

# STATUS UPDATE FOR H-GACTOTAL MAXIMUM DAILY LOAD STUDIES

CWI

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# Bacteria Impairments and Concerns

## Regional Bacteria Impairment



# Total Maximum Daily Loads

## **TMDL is a tool which:**

- Determines the maximum amount of a particular pollutant (load) that a water body can receive and still meet its standards
- Determines sources of pollution by broad categories (i.e., point and nonpoint), though individual permitted wastewater dischargers are required to be listed.

## **A TMDL is also a document:**

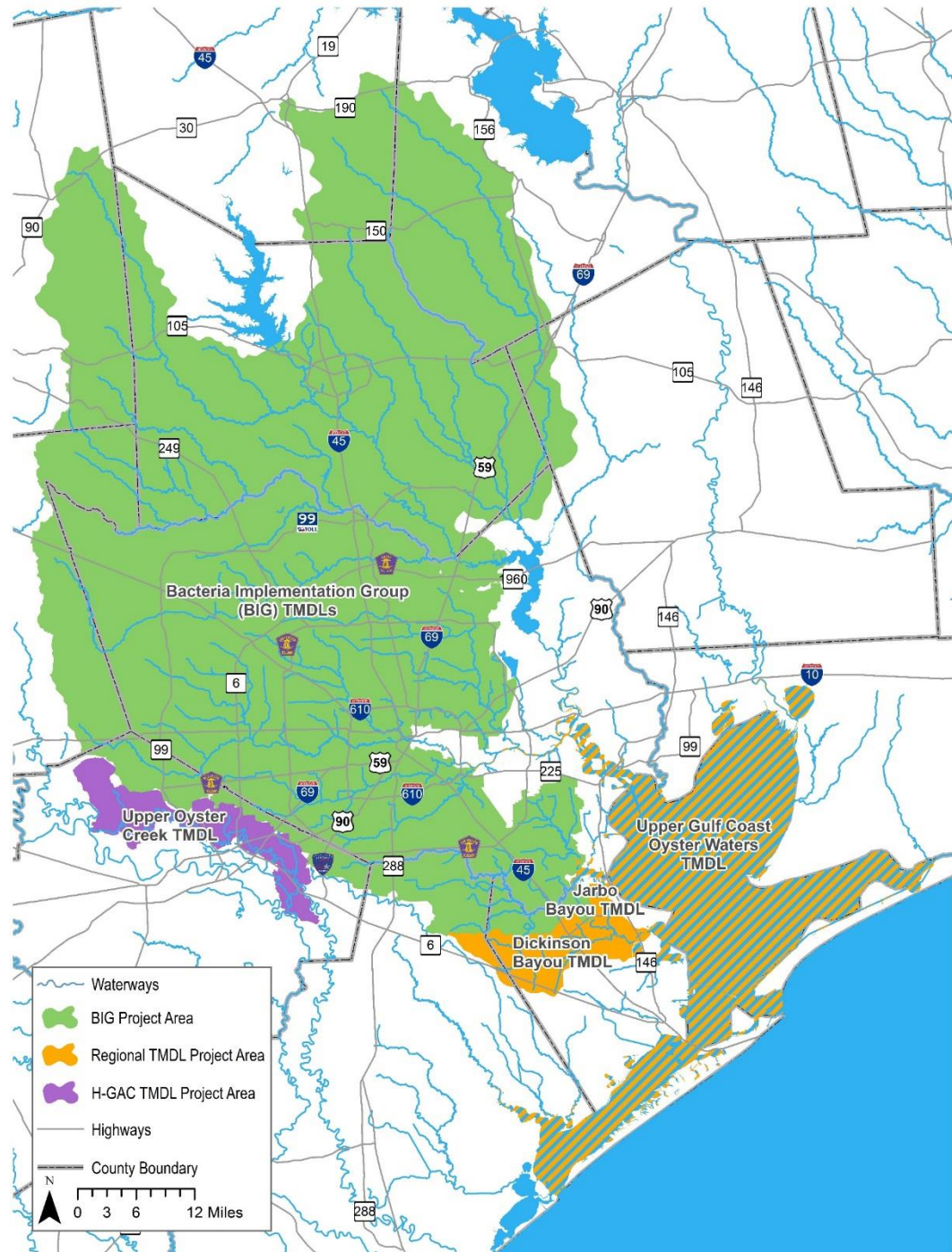
- submitted to the EPA. It identifies the pollutant of concern and its sources, and allocates the allowable loads

## TMDL I Plan

### **Implementation Plan:**

- Utilizes the TMDL as a basis for identifying management practices to improve water quality.
- Mostly Voluntary Measures
- Developed by watershed stakeholders

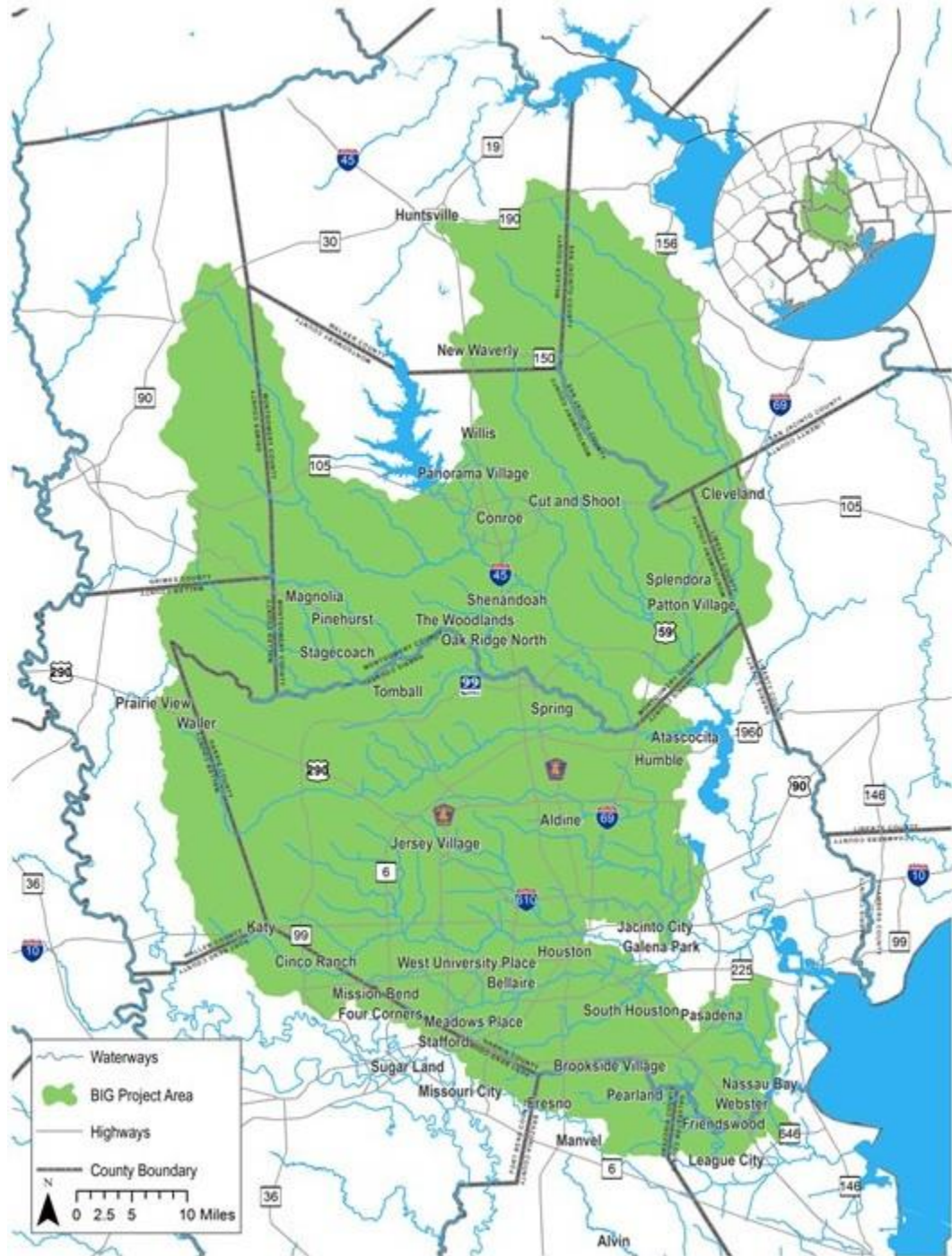
# TMDL Projects







BIG





# Status

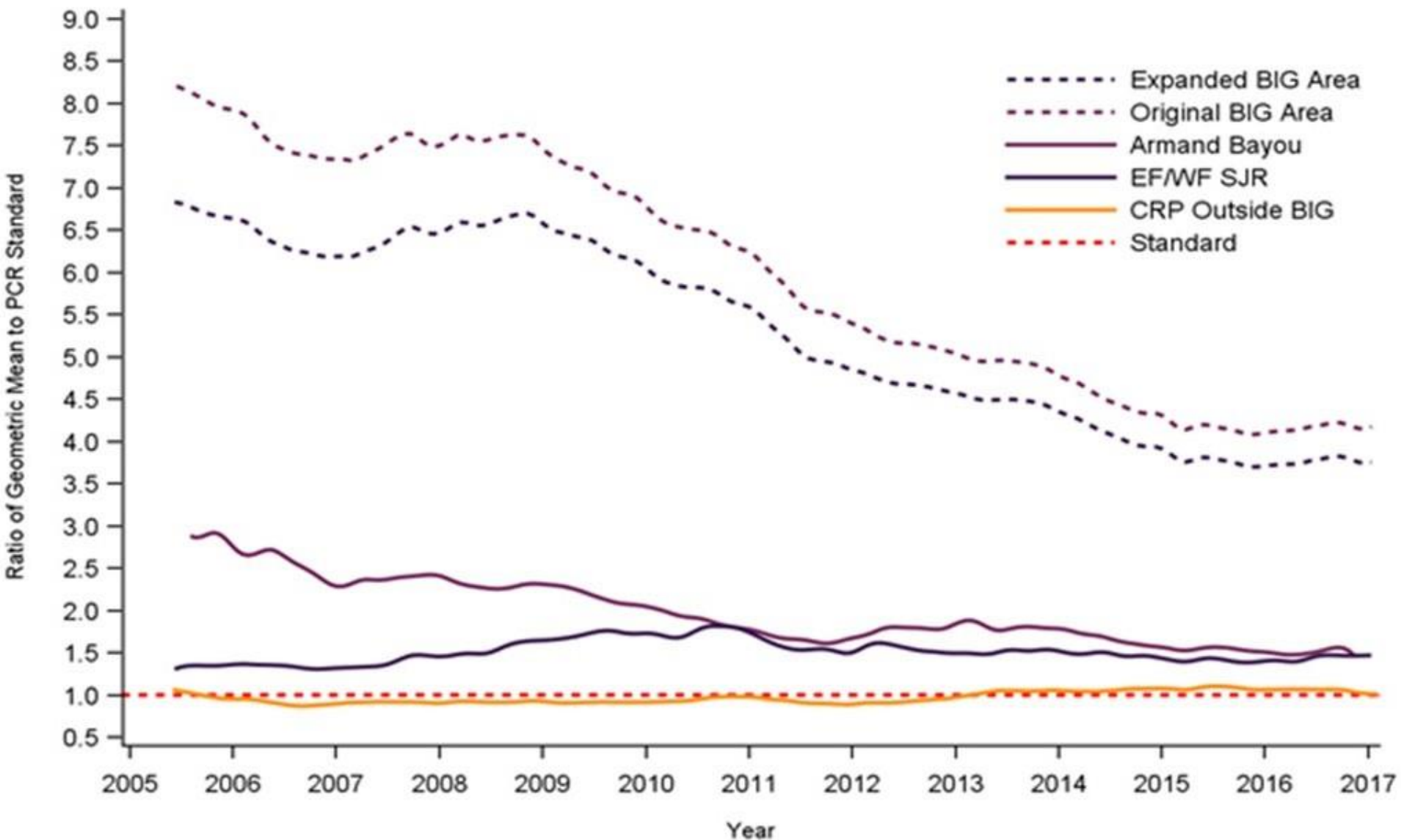


<http://www.h-gac.com/community/water/tmdl/BIG/reports.aspx>



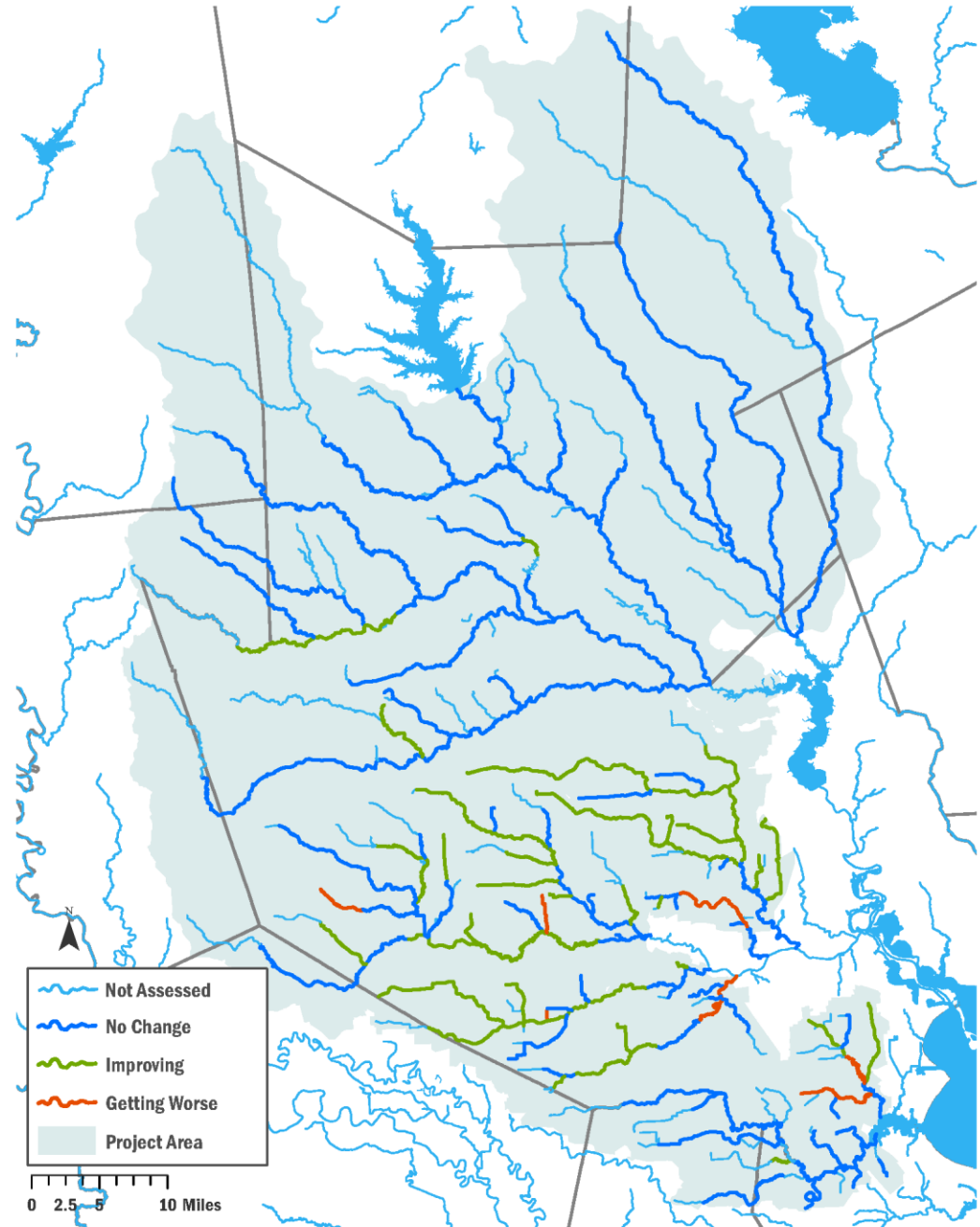
# Moving Seven-Year Geometric Mean- BIG Area, With and Without Armand Bayou

## Expressed as Multiple of Primary Contact Recreation Standard



# Bacteria Trends by Assessment Unit

## Bacteria Trends

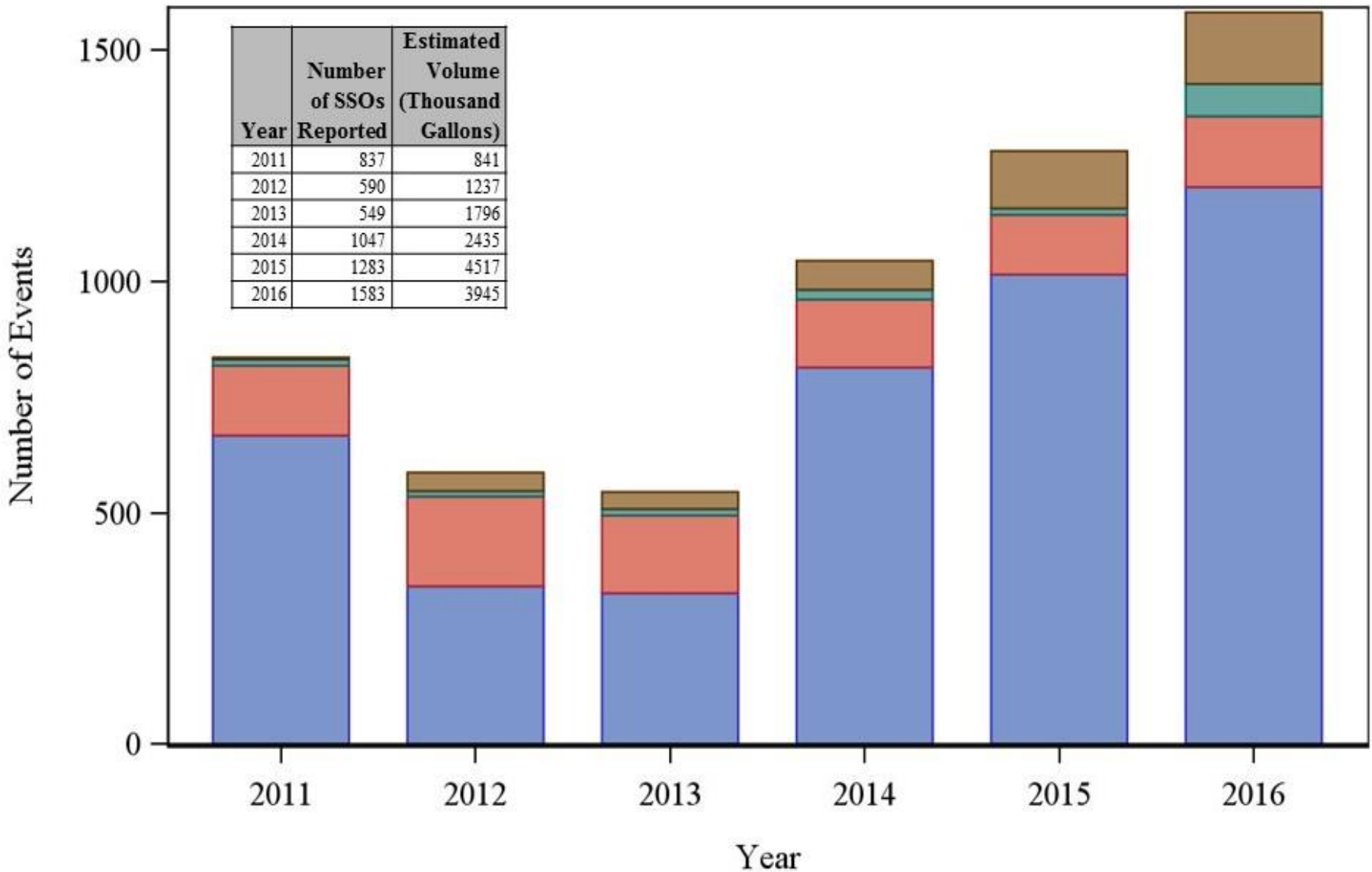






# Cause of Reported SSOs by Year in BIG Project Area, 2011-2016

## Number of Events



Year	Number of SSOs Reported	Estimated Volume (Thousand Gallons)
2011	837	841
2012	590	1237
2013	549	1796
2014	1047	2435
2015	1283	4517
2016	1583	3945

Cause of SSO

- Blockage (All Types)
- Infrastructure/WWTP
- Other
- Rain/INI



# Basin Projects

## BASIN CHARACTERIZATION REPORT FOR THE SAN JACINTO – BRAZOS COASTAL BASIN FOR INDICATOR BACTERIA

Segments: 1101, 1102, 1103, 1104, 1105, 1107, 1108, 1109, 1110, 1111, 1113,  
2424, 2425, 2427, 2431, 2432, 2433, 2434, 2436, 2437, 2438, 2439



June 30, 2016

## BASIN CHARACTERIZATION REPORT FOR THE BRAZOS – COLORADO COASTAL BASIN FOR INDICATOR BACTERIA

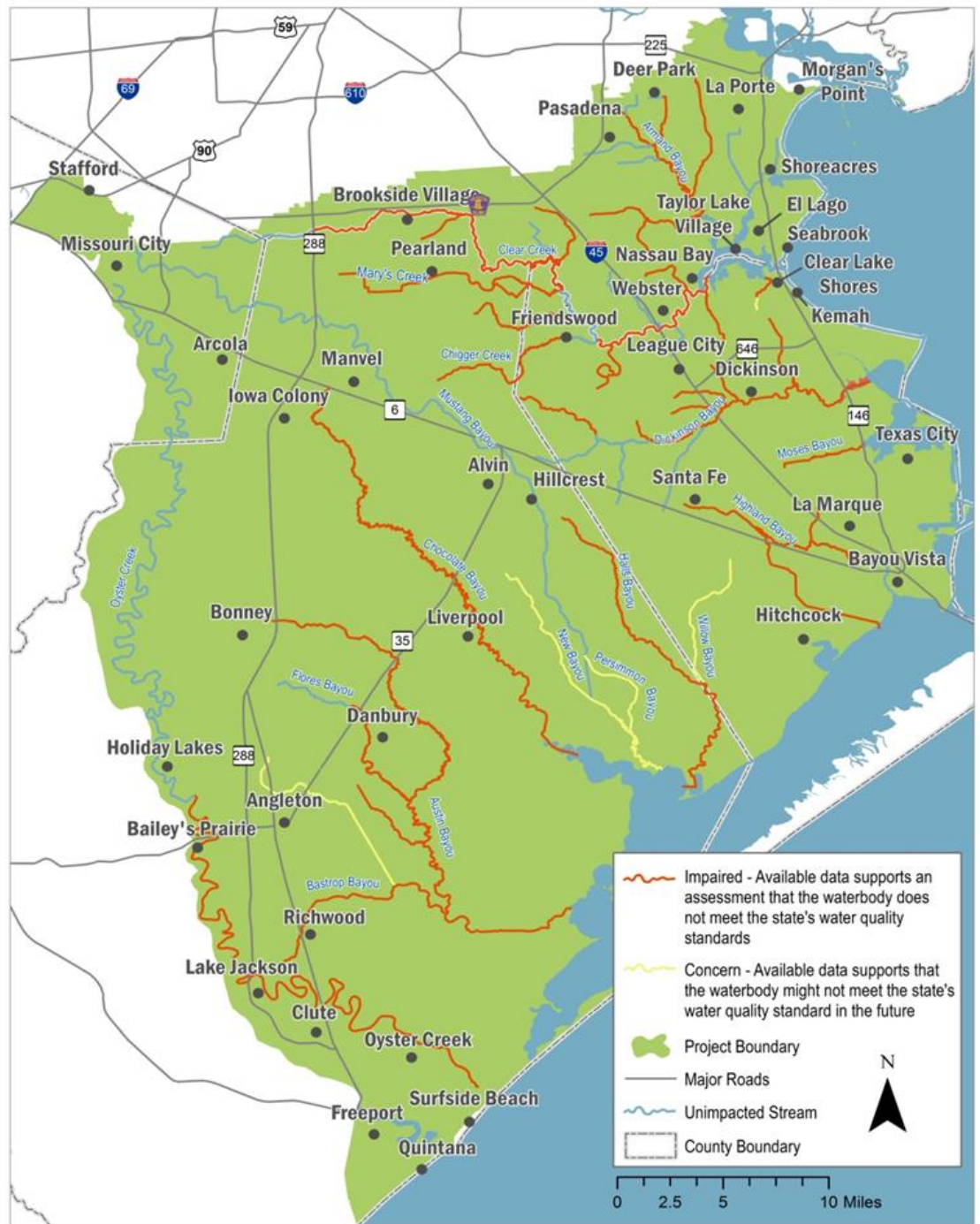
Segments: 1301, 1302, 1304, 1305



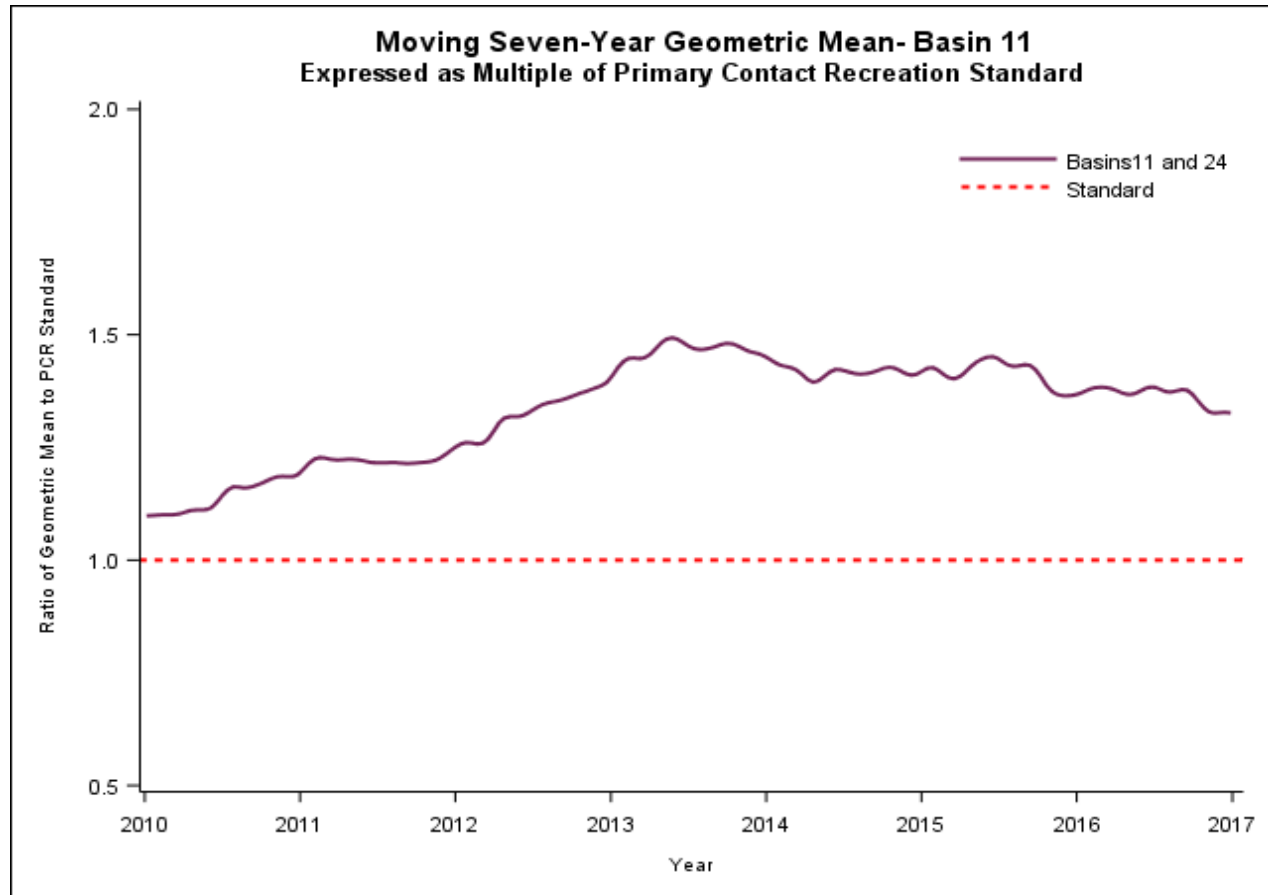
June 30, 2017



# Bacteria (Basin 11)



# Bacteria Trends (Basin 11)



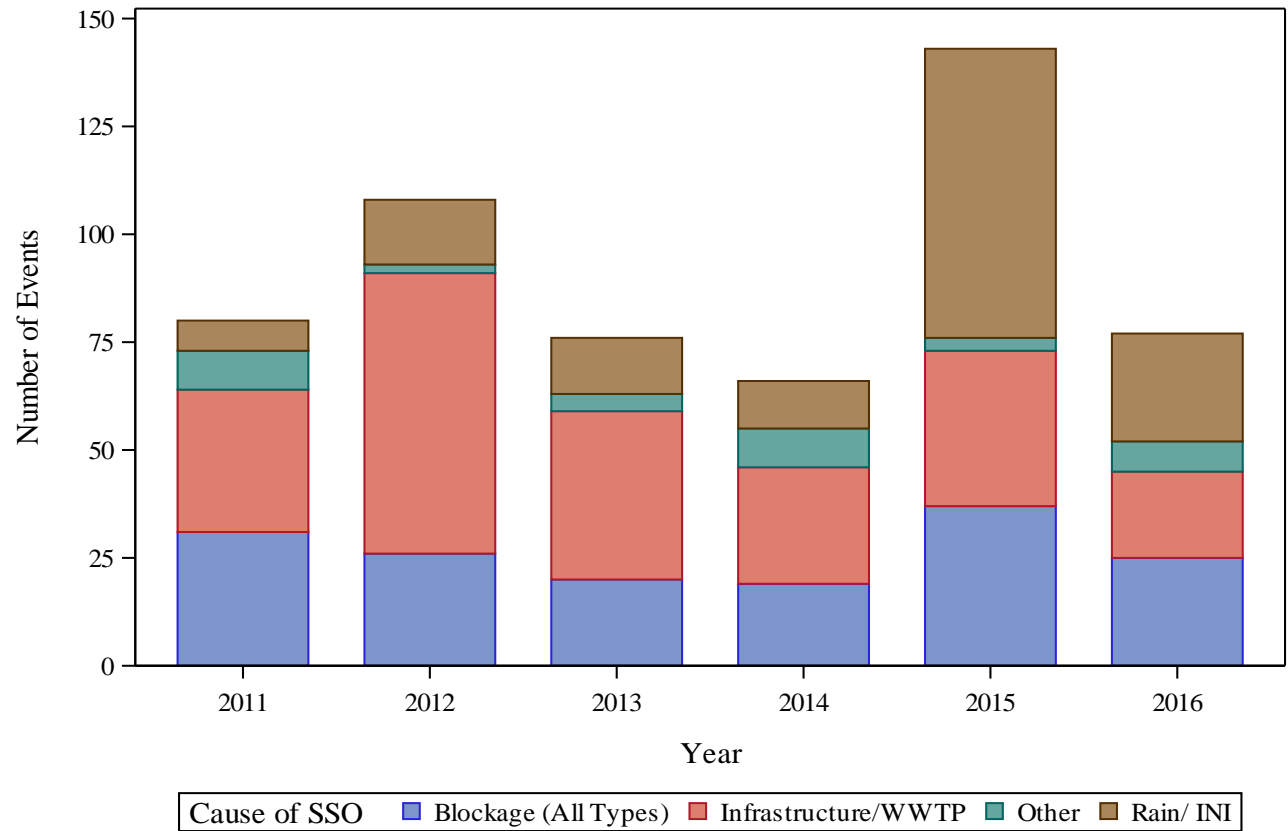
# Basin Data



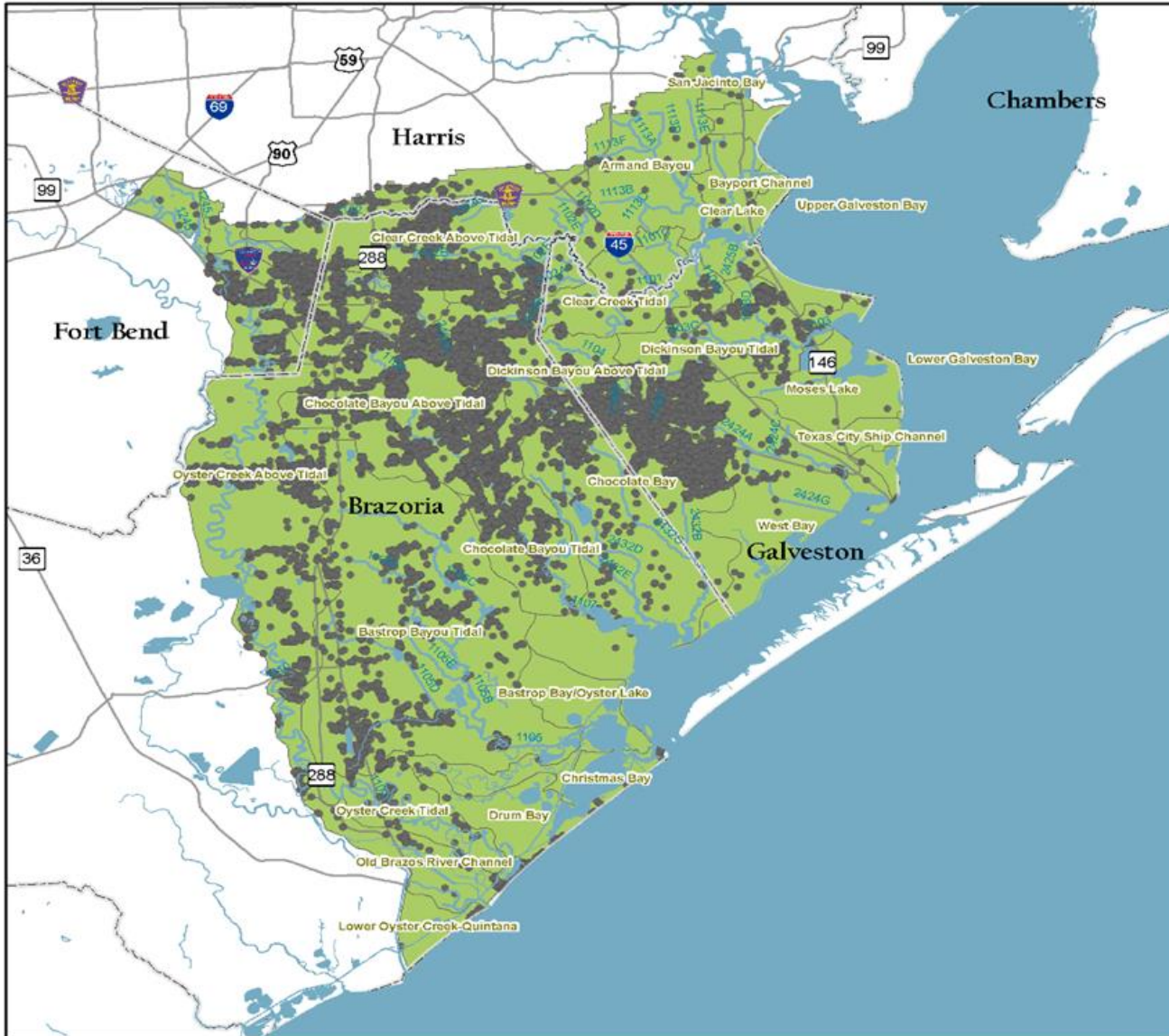







# Sanitary Sewer Overflow (SSOs)

**Cause of Reported SSOs by Year in Basin 11 TMDL Project Area, 2011-2016**  
**Number of Events**

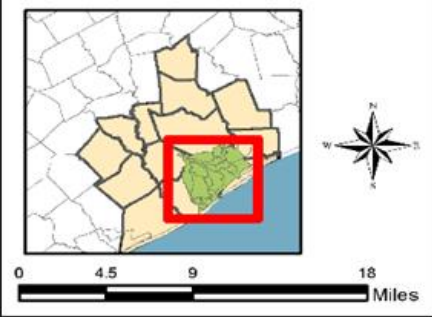


# Basin 11 - OSSF Permits



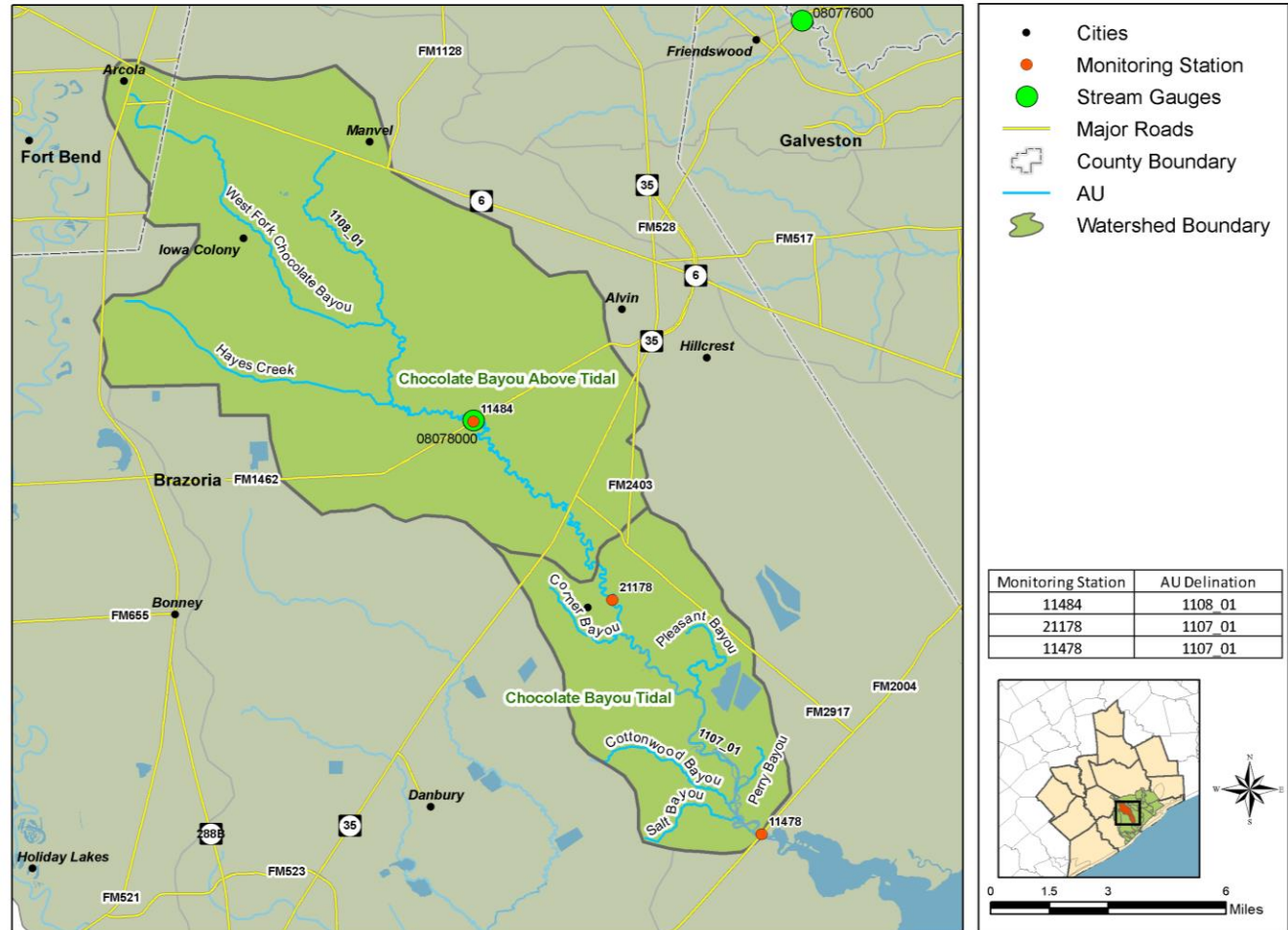
-  County Boundary
-  OSSF Permits
-  Major Rivers and Bayous
-  Major Roads
-  Watershed Boundary

	OSSF Permits
Basin 11- Total	13762
Bastrop Bay/Oyster Lake	5
Bayport Channel	1
Chocolate Bay	2977
Christmas Bay	59
Clear Lake	21
Dickinson Bayou Tidal	1096
Drum Bay	35
Lower Galveston Bay	14
Moses Lake	18
San Jacinto Bay	25
Texas City Ship Channel	2
Upper Galveston Bay	23
West Bay	589
Armand Bayou	32
Bastrop Bayou Tidal	1234
Chocolate Bayou Above Tidal	2422
Chocolate Bayou Tidal	399
Clear Creek Above Tidal	1692
Clear Creek Tidal	462
Dickinson Bayou Above Tidal	701
Lower Oyster Creek-Quintana	28
Old Brazos River Channel	248
Oyster Creek Above Tidal	1562
Oyster Creek Tidal	117



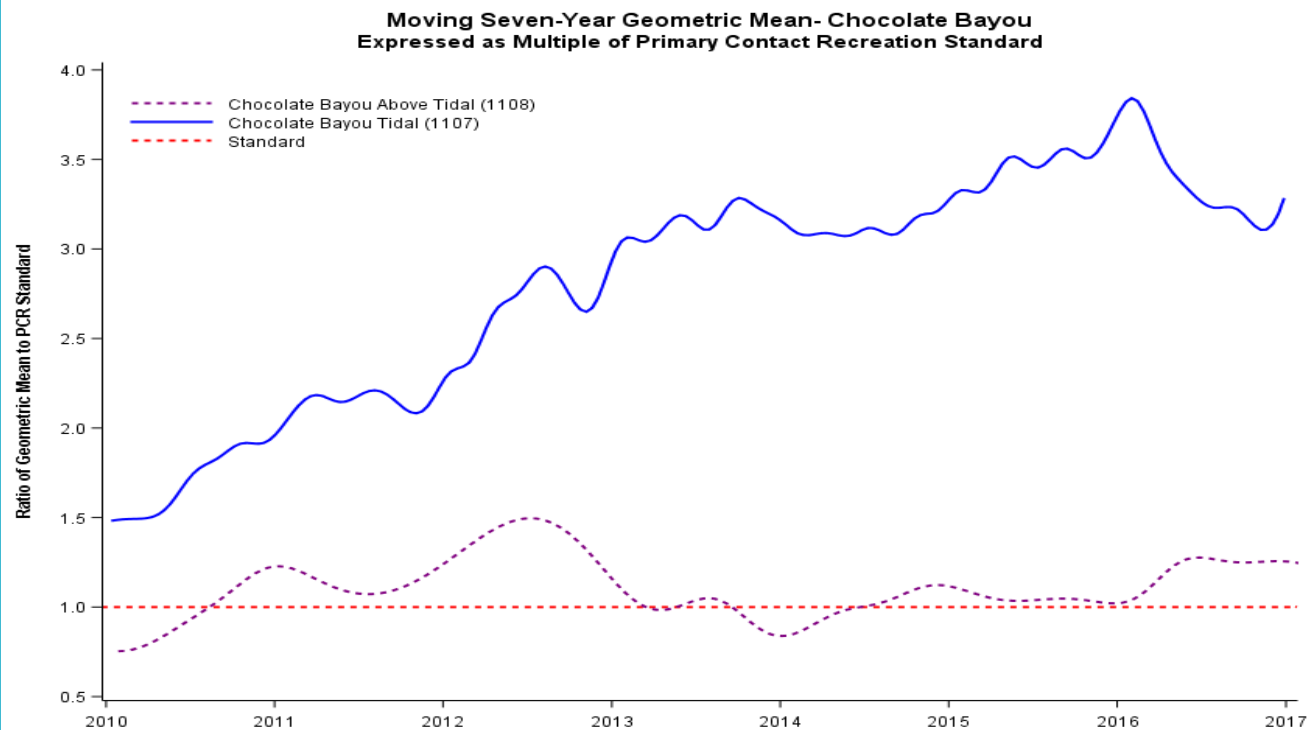
# Chocolate Bayou Study 1107, 1108

## Chocolate Bayou - Monitoring Site Locations

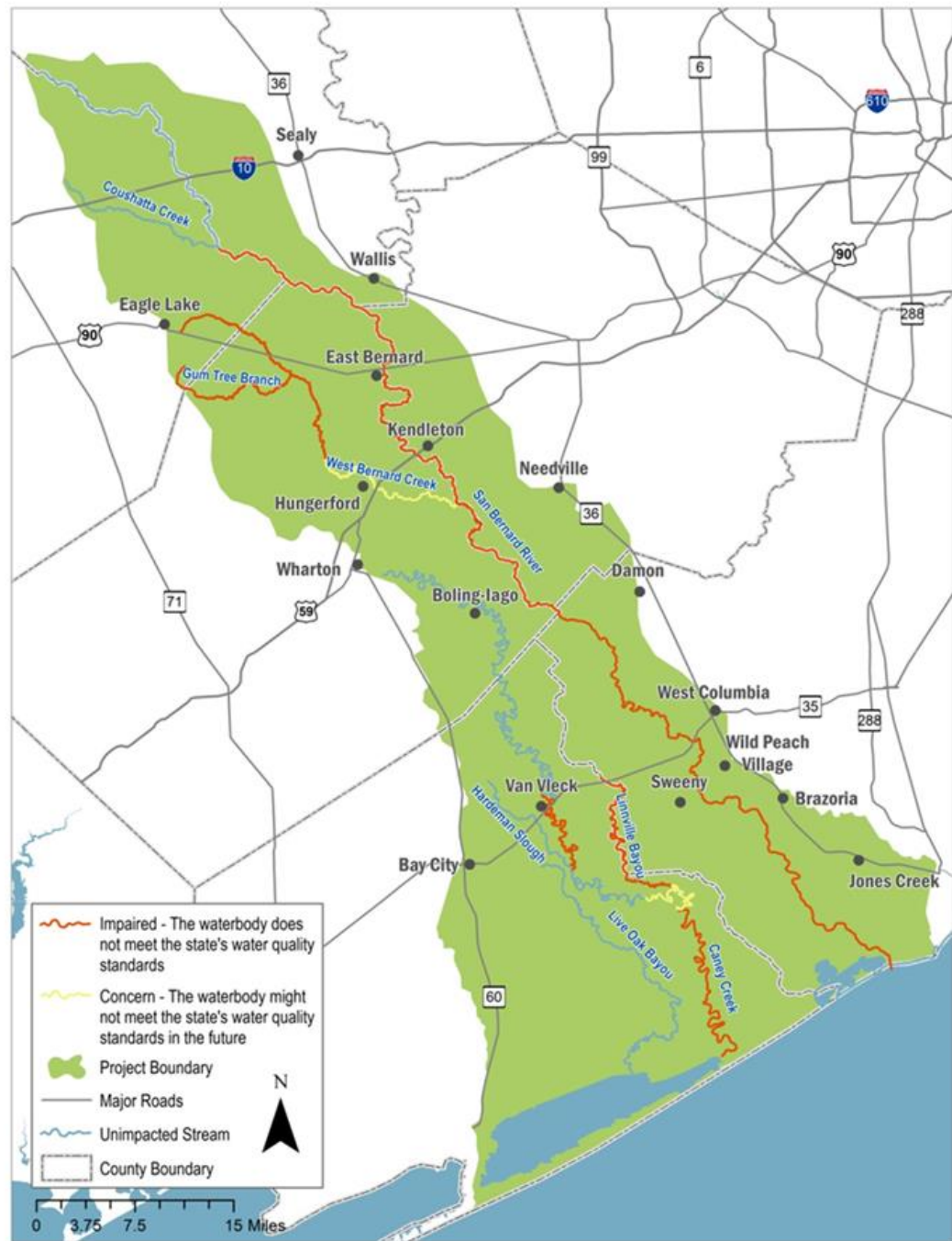




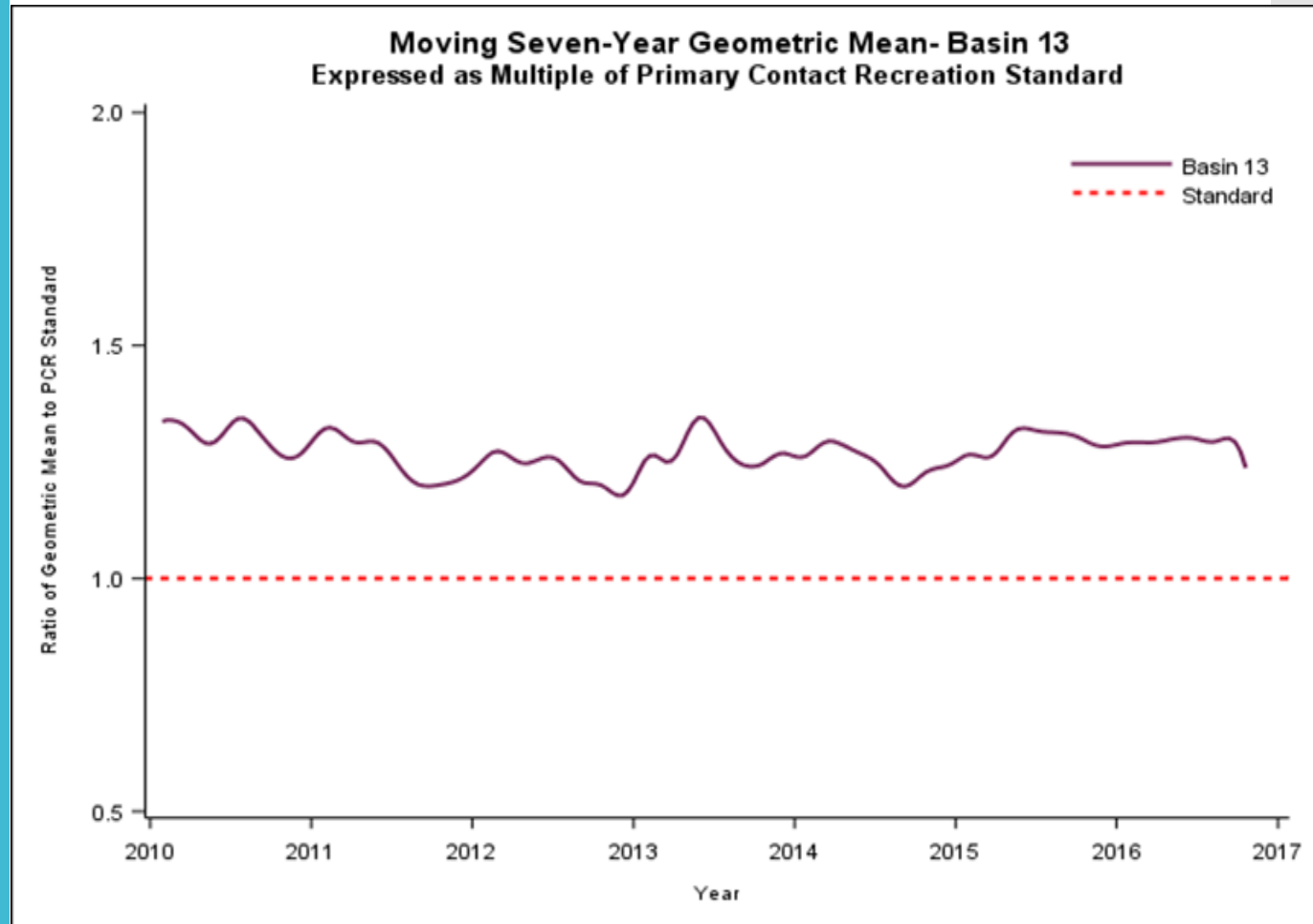
# Chocolate Bayou: Bacteria Trends



# Bacteria (Basin 13)



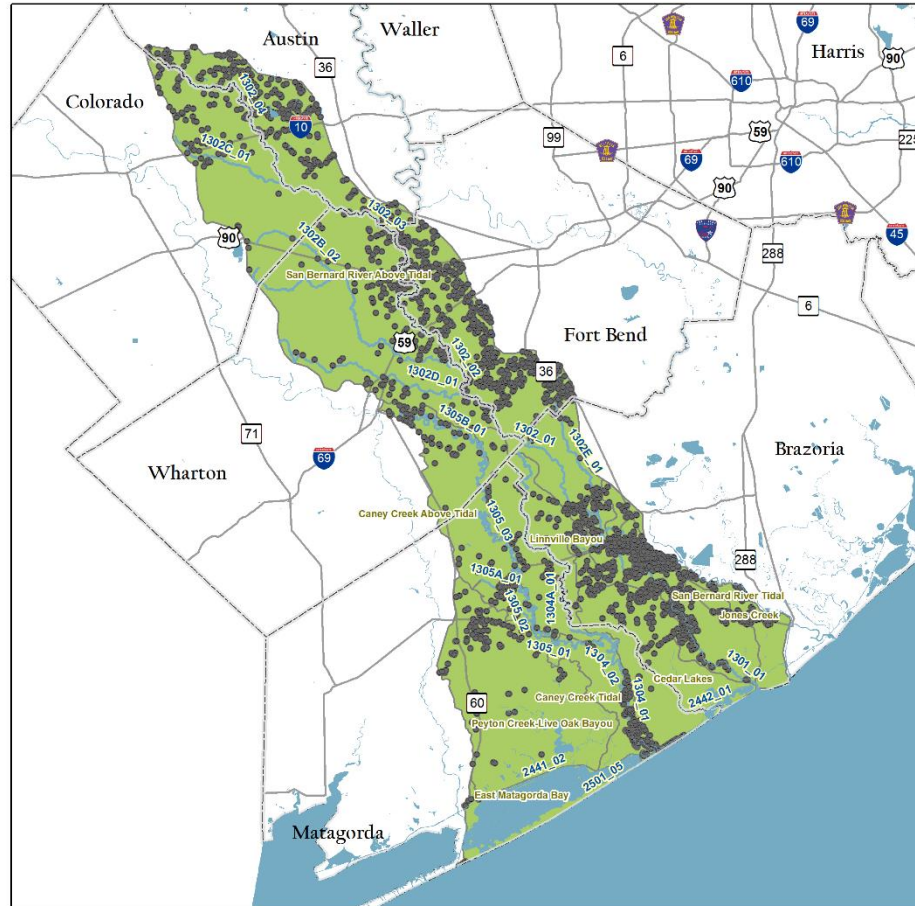
# Bacteria Trends in Basin 13





# Potential Sources: OSSFs

## Basin 13 - OSSF Permits



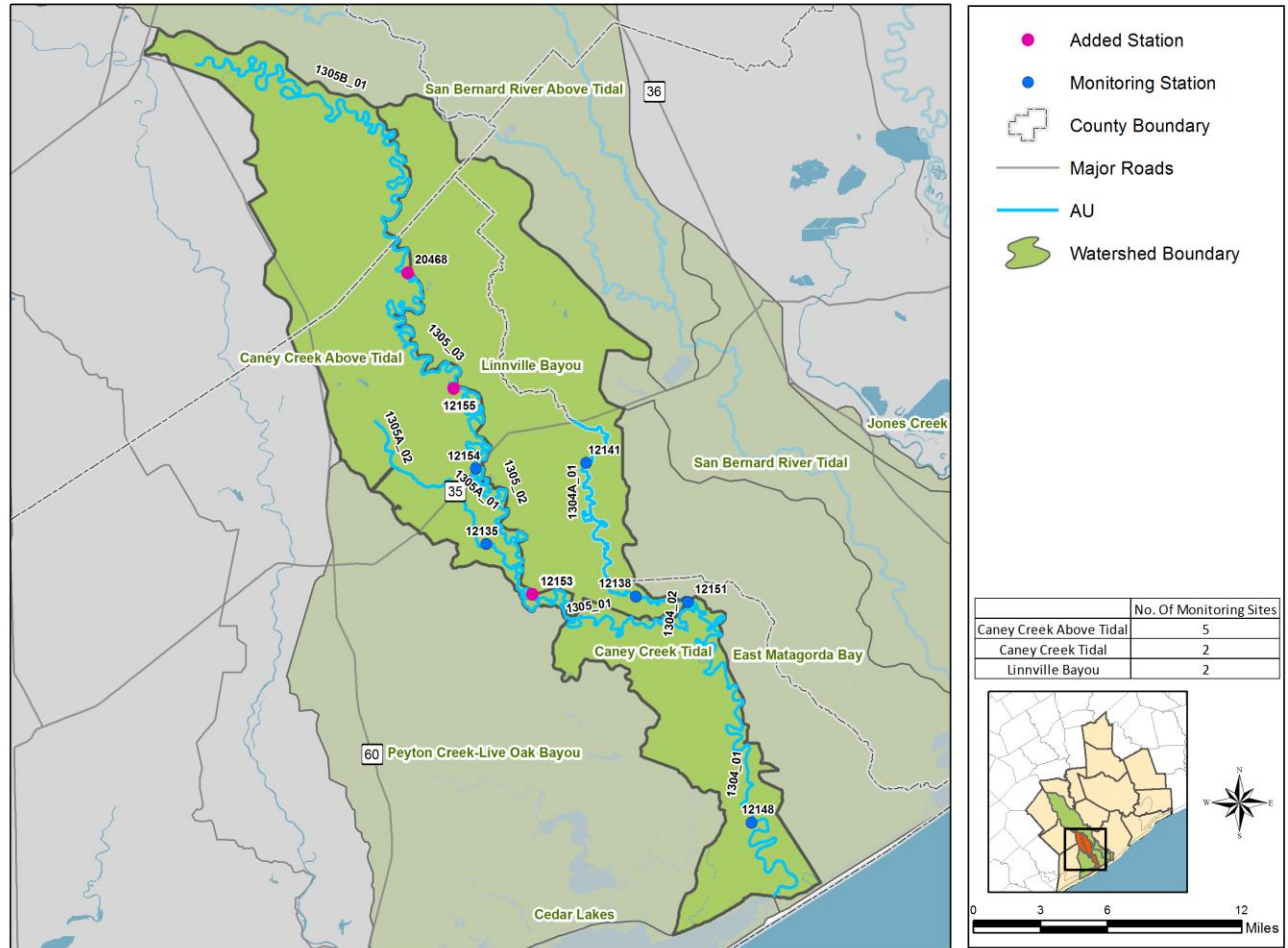
- County Boundary
- OSSF Permits
- Major Rivers
- Major Roads
- Watershed Boundary

	OSSF Permits
Basin 13-Total	4538
Linnville Bayou	103
Caney Creek Above Tidal	303
Peyton Creek-Live Oak Bayou	127
Cedar Lakes	267
Jones Creek	244
San Bernard River Above Tidal	2144
San Bernard River Tidal	1053
Caney Creek Tidal	279
East Matagorda Bay	18

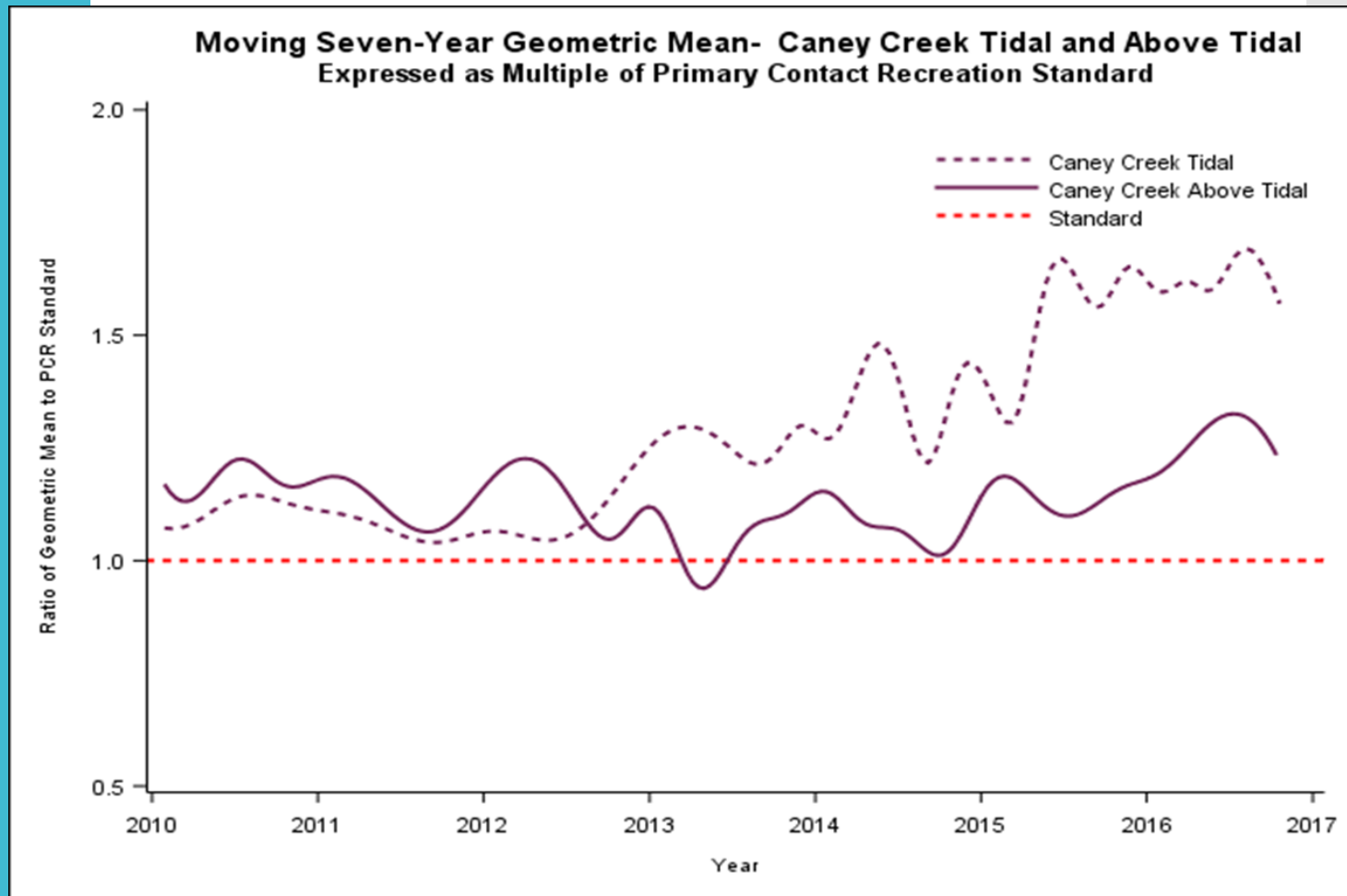


# Caney Creek

## Caney Creek - Monitoring Site Locations



# Bacteria Trends





# Next Steps

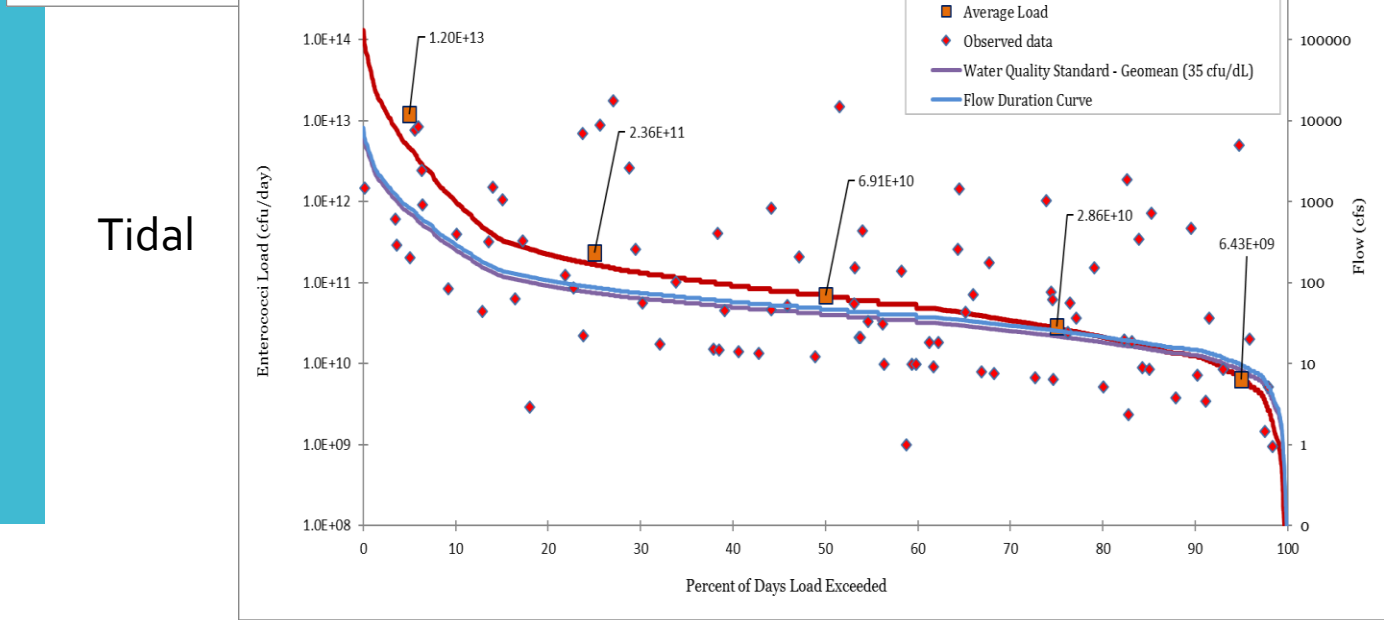
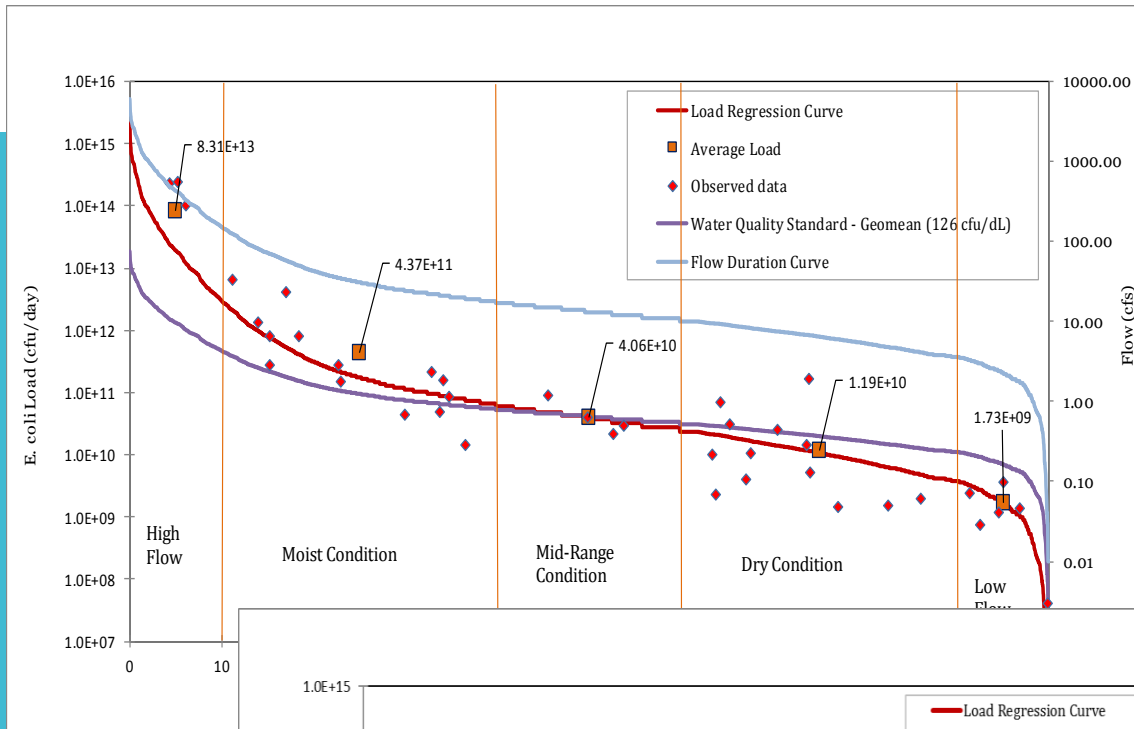


Texas Watershed Stewards Training/July 11, 2017

HGAC



# Chocolate Bayou: LDCs





# Basin 11 - Watershed



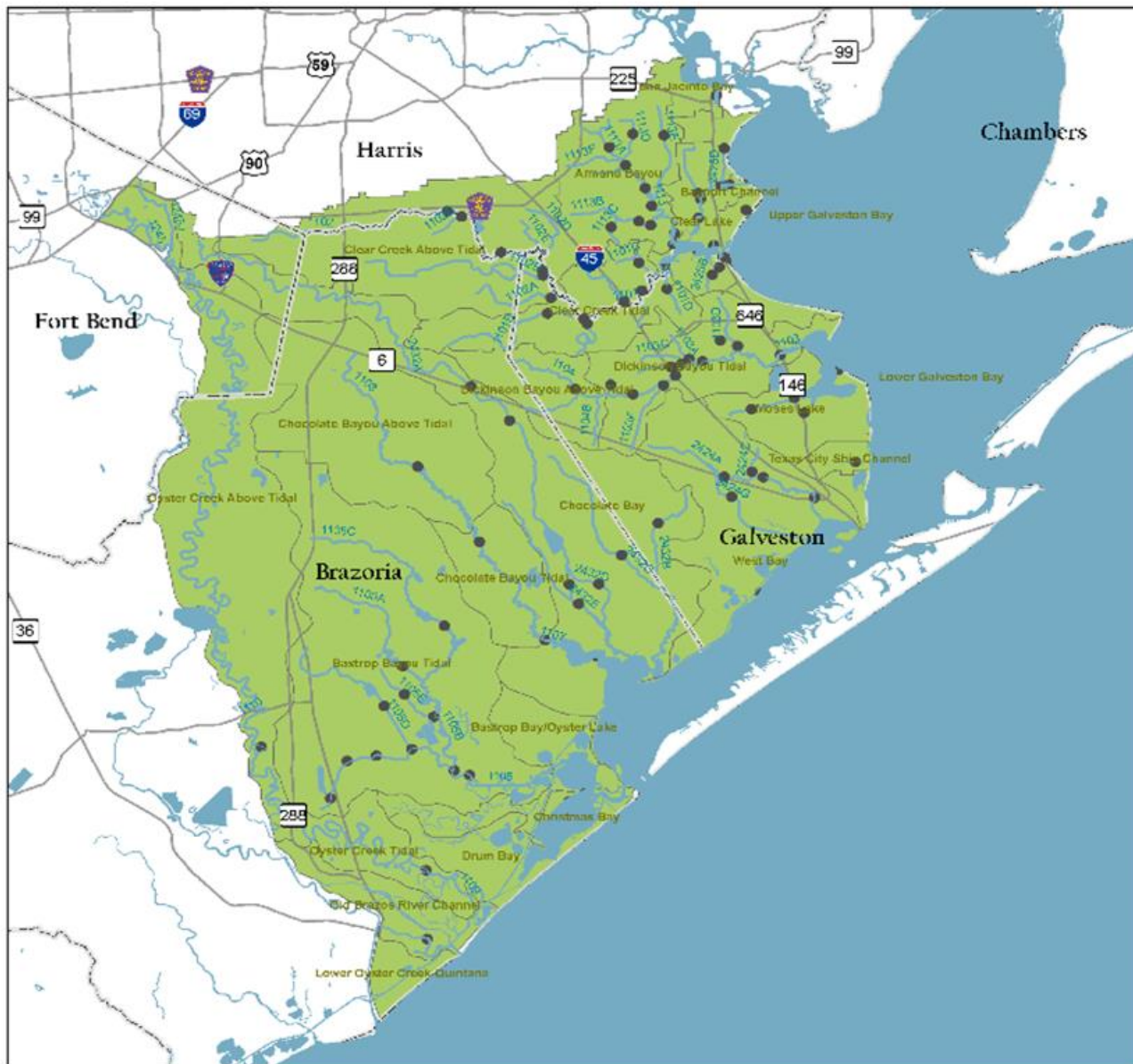
- County Boundary
- Major Rivers and Bayous
- Watershed Boundary

Watershed	% of Basin 11
Bastrop Bay/Oyster Lake	2
Bayport Channel	>1
Chocolate Bay	11
Christmas Bay	1
Clear Lake	1.5
Dickinson Bayou Tidal	3
Drum Bay	1.5
Lower Galveston Bay	11
Moses Lake	2
San Jacinto Bay	1
Texas City Ship Channel	<1
Upper Galveston Bay	7.5
West Bay	11
Armand Bayou	3
Bastrop Bayou Tidal	12
Chocolate Bayou Above Tidal	6
Chocolate Bayou Tidal	2
Clear Creek Above Tidal	6
Clear Creek Tidal	3
Dickinson Bayou Above Tidal	2
Lower Oyster Creek-Quintana	1
Old Brazos River Channel	2
Oyster Creek Above Tidal	9
Oyster Creek Tidal	2



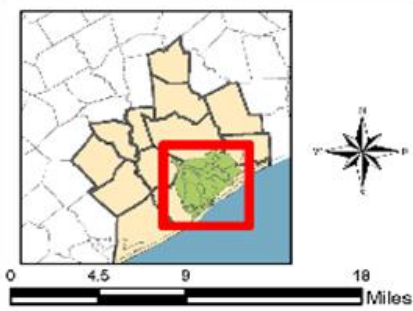
Source- Harris County Flood Control District (HCFCD), United States Geological Survey (USGS), 10-HUC watershed boundary dataset and the H-GAC Clean Rivers Program (CRP) watersheds

# Basin 11 - Monitoring Site Locations



- Monitoring Station
- ⊕ County Boundary
- Major Rivers and Bayous
- Major Roads
- ▭ Watershed Boundary

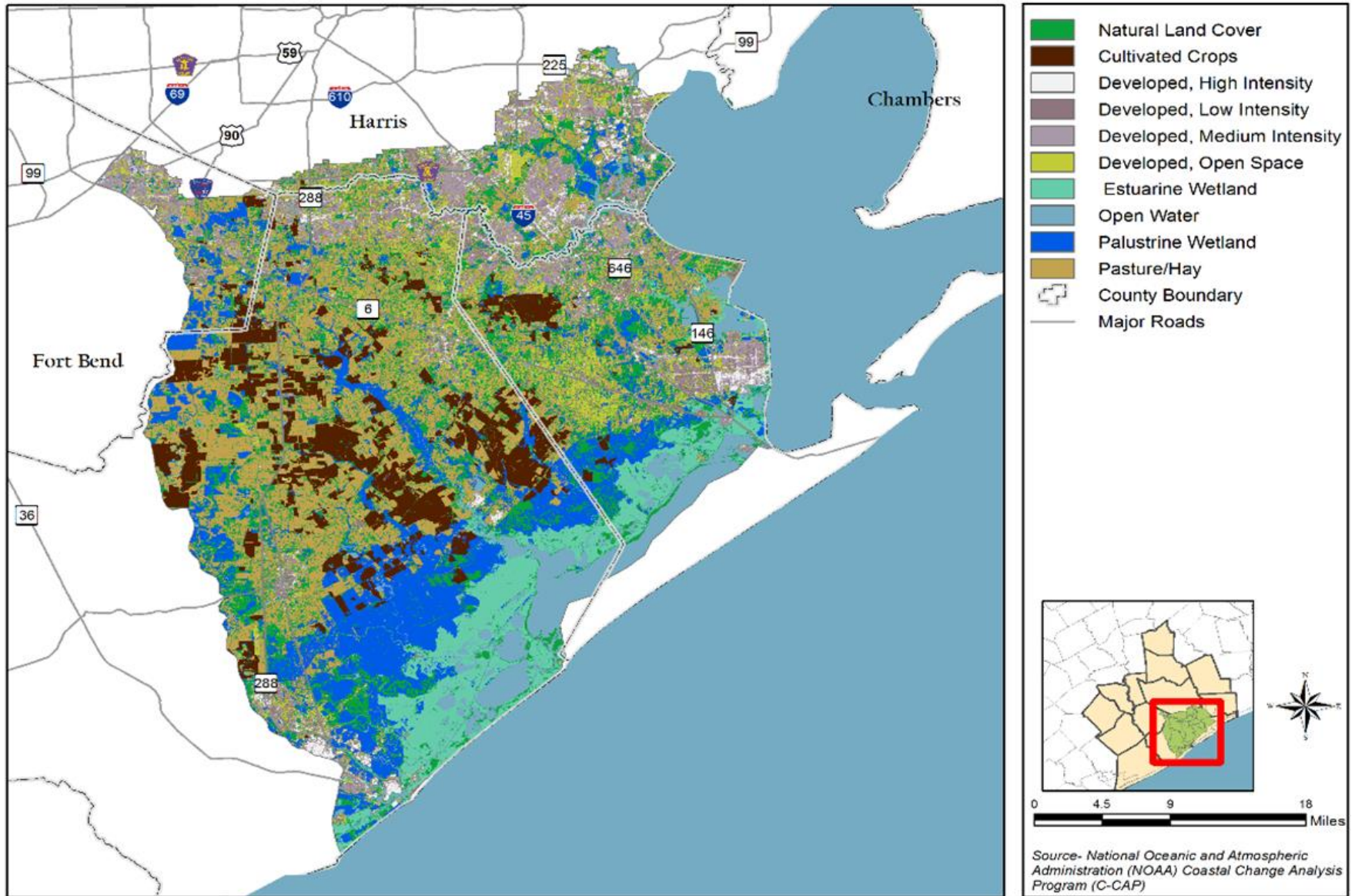
	No. of Monitoring Site
Basin 11- Total	133
Bayport Channel	2
Chocolate Bay	10
Christmas Bay	2
Clear Lake	8
Dickinson Bayou Tidal	17
Lower Galveston Bay	15
Moses Lake	5
San Jacinto Bay	2
Texas City Ship Channel	1
Upper Galveston Bay	21
West Bay	10
Armand Bayou	11
Bastrop Bayou Tidal	11
Chocolate Bayou Above Tidal	1
Chocolate Bayou Tidal	3
Clear Creek Above Tidal	6
Clear Creek Tidal	8
Dickinson Bayou Above Tidal	1
Old Brazos River Channel	1
Oyster Creek Above Tidal	1
Oyster Creek Tidal	2



Source- Houston-Galveston Area Council

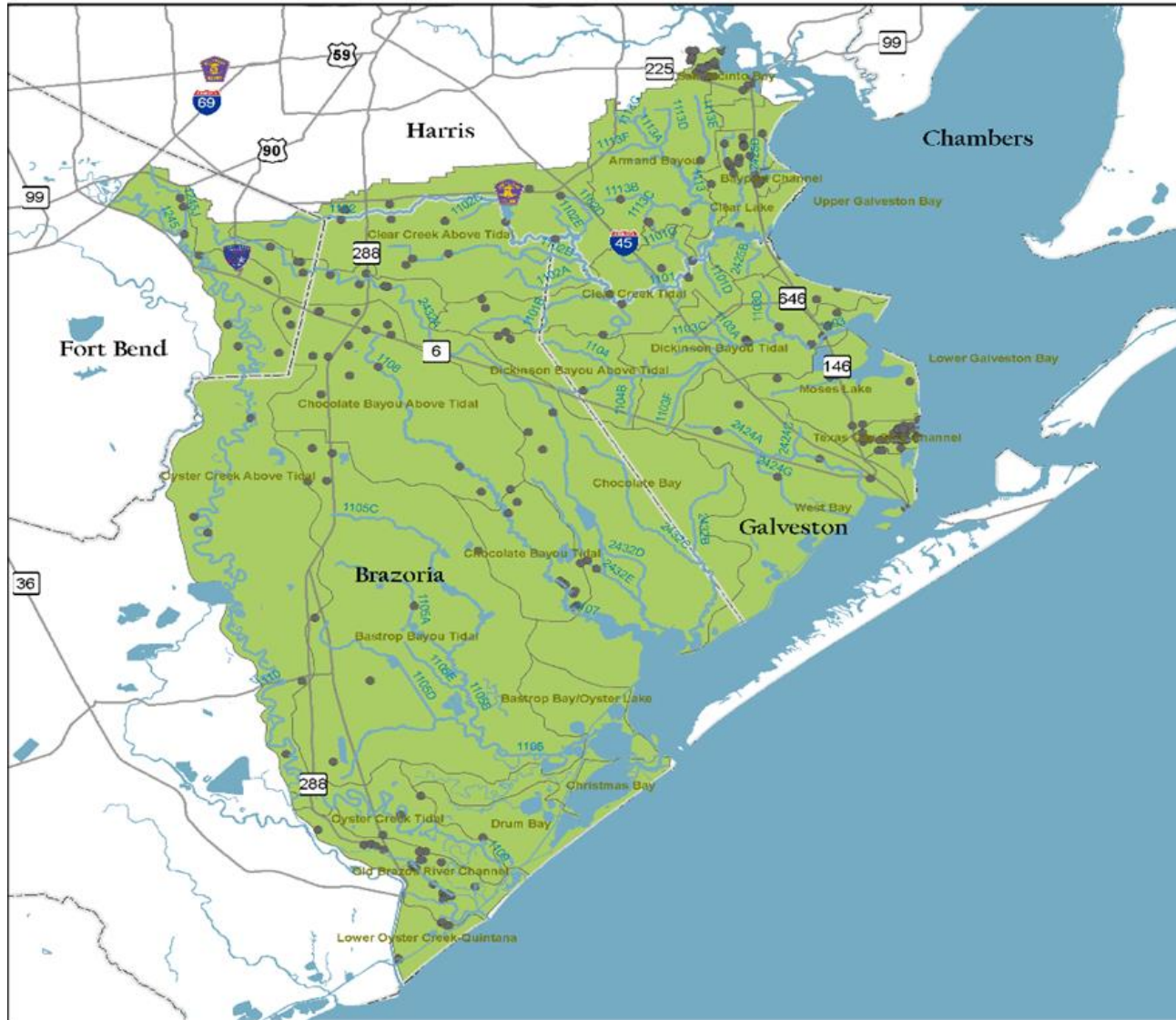


# Basin 11 - Land Cover





# Basin 11 - Waste Water Outfalls



- Waste Water Outfalls
- Major Rivers and Bayous
- Major Roads
- ⊕ County Boundary
- Watershed Boundary

	Waste Water Outfalls
Basin 11- Total	280
Bayport Channel	8
Chocolate Bay	19
Clear Lake	16
Dickinson Bayou Tidal	9
Drum Bay	1
Lower Galveston Bay	5
Moses Lake	6
San Jacinto Bay	37
Texas City Ship Channel	45
Upper Galveston Bay	8
West Bay	6
Armand Bayou	5
Bastrop Bayou Tidal	8
Chocolate Bayou Above Tidal	17
Chocolate Bayou Tidal	10
Clear Creek Above Tidal	13
Clear Creek Tidal	9
Dickinson Bayou Above Tidal	4
Lower Oyster Creek-Quintana	6
Old Brazos River Channel	30
Oyster Creek Above Tidal	15
Oyster Creek Tidal	3

# Basin 11 - MS4

