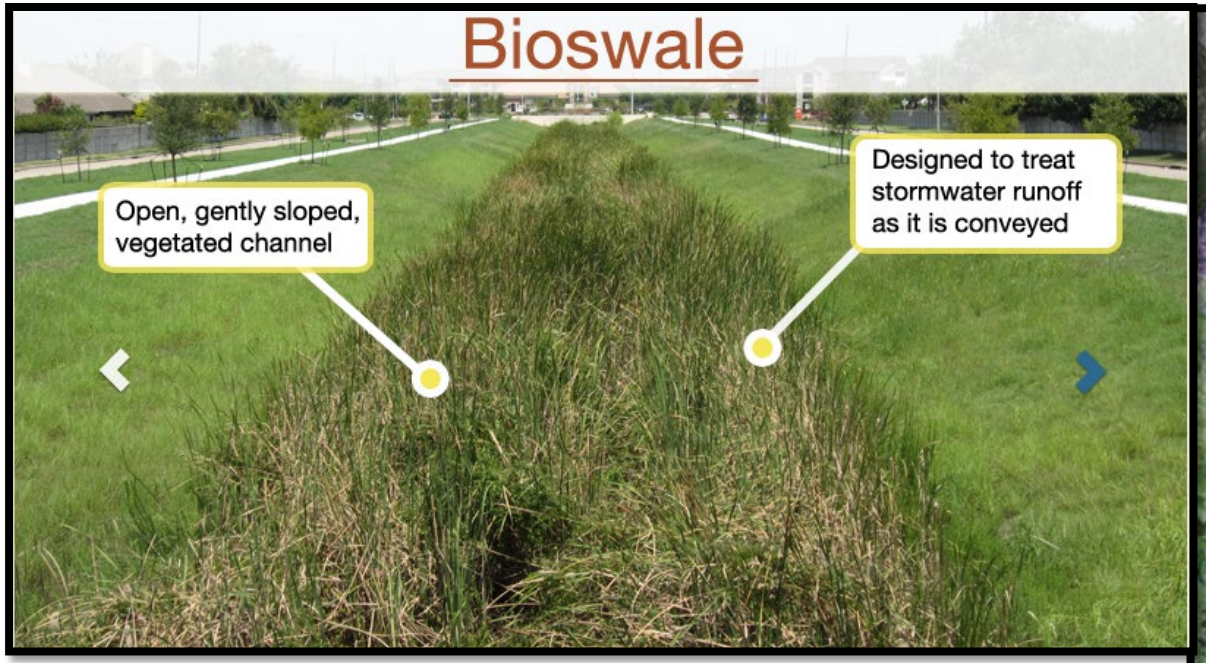
3. Urban Nonpoint Sources - MS4s and General

- MS4 efforts – MCMs or others?

- H-GAC's Programs
  - Clean Waters Initiative Workshop
  - LID/GI Research
  - LID Tools (https://h-gac.com/low-impact-development)
  - Outreach and Education Tools

LOW IMPACT DEVELOPMENT

https://h-gac.com/low-impact-development



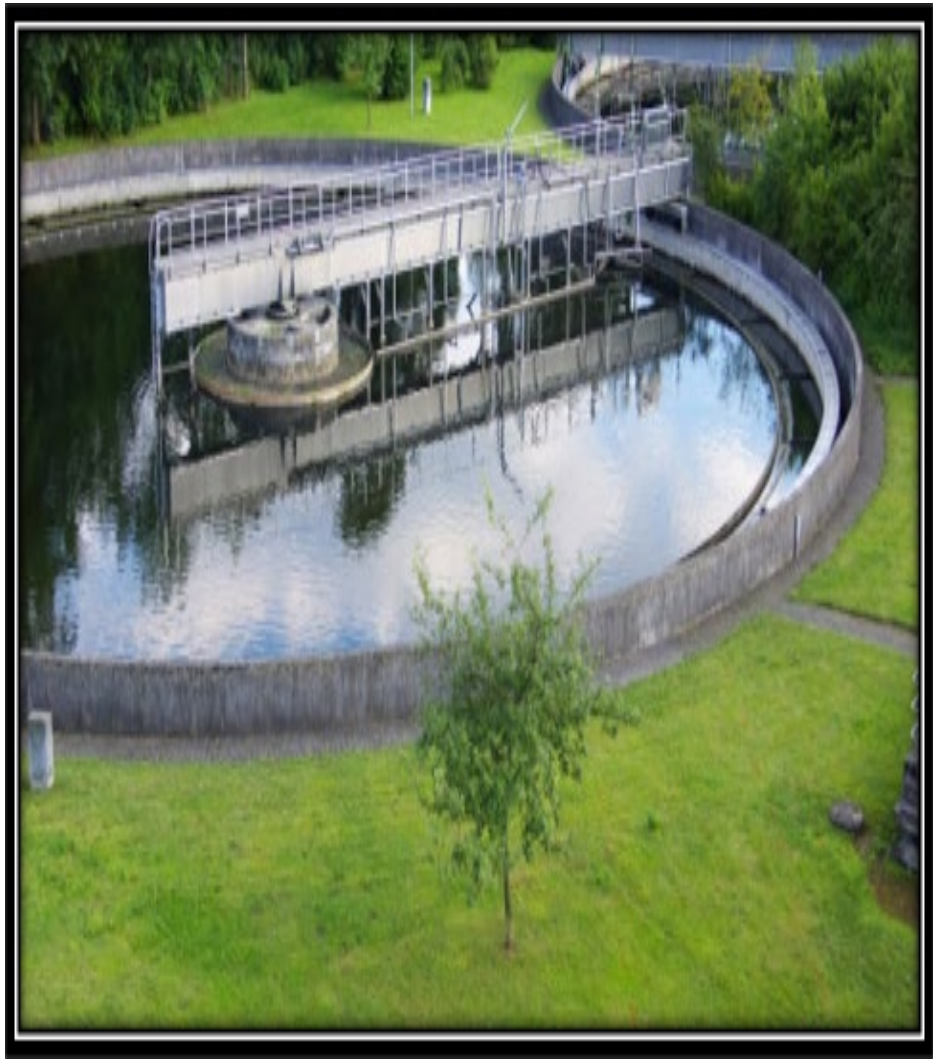
4. Agriculture, Invasives and Wildlife

- MS4 efforts?

- Resource Partners
  - Texas AgriLife Extension Programs
  - Texas State Soil and Water Conservation Board
  - Natural Resources Conservation Service
  - Texas Forest Service – Urban Forest Program

5. Human Waste

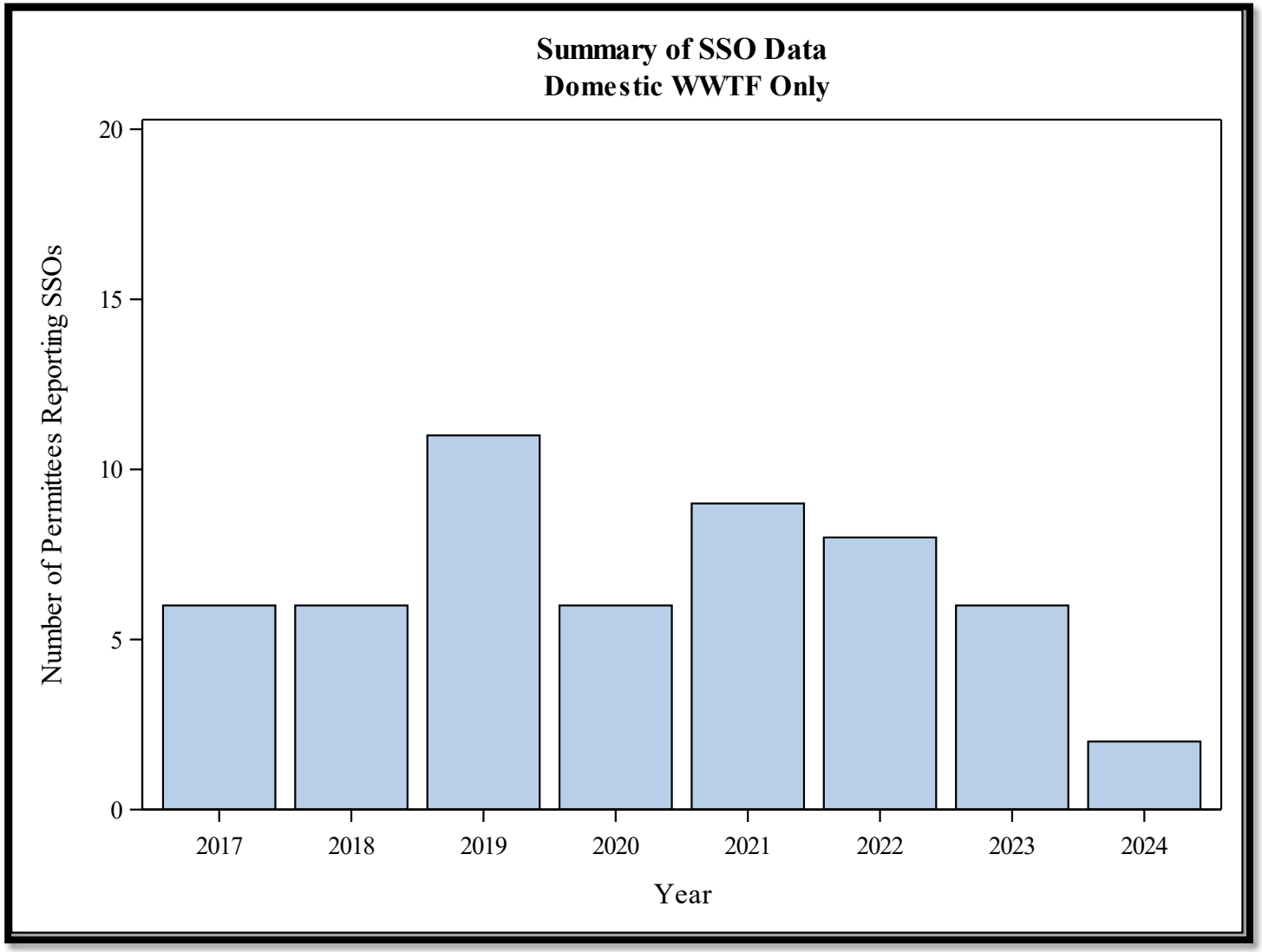
- MS4 Efforts?
- H-GAC Review and Implementation
  - Sanitary Sewer Overflows (SSOs)
  - Wastewater Treatment Facility Effluent – Discharge Monitoring Reports (DMRs)
  - Onsite Sewage Facilities (OSSFs and Septic Systems)
  - Targeted Monitoring



Sewer Overflows

- SSOs reported to TCEQ
- Added January - December 2023
  - Assessed for totals (volume, number, causes), volume by cause, number by cause
- Data may not reflect full extent of SSOs

Permittees Submitting SSOs Reports (2017-2024)



SSOs by Number and Volume

Year	Number of SSOs Reported	Estimated Volume (Thousand Gallons)
2017	10	102
2018	9	103
2019	26	277
2020	21	85
2021	25	307
2022	18	76
2023	24	114
2024	2	5

2023 SSOs by Causes, Number, and Volume

2023 Reported Cause	Number of Events	Estimated Volume (1000 Gallons)
Blockage in Collection System-Other Cause	2	0.5 (<1%)
Lift Station Failure	8	34 (30%)
Line Blockage - Fats/Grease	4	0.9 (1%)
Line Blockage - Rags/Wipes	1	0.2 (<1%)
Rain / Inflow / Infiltration	7	77.6 (68%)
Unknown Cause	2	0.4 (<1%)

Wastewater Facilities

- Data source – Discharge Monitoring Reports, TCEQ
- Assessed 2017-2024
- Bacteria, NH^3, CBOD5
- Generally performing well, few exceedances noted

Wastewater Facilities 2024

WWTF Data Source	WWTF Number
Permittees in TCEQ Outfall Layer	29
Permittees in EPA Registry	29
Permittees Submitting DMR Data (any type)	21
Permittees Submitting DMR Bacteria Data	20

Wastewater Facilities 2023 DMRs

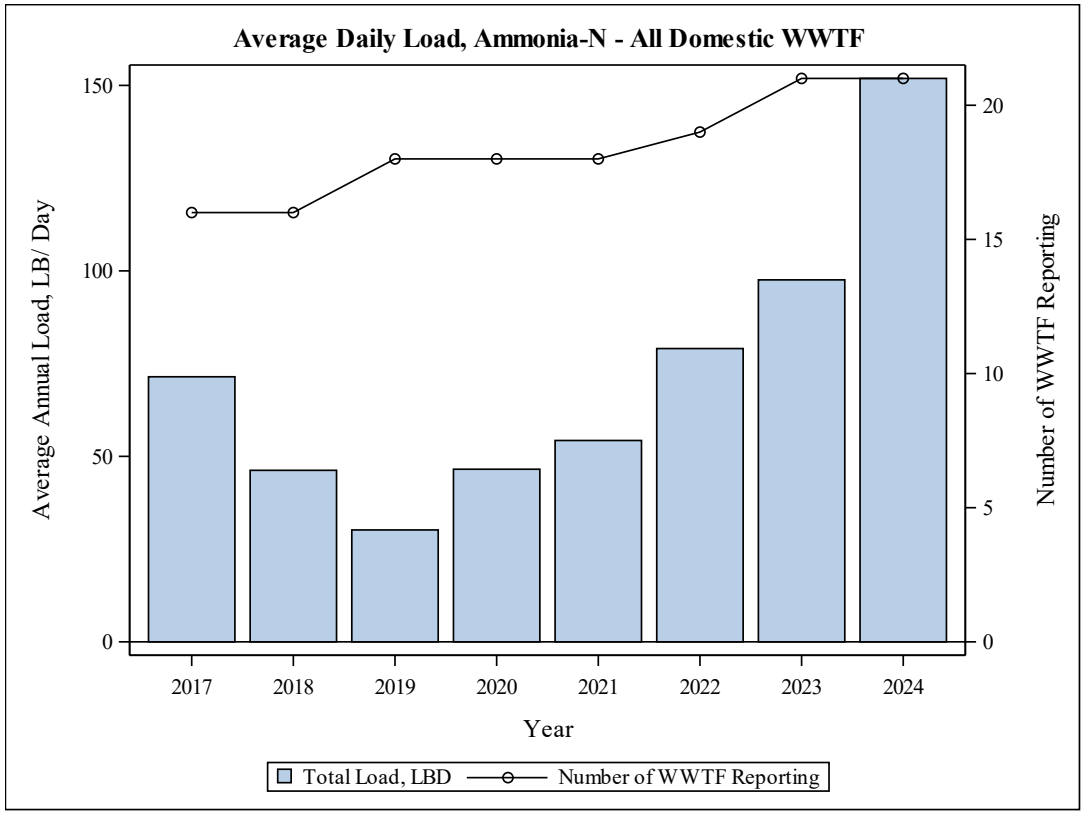
Variable	Geometric Mean	Daily Maximum or Grab Sample
Total Results Reported	227	227
Total Exceeding Limit	1	15
Percent Exceedance	0.44	6.61
Percent Compliance	99.56	93.39

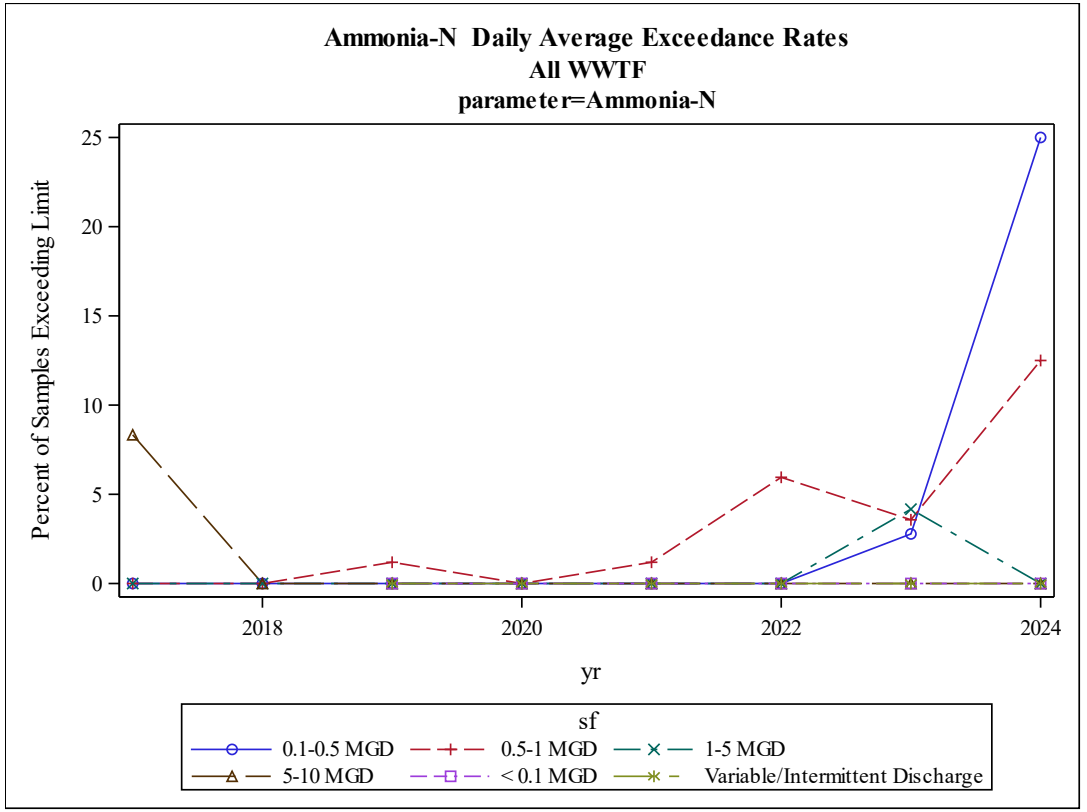
Relative Plant size	Number WWTFs	Daily Maximum or Grab Sample Percent Exceedance	Daily Maximum or Grab Sample Percent Compliance
< 0.1 MGD	1	.	.
0.1-0.5 MGD	3	.	.
0.5-1 MGD	7	3.1	96.9
1-5 MGD	4	20.8	79.2
5-10 MGD	2	4.2	95.8
Variable/Intermittent Discharge	4	5.3	94.7

Wastewater Facilities 2017- 2024
DMR Bacteria Analysis

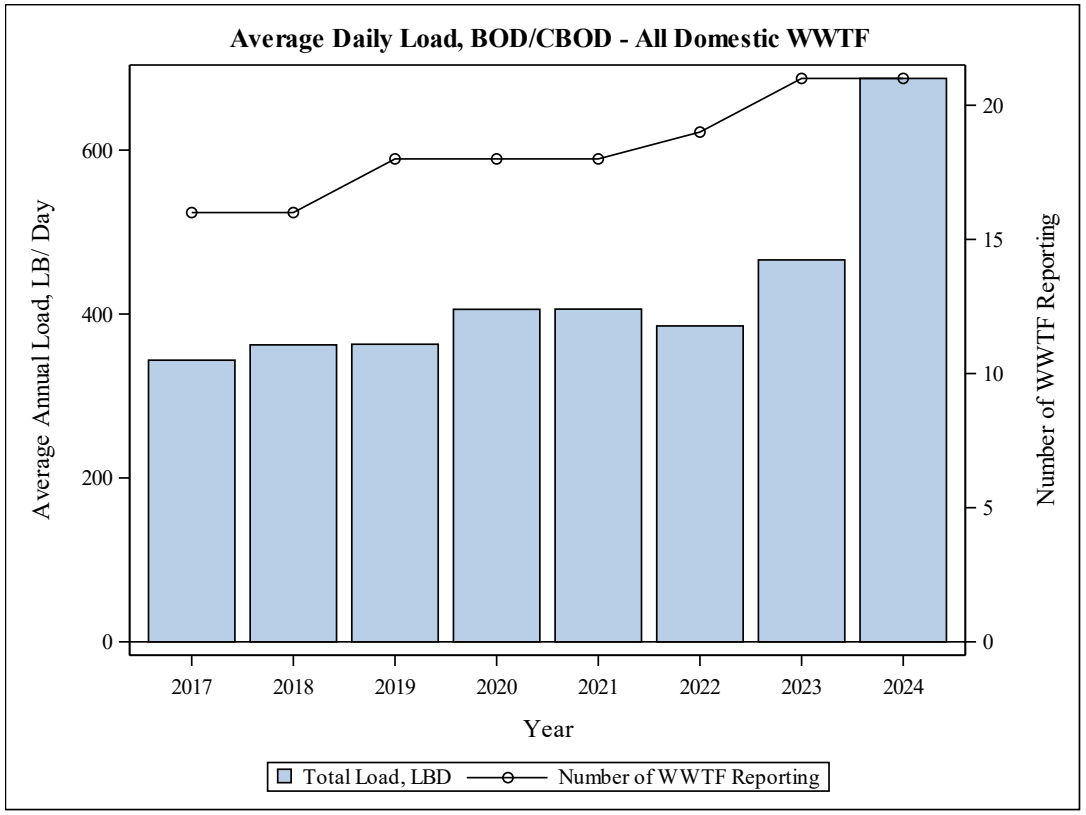
Year	Total Grab/Max Results Reported from Permittees with Limits In Permits	Samples Exceeding Grab/ Max Limit	Percent Samples Exceeding Grab/Max Limit	Grab/Max Percent Compliance	Year	Total Reported Discharge, MGD
2017	186	4	2.2	97.8	2017	16
2018	196	3	1.5	98.5	2018	16
2019	213	4	1.9	98.1	2019	16
2020	220	1	0.5	99.5	2020	17
2021	220	1	0.5	99.5	2021	18
2022	221	4	1.8	98.2	2022	17
2023	227	15	6.6	93.4	2023	18
2024	28	6	21.4	78.6	2024	21

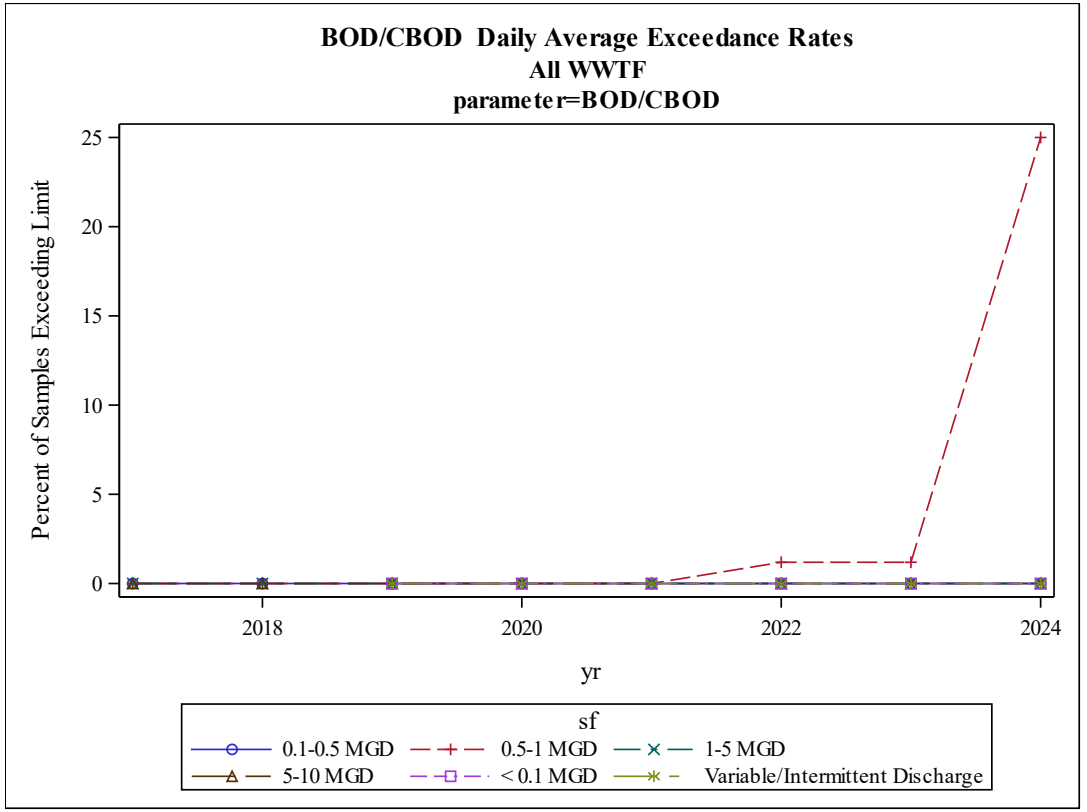
Wastewater Facilities 2017 – 2024
DMR Ammonia



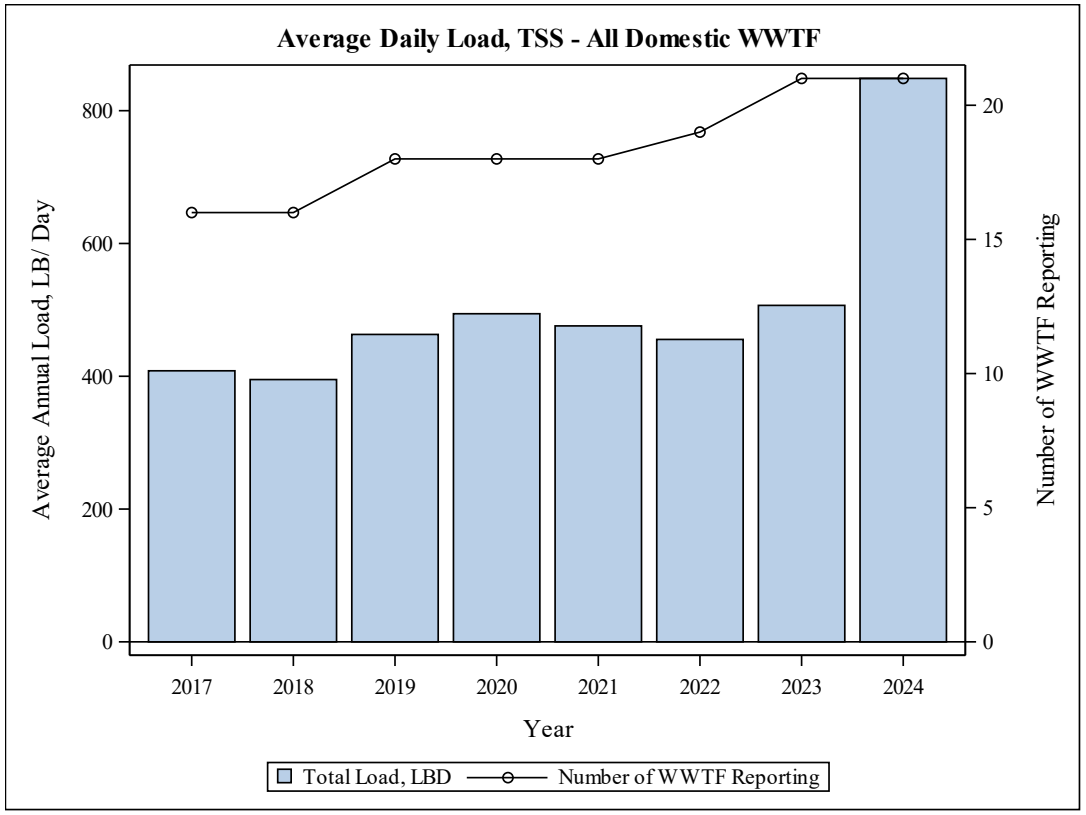


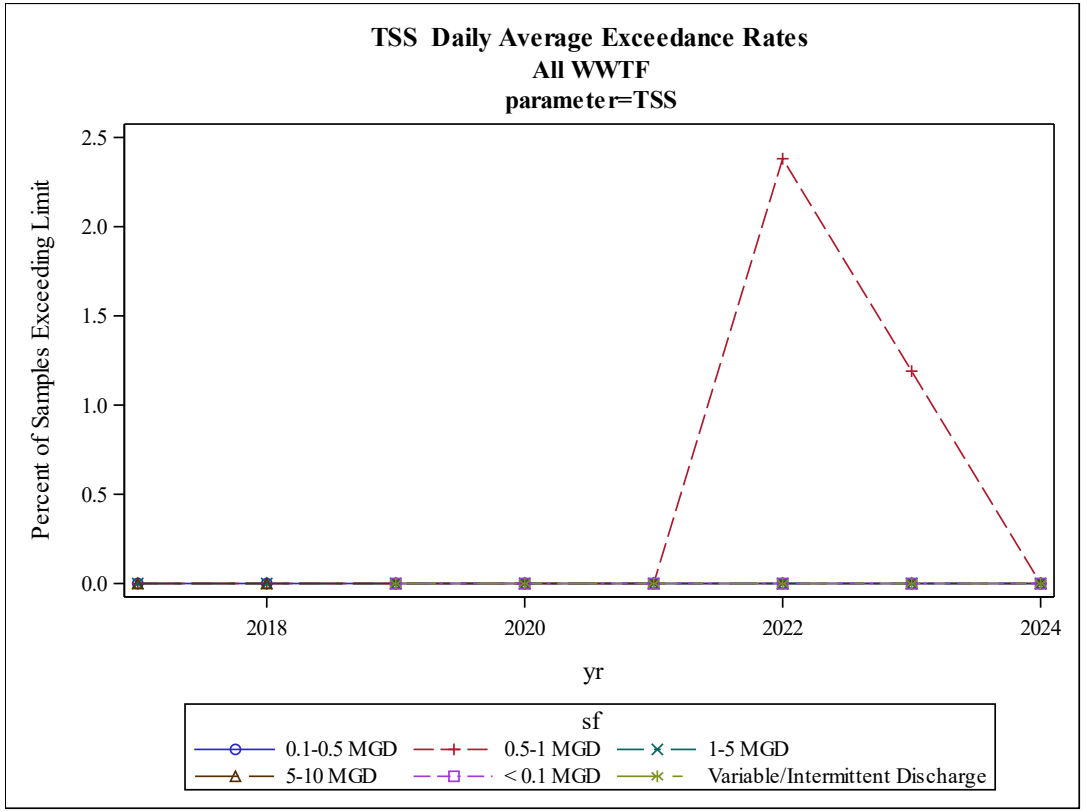
Wastewater Facilities 2017 – 2024
DMR BOD/CBOD





Wastewater Facilities 2017 – 2024
DMR TSS





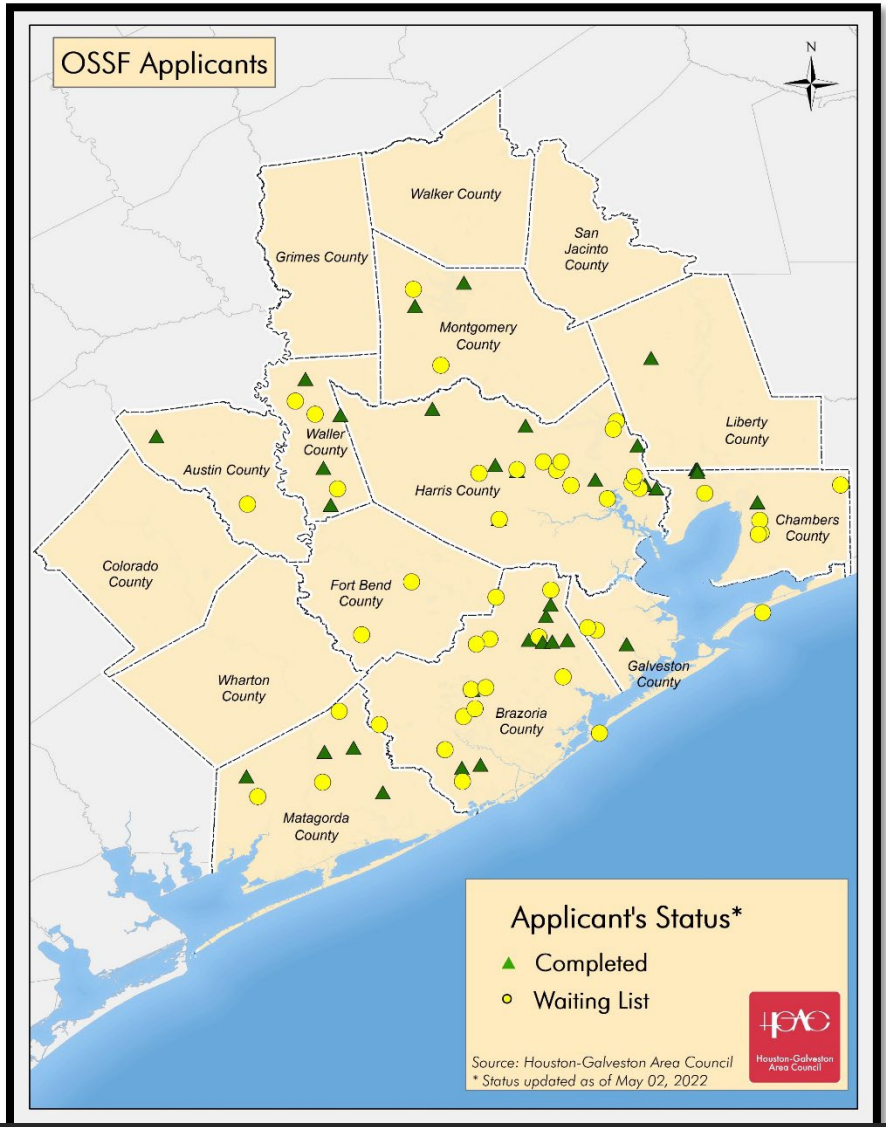
OSSFs Estimated Numbers 2024

Upper Oyster Creek	Permitted - OSSFs	Non-Permitted OSSFs	Total
Total	1,712	616	2,328

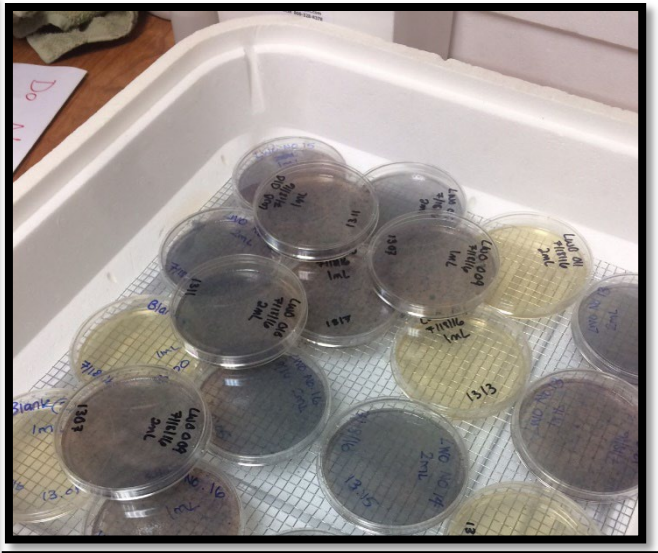
OSSFs and Vulnerable Populations

Bill Ervin - Current Resources

- Roadmap Messages
- Homeowner Education Workshops
- Homeowner Wastewater Assistance Program



TARGETED BACTERIA REDUCTION



Water Quality Summary

- Improvement in some areas, issues persist in most.
- Impairments/concerns still present throughout system
- Continued growth may continue to impact
- WWTFs doing relatively well, though there are some questions for 2023 and 2024.
- SSOs remain a concern

Resources and Partnerships

- How can we support your efforts?
- Who else needs to be at the table?
- Coordination with adjacent planning efforts
  - Conservation
  - Flood Mitigation
  - Urban Forestry

Next Steps

- 2024/2025 pursue additional opportunities, funding, conservation projects, partnerships
- Continue ongoing projects and monitoring
- Report for 2023/24 to be released including your feedback today.

Thank You!

For more information, contact:

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https://www.h-gac.com/watershed-based-plans/upper-oyster-creek-tmdl-and-implementation-plan