



Nueces River Authority

2025 Watershed Characterization Report

Basin 22

Nueces-Rio Grande Coastal

&

Basin 24

Southern Portions of Bays and Estuaries



Texas Commission on Environmental Quality

MAY 2025

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Table of Contents

List of Figures.....	T-3
List of Acronyms.....	T-5
Introduction	1
Basin 22: Nueces-Rio Grande Coastal	1
Basin 24: Bays and Estuaries	1
2024 Highlights	1
Water Quality Monitoring	2
Water Quality Conditions.....	2
Water Quality Terminology	2
Recreation Use Designations	5
Recreational Use Attainability Analyses (RUAA).....	5
Aquatic Life Monitoring (ALM).....	6
Least Disturbed Stream (LDS).....	6
Watershed Summaries.....	6
Basin 22: Nueces-Rio Grande Coastal	7
Water Quality Overview	8
Segment 2201: Arroyo Colorado Tidal	9
Segment 2202: Arroyo Colorado Above Tidal	12
Segment 2203: Petronila Creek Tidal	15
Segment 2204: Petronila Creek Above Tidal	16
Basin 24: Bays and Estuaries	19
Segment 2462: San Antonio Bay / Hynes Bay.....	20
Segment 2463: Mesquite Bay.....	22
Segment 2471: Aransas Bay	24
Segment 2471A: Little Bay	25
Segment 2472: Copano Bay/ Port Bay/ Mission Bay.....	26
Segment 2473: St. Charles Bay.....	28
Segment 2481: Corpus Christi Bay.....	30
Segment 2482: Nueces Bay	32
Segment 2483: Redfish Bay	34

Segment 2483A: Conn Brown Harbor	36
Segment 2484: Corpus Christi Inner Harbor.....	38
Segment 2485: Oso Bay.....	39
Segment 2485A: Oso Creek.....	41
Segment 2485B: Unnamed Tributary of Oso Creek.....	43
Segment 2485D: West Oso Creek.....	43
Segment 2491: Laguna Madre	44
Segment 2491B: North Floodway.....	46
Segment 2491C: Raymondville Drain.....	47
Segment 2491C: Hidalgo Main Drain	48
Segment 2492: Baffin Bay / Alazan Bay / Cayo del Grullo / Laguna Salado.....	49
Segment 2492A: San Fernando Creek.....	50
Segment 2492B: Los Olmos Creek Tidal.....	52
Segment 2493: South Bay.....	54
Segment 2494: Brownsville Ship Channel.....	55
Segment 2494A: Port Isabel Fishing Harbor	56
Segment 2494C: San Martin Lake Tidal	57
Summary.....	58
Water Quality in the Nueces – Rio Grande Coastal Basin	58
Water Quality in the Bays and Estuaries.....	58
Recommendations	59
Contact Information.....	60
Appendix A.....	61
Wastewater Discharge Permit Information.....	61

List of Figures

Figure 1: Map of the Nueces - Rio Grande Coastal Basin	7
Figure 2: Map of Arroyo Colorado Tidal.....	9
Figure 3: Arroyo Colorado at Cemetery Road	12
Figure 4: Map of the Arroyo Colorado	13
Figure 5: Map of Petronila Creek Tidal	15
Figure 6: Petronila Creek Above Tidal	16
Figure 7: Map of Petronila Creek.....	17
Figure 8: Retama at Petronila Tributary FM 70 (Cefe #1).....	19
Figure 9: San Antonio Bay	20
Figure 10: Map of San Antonio Bay.....	21
Figure 11: Mesquite Bay.....	22
Figure 12: Map of Mesquite Bay	23
Figure 13: Map of Aransas Bay.....	24
Figure 14: Overview of Little Bay.....	25
Figure 15: Mission Bay	26
Figure 16: Map of Mission Bay	27
Figure 17: St. Charles Bay	28
Figure 18: Map of St. Charles Bay	29
Figure 19: Corpus Christi Bay	30
Figure 20: Nueces Bay	32
Figure 21: Map of Nueces Bay	33
Figure 22: Redfish Bay	34
Figure 23: Map of Redfish Bay	35
Figure 24: Conn Brown Harbor	36
Figure 25: Corpus Christi Inner Harbor.....	38
Figure 26: Oso Bay	39
Figure 27: Map of Oso Bay	40
Figure 28: Oso Creek at SH286.....	41
Figure 29: Map of Oso Creek	42
Figure 30: Unnamed Tributary of Oso Creek	43
Figure 31: West Oso Creek.....	43
Figure 32: Laguna Madre.....	44
Figure 33: Map of Laguna Madre.....	45
Figure 34: North Floodway Station 20930	46
Figure 35: Raymondville Drain at CR 445.....	47
Figure 36: Map of the Valley Drains	47
Figure 37: Hidalgo Main Drain	48

Figure 38: Alazan Bay	49
Figure 39: Map of Baffin Bay Tributaries	49
Figure 40: San Fernando Creek at US 77	50
Figure 41: Map of San Fernando Creek.....	51
Figure 42: Los Olmos Creek at US 77	52
Figure 43: Map of Los Olmos Creek	53
Figure 44: Map of South Bay.....	54
Figure 45: Map of Brownsville Ship Channel	55
Figure 46: Map of Port Isabel Fishing Harbor and San Martin Lake	56
Figure 47: Map of San Martin Lake Tidal	57

List of Acronyms

AU	Assessment Unit
BCRAGD	Bandera County River Authority and Groundwater District
BMP	Best Management Practices
CAFO	Concentrated Animal Feeding Operations
CBBEP	Coastal Bend Bays and Estuary Program
CCSC	Corpus Christi Ship Channel
cfu	Colony Forming Units
CR	County Road
DO	Dissolved Oxygen
FM	Farm to Market Road
HR	Hour
IH	Interstate Highway
km	Kilometers
m	Meters
mg/L	Milligrams Per Liter
mL	Milliliter
MSL	Mean Sea Level
NRA	Nueces River Authority
PCR	Primary Contact Recreation
RR	Ranch Road
RRC	Railroad Commission of Texas
RUAA	Recreational Use Attainability Analyses
SCR1	Secondary Contact Recreation 1
SCR2	Secondary Contact Recreation 2
SH	State Highway
su	Standard Units
SWQM	Surface Water Quality Monitoring
SWQMIS	Surface Water Quality Monitoring Information System
TCEQ	Texas Commission on Environmental Quality
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TPWD	Texas Parks and Wildlife Department
TSS	Total Suspended Solids
TSSWCB	Texas State Soil and Water Conservation Board
TWRI	Texas Water Resources Institute
µg/l	Micrograms Per Liter
US	United States Highway
WPP	Watershed Protection Plan
WWTP	Wastewater Treatment Plant

Introduction

In 1991, the Texas Legislature passed the Texas Clean Rivers Act (Senate Bill 818) requiring basin-wide water quality assessments to be conducted for each river basin in Texas. Under this act, the Clean Rivers Program (CRP) developed an effective partnership involving the Texas Commission on Environmental Quality (TCEQ), other state agencies, river authorities, local governments, industry, and citizens.

Using a watershed management approach, the Nueces River Authority (NRA) and TCEQ work together to identify and evaluate surface water quality issues and to establish priorities for corrective action. Under CRP, NRA is responsible for the San Antonio – Nueces Coastal Basin, the Nueces River Basin, the Nueces – Rio Grande Coastal Basin, and the adjacent bays and estuaries, an area roughly 30,500 square miles, ranging from the hill country in Edwards County to San Antonio Bay in Refugio County to the Brownsville Ship Channel in Cameron County.

Basin 22: Nueces-Rio Grande Coastal

The Nueces-Rio Grande Coastal Basin covers approximately 10,400 square miles, encompassing all or part of 12 counties in South Texas. The basin is bordered by the Nueces River Basin and the San Antonio – Nueces Coastal Basin to the north, bays, estuaries, and the Gulf of America to the east, and the Rio Grande River Basin to the south and west. Waterbodies include the Arroyo Colorado which drains into the Laguna Madre and Petronila Creek into Baffin Bay. The inland area of the basin is dominated by large ranches, including the King Ranch. State-operated recreational areas are located primarily along the coast and include Mustang Island State Park, Port Isabel Light House, State Historic Park in Port Isabel, and the Padre Island National Seashore.

Basin 24: Bays and Estuaries

Basin 24 covers 2,002 square miles of the Texas Coast and includes 48 classified estuarine segments and marine waterbodies along nine major bay systems on the western shore of the Gulf of America. Located in the Western Gulf Coastal Plain ecoregion, Basin 24 includes tidally influenced streams, marshes, mud and sand flats, seagrass beds, oyster reefs, and soft-bottom bay systems that are semi-enclosed by long sandy barrier islands. These habitats serve as nursery grounds for many fish and shellfish species, including shrimp, oysters, crabs, and scallops.

2024 Highlights

Conservation Easements have greatly improved riparian zones throughout the Coastal Bend. Through the San Fernando and Petronila Creek Watershed Protection Plan implemented by Texas Water Resources Institute, monitoring of these water bodies is ongoing into 2025 and 2026. This monitoring documents the improvements in water quality due to changes in land management practices and wastewater upgrades. Bringing Baffin Back is a sustained commitment to dramatically improve the health of Baffin Bay and the surrounding economy. This campaign is gaining momentum and growing environmental stewardship among stakeholders. Continuous water monitoring stations are being implemented in the Lower Rio Grande Valley. Drought conditions have caused a lot of parameters to worsen throughout the Coastal Bend, bays, and estuaries.

Water Quality Monitoring

The CRP and the TCEQ Surface Water Quality Monitoring (SWQM) team conduct quarterly monitoring at routine monitoring sites. Most of these sites have been monitored for many years and provide valuable information with respect to trends and/or changing conditions. Routine water quality samples are analyzed for conventional and bacteria parameters. These samples are usually collected four times per year, once a quarter. Field parameters are also recorded as part of the sampling events.

Parameters analyzed for conventional monitoring include alkalinity, ammonia, total dissolved solids (TDS), total suspended solids (TSS), total phosphorous, chloride, sulfate, nitrates, chlorophyll-a, pheophytin, and total organic carbon. Routine bacteria analysis includes enterococcus in saltwater bodies and tidal segments and E. coli for freshwater sites. Additional bacteria analysis is being conducted for special studies. These studies are discussed in the Watershed Summaries section.

Low Dissolved Oxygen (DO) concerns are more toughly evaluated with 24- Hour (HR) DO measurements. This monitoring is conducted when adequate flow conditions are noted.

Water Quality Conditions

Water Quality Terminology

TCEQ's 2024 Integrated Report assesses suitable data in the State's water quality database (Surface Water Quality Monitoring Information System (SWQMIS)) for a 7-year period, and the most recent 7-year data set is assessed every two years. In most cases, a minimum of 10 samples is required to conduct the assessment. In some cases, the 10 samples are obtained by using a slightly longer period of time. The 2024 Integrated Report included data from December 1, 2015, through November 30, 2022. For this report, the analysis and discussion of the concerns and impairments in each segment is based on the 2024 Integrated Report and includes graphs of the data. Prior to 2010, water quality assessments conducted by the TCEQ were called the Water Quality Inventory.

For the 2024 Integrated Report, TCEQ assessed a variety of parameters including DO, pH, water temperature, total phosphorus, nitrates, ammonia chlorophyll-a, and bacteria (E. coli for freshwater segments and Enterococcus on tidal and marine segments) values on each assessment unit (AU) of a classified segment where ample data were available. Metals data were assessed where applicable. A single segment can consist of one to several AUs. TDS, chloride, and sulfate are assessed for the entire segment and only on freshwater segments. AU boundaries are occasionally modified to be more representative and provide for more accurate analysis.

Impairment for the following parameters are defined as follows:

Parameter	Criteria	Calculation Used for Impairment
TDS, chloride, and Sulfate	Segment specific	Average of samples are above the criteria
DO (for High Aquatic Life Use)	3.0 mg/L ** grab sample 5.0 mg/L 24-hr average or Segment specific	10% of samples are below either criteria
pH	6.5 su*** and 9 su	10% of samples are above or below the criteria
E.coli	126 cfu **** 394 cfu	Geometric mean is greater than the criteria 25% of samples are above the criteria
Enterococci	35 cfu 89 cfu	Geometric mean is greater than the criteria 25% of samples are above the criteria

*The percent of samples exceeding the criteria or screening level varies somewhat with small sample sizes (between 10 and 20). When sample sizes are greater than 20 samples, the percentage shown in the calculation column is much more accurate.

**mg/l: milligrams per liter

***su: standard units

****cfu: colony forming units

Concerns for the following parameters are defined as follows:

Parameter	Screening Levels*			Calculation Used for Concern
	Streams	Reservoir	Tidal Streams	
Ammonia-Nitrogen	0.33 mg/L	0.11 mg/L	0.46 mg/L	20% of samples are above the criteria
Nitrate	1.95 mg/L	0.37 mg/L	1.10 mg/L	
Total Phosphorus	0.69 mg/L	0.20mg/L	0.66 mg/L	
Chlorophyll-a	14.1 µg/L **	26.7 µg/L	21.0 µg/L	

*Screening levels to identify concerns have been developed by the state to enable an assessment of water quality for some parameters, primarily nutrients that only have a narrative criterion. The levels were developed by calculating the 85th Percentile for all water quality data in the TCEQ's water quality database over a 10-year period.

**µg/l: micrograms per liter

The following chart explains the potential causes and impacts when water quality standards are not met.

Parameter of Concern or Impairment	Cause	Impact
Dissolved Oxygen (DO)	Modifications to the riparian zone, human activity that causes water temperatures to increase, and increases organic matter, bacteria, and over abundant algae.	Organisms that live in water need oxygen to live. In waters with depressed DO levels, organisms may not have sufficient oxygen to survive.
pH	Industrial and wastewater discharge, runoff from quarry operations, and accidental spills.	Most aquatic life is adapted to live within a narrow pH range. Different organisms can live and adjust to differing pH ranges, but all fish die if pH is below 4 (the acidity of orange juice) or above 12 (the pH of ammonia).
Ammonia	Ammonia is excreted by animals and is produced during the decomposition of plants and animals. It is an ingredient in many fertilizers and is also present in sewage, storm water runoff, certain industrial wastewater, and runoff from animal feedlots.	Elevated levels of ammonia in the environment can adversely affect fish and invertebrate reproductive capacity and reduced growth of the young
Nutrients (Nitrate, Nitrite, Total Phosphorus)	Nutrients are found in effluent released from wastewater treatment plants (WWTP)s, fertilizers, and agricultural runoff carrying animal waste from farms and ranches. Soil erosion and runoff from farms, lawns, and gardens can add nutrients to the water.	These nutrients increase plant and algae growth. When plants and algae die, the bacteria that decompose them use oxygen so that is no longer available for fish and other living aquatic life. The more dead plants in the water, the more bacteria are produced to decompose the dead leaves. High levels of nitrate and nitrites can produce Nitrite Toxicity, or "brown blood disease," in fish. This disease reduces the ability of blood to transport oxygen throughout the body.
Chlorophyll-a	Modifications to the riparian zone, human activity that causes water increases in organic matter, nutrients, bacteria, and over abundant algae.	Chlorophyll-a is the photosynthetic pigment found in all green plants, algae, and cyanobacteria. Elevated levels indicate abundant plant growth which could lead to reduced DO levels.
Total Suspended Solids (TSS)	TSS originates from multiple point and nonpoint sources but most commonly results from erosion of soils substrates. A good measure of the upstream land use conditions is how much TSS rises after heavy rainfall.	TSS measures the amount of particles that are suspended in water, and which will not pass through a filter. It can also affect light penetration. Deposition of these particles can bury and/or destroy benthic habitat for most species of aquatic insects, snails and crustaceans.
Salts (Total Dissolved Solids (TDS), Chloride, and Sulfate)	Mineral springs, carbonate deposits, salt deposits, and sea water intrusion are natural sources of these parameters. Other sources can be attributed to oil exploration, drinking water treatment chemicals, storm water and agricultural runoff, and wastewater discharges.	High levels of these parameters may affect the aesthetic quality of water, interfering with washing clothes and corroding plumbing fixtures. They can also affect the permeability of ions in aquatic organisms.

Recreation Use Designations

In 2010, TCEQ expanded the categories for recreational uses to include secondary contact recreation activities. Below is a breakdown of the definitions for each designation and the corresponding bacterial concentrations.

Primary contact recreation (PCR): Water recreation activities, such as wading by children, swimming, water skiing, diving, tubing, surfing, whitewater kayaking, canoeing, and rafting, involving a significant risk of ingestion of water. For *E. coli*, the geometric mean criterion is 126 cfu per 100 milliliters of sampled water; for *Enterococcus*, the geometric mean criterion is 35 cfu per 100 milliliters of sampled water.

Secondary contact recreation 1 (SCR1): Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion and that commonly occur. For *E. coli*, the geometric mean criterion is 630 cfu per 100 milliliters of sampled water; for *Enterococcus*, the geometric mean criterion is 175 colonies per 100 milliliters of sampled water.

Secondary contact recreation 2 (SCR2): Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion but that occur less frequently than for secondary contact recreation 1 due to (1) physical characteristics of the water body and/or (2) limited public access. For *E. coli*, the geometric mean criterion is 1030 cfu per 100 milliliters of sampled water.

Noncontact recreation (NCR): Activities, such as ship and barge traffic, birding, and using hike and bike trails near a water body, not involving a significant risk of water ingestion, and where primary and secondary contact recreation should not occur because of unsafe conditions. For *E. coli*, the geometric mean criterion is 2,060 cfu per 100 milliliters of sampled water; for *Enterococcus*, the geometric mean criterion is 350 cfu per 100 milliliters of sampled water.

Recreational Use Designations	<i>E. coli</i> (Freshwater) cfu/100 mL	<i>Enterococcus</i> (Salt Water) cfu/mL
Primary Contact Recreation (PCR)	126	35
Secondary Contact 1	630	175
Secondary Contact 2	1030	*
Noncontact Recreation	2060	350

*There is no Secondary Contact 2 designation for *Enterococcus*.

Recreational Use Attainability Analyses (RUAA)

In order to determine the appropriate designation, a Recreational Use Attainability Analysis (RUAA) must be conducted. An RUAA is designed to: capture information of the types of recreational uses occurring in a water body; document physical stream characteristics that affect recreational uses; and document observed, historical, and anecdotal recreational uses. The information is obtained via questionnaires, field surveys, and research. Until an RUAA is conducted and a designation other than primary contact recreation is found to be more appropriate, a segment will continue to be assessed using the primary contact recreation criteria.

Aquatic Life Monitoring (ALM)

Aquatic Life Monitoring (ALM) is a type of monitoring that's used to derive baseline data on fish communities, benthic macroinvertebrate communities, and physical habitat to determine if designated or presumed aquatic life uses are being attained and/or are appropriate for the waterbody. ALM activities include fish and aquatic invertebrate collection, habitat assessment, 24-hour dissolved oxygen data collection, and water chemistry analysis. Typically, two biological events are required over one year. One event is to be conducted during the critical period (July 1 - September 30) and the other event during the non-critical portion of the index period (March 15 - June 30 or October 1 – October 15) with, at least one month between monitoring events. ALMs were conducted in two river segments (2104 and 2113) in 2019 to address biological impairments.

Least Disturbed Stream (LDS)

Least Disturbed Stream (LDS) monitoring is a type of ALM that is conducted in streams to define reference conditions for Texas streams and represent the “best available” streams in each of the ecoregions in Texas. LDS studies serve as the basis for developing benchmarks against which a biological monitoring program can assess the biological condition of test sites. LDS studies were conducted on Segment 2105 – Nueces River above Holland Dam in 2018

Watershed Summaries

This section contains detailed information for the Nueces-Rio Grande Coastal Basin and Bays and Estuaries. Information included for each of the basins contains a map of the basin, a description of the basin, a summary of concerns and impairments identified in the 2024 Integrated Report, a table of the FY 2024 sampling locations, and summaries for each segment within the basin.

The summaries for each segment include a map, a description of the watershed, a concern and impairment discussion, and data relating to each concern and impairment. Appendix A contains a list of all wastewater discharge permits.

Basin 22: Nueces-Rio Grande Coastal

The Nueces – Rio Grande Coastal Basin covers approximately 10,400 square miles, encompassing all or part of 12 counties in South Texas. The basin is bordered by the Nueces River Basin and the San Antonio – Nueces Coastal Basin to the north, bays, estuaries, and the Gulf of America to the east, and the Rio Grande River Basin to the south and west. Waterbodies include the Arroyo Colorado which drains into the Laguna Madre and Petronila Creek into Baffin Bay. The inland area of the basin is dominated by large ranches, including the King Ranch. State-operated recreational areas are primarily along the coast and include Mustang Island State Park, Port Isabel Light House, State Historic Park in Port Isabel, and the Padre Island National Seashore.

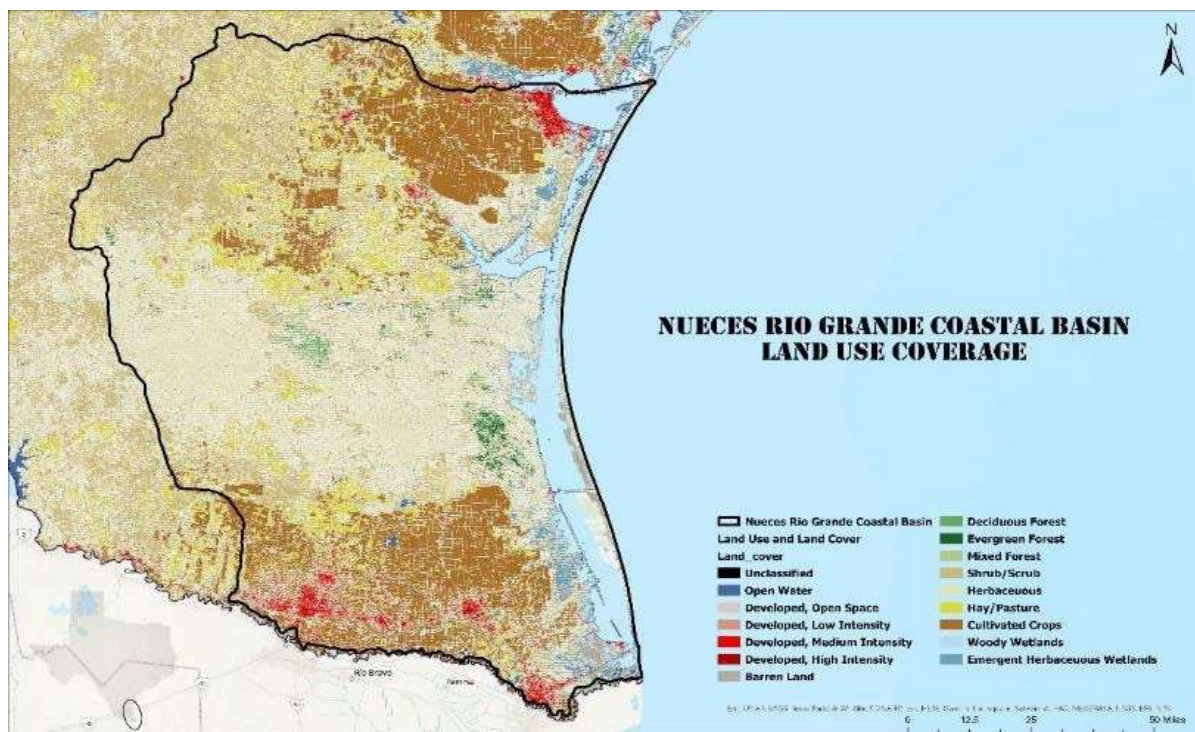


Figure 1: Map of the Nueces - Rio Grande Coastal Basin

Water Quality Overview

Water in the Arroyo Colorado originates from the numerous effluent flows from the surrounding communities including wastewater effluent and irrigation return flows. The Arroyo Colorado also receives water diverted from the Rio Grande during flood events. Water quality issues in the Arroyo Colorado include the following: elevated nutrient (nitrogen and phosphorus) and bacteria loads, instances of low DO, high levels of chlorophyll-a, and pollutants resulting in fish consumption advisories (in tidal and above tidal portions). In 2007, phase I BMPs of the Arroyo Colorado WPP were initiated. Projects include improved wastewater infrastructure, large and small scale habitat projects, implementation of agricultural BMPs on irrigated crop land, and a comprehensive education and outreach program. The WPP was updated in 2017. While the impairments and concerns continue on both the tidal and above tidal segments.

Petronila Creek is a shallow gradient coastal creek that begins near Banquete and flows approximately 49 miles into Kleberg County and Alazan Bay. The upper half of the watershed is more ephemeral in nature, only flowing in conjunction with rain events. There is an earthen impoundment just west of US 77 near the Lost Creek Colonia that maintains water on a perennial basis. Reports of water quality issues including fish kills have been reported and are usually attributed to pollution associated with runoff from rain events. Water flowing in the lower half of the watershed is generally brackish in nature with extremely high concentrations of chloride, sulfate, and TDS associated with historical oil and gas operations in which brine water was discharged into tributaries and drainage ditches that drain into the creek. Brine discharges to the creek were suspended in 1987 but elevated levels of TDS, chloride, and sulfate remain. NRA has been monitoring on the tributaries to the creek to try and pinpoint the source areas. The Chloride, Sulfate, and TDS concentrations are inversely correlated with the three-week antecedent rainfall amounts. The concentrations rise quickly from groundwater seepage during low flow period.

Segment 2201: Arroyo Colorado Tidal

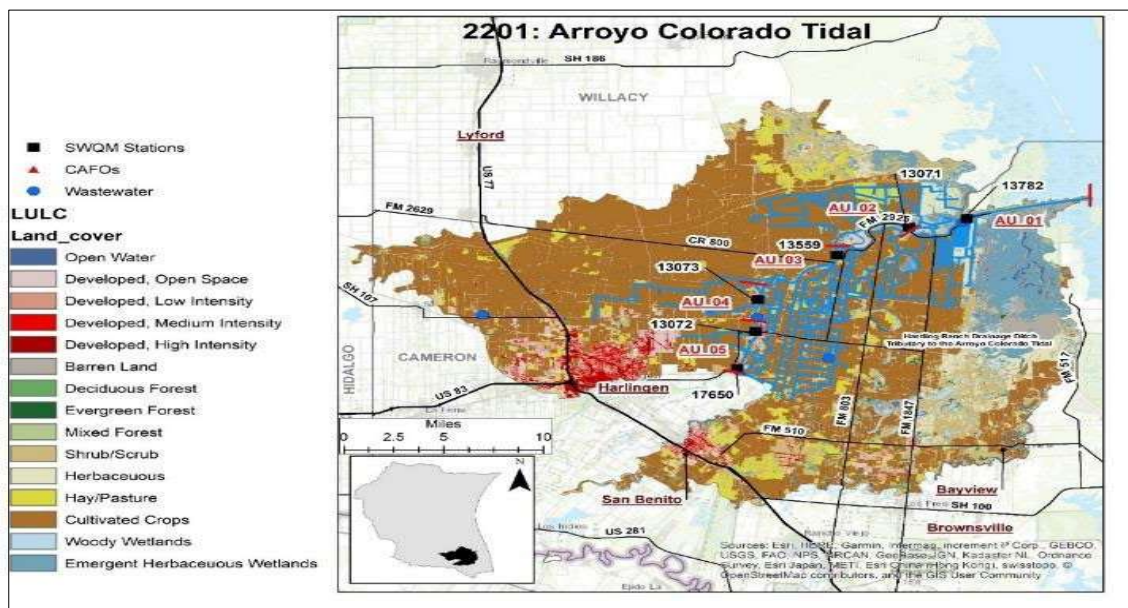


Figure 2: Map of Arroyo Colorado Tidal

Segment Description – Segment 2201 flows 26 miles from 110 yards downstream of Cemetery Road south of the Port of Harlingen to its confluence with the Laguna Madre. The segment forms part of the county line between Cameron and Willacy Counties. The segment is divided into five AUs and the area is predominately farmland. The Arroyo Colorado Tidal segment serves as the waterway from the Laguna Madre to the Port of Harlingen. Its watershed is 294,591 acres. The City of Rio Hondo is just downstream of the port. Arroyo City is located along the southern shore, with many homes lining the river. Segment 2201 has four active stations that consists of **13782 AU_01**, **13071 AU_02**, **13073 AU_04**, **13072 AU_05**.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2201 Arroyo Colorado Tidal	13782 (AU_01)	Near Marker 16 at Arroyo City 492 m downstream of confluence with Arroyo Colorado and Arroyo Colorado cutoff	TCEQ Region 15	Quarterly
	13071 (AU_02)	At mile 10 marker 22, 81 m upstream from San Vicente drain ditch	TCEQ Region 15	Quarterly
	13073 (AU_04)	At Camp Perry north of Rio Hondo 177 m downstream from confluence with unnamed ditch west side of Arroyo Colorado	TCEQ Region 15	Quarterly
	13072 (AU_05)	At FM 106 bridge at Rio Hondo	TCEQ Region 15	Quarterly

Hydrologic Characteristics

Streamflow in Segment 2201 is largely influenced by wastewater discharges, agricultural irrigation flows, urban runoff, and base flows from shallow groundwater. The Arroyo Colorado is a major source of fresh water to the lower Laguna Madre, an economically and ecologically important resource to the region.

Water Quality Assessment

All AUs have listed water quality **impairments** for **bacteria** (*Enterococcus*) and **concerns** for **chlorophyll-a** and **nitrate** in the 2024 IR. The impairment for bacteria for primary contact recreation is based on inadequate data. Due to the eight-hour holding time and because there are no local labs accredited for enterococci analysis, routine bacteria sample collection has been suspended. Wastewater dominated effluent with nitrate exceedances (every time) as well as chlorophyll-a and bacteria (more often than not).

AUs 04 and 05 are also **impaired** for **depressed dissolved oxygen** (24-hour minimum) and AU_05 has a **concern** for **total phosphorus**. AU_04 and AU_05 have been impaired for depressed DO since the 1996 IR, generally attributed to the physical properties of the segment, including the Port of Harlingen and manipulation by dredging and other mechanical changes to the river. At times, barge traffic to the port causes the anoxic water near the bottom of the channel to rise to the surface which results in fish kills. This report also lists AU_05 as having a **concern** for **depressed dissolved oxygen** (24-hour average). Additional 24-hour DO monitoring will be needed to fully evaluate the concern.

Segment Name	AU	Description	Impairment	Concern
2201 Arroyo Colorado Tidal	01	From the downstream end of the segment to the confluence with San Vicente Drainage Ditch	Bacteria 5r	Chlorophyll-a, Nitrate
	02	From the confluence with San Vicente Drainage Ditch to the confluence with an unnamed drainage ditch with NHD RC 12110108005353 at point N-97.53, W 26.31	Bacteria 5r	Chlorophyll-a, Nitrate
	04	From the confluence with Harding Ranch Ditch tributary to just upstream of the City of Hondo Wastewater Discharge at point N-97.58359, W26.247186	Bacteria, DO 5r	Chlorophyll-a, Nitrate
	05	From just upstream of the City Rio of Hondo Wastewater Discharge at point N-97.58359, W26.247186 to the upstream end of the segment	DO-5r, Bacteria-5r, Mercury in edible tissue, and PCBs in edible tissue-5c	DO, Chlorophyll-a, Nitrate, Total Phosphorus

Fish consumption warnings continue for AU_05 for **PCBs** and **mercury in edible fish tissue**. More information on fishing advisories and bans are available at <http://dshs.texas.gov/seafood/advisories-bans.aspx>.

In **Segment 2201: 13782 (AU_01)** the nitrate failed to meet the nutrient screening level of 0.17 mg/L; the average exceedance value was 2.38 mg/L. For Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 61.63 mg/L. The bacteria impairment is currently classified as 5r, meaning a WPP is under development or accepted by EPA for this parameter.

In **Segment 2201: 13071 (AU_02)** the nitrate failed to meet the nutrient screening level of 0.17 mg/L; the average exceedance value was 2.98 mg/L. For Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 50.03 mg/L. The bacteria impairment is currently classified as 5r, meaning a WPP is under development or accepted by EPA for this parameter.

In **Segment 2201: 13073 (AU_04)** the nitrate failed to meet the nutrient screening level of 0.17mg/L; the average exceedance value was 3.72 mg/L. For Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 50.44 mg/L. The bacteria and depressed dissolved oxygen in water impairment is currently classified as 5r, meaning a WPP is under development or accepted by EPA for this parameter.

In **Segment 2201: 13072 (AU_05)** the nitrate failed to meet the nutrient screening level of 0.17 mg/L; the average exceedance value was 4.2 mg/L. For Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 125.41 mg/L. The total phosphorus failed to meet the screening level of 0.21 mg/L: the average exceedance was 1.01 mg/L. The bacteria impairment is currently classified as 5r, meaning a WPP is under development or accepted by EPA for this parameter.

Segment 2202: Arroyo Colorado Above Tidal



Figure 3: Arroyo Colorado at Cemetery Road

Segment Description: Segment 2202 flows 63 miles from FM 2062 in Hidalgo County to 110 yards downstream of Cemetery Road south of the Port of Harlingen. The segment is divided into four AUs and the watershed is 252,633 acres. There are numerous cities along US 83 just north of the Arroyo Colorado, with farming activities in between. The Arroyo Colorado is the primary conveyance of wastewater and agricultural runoff for this area. Segment 2202 consists of four active stations: **13074** AU_01, **13079** AU_02, **13081** AU_03, **13084** AU_04.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2202 Arroyo Colorado Above Tidal	13074 (AU_01)	At low water bridge at Port Harlingen at Cemetery Rd bridge	TCEQ Region 15	Quarterly
	13079 (AU_02)	At US 77 in SW Harlingen	NRA	Quarterly
	13081 (AU_03)	At FM 1015 south of Weslaco	TCEQ Region 15	Quarterly
	13084 (AU_03)	At US 281 south of Pharr	TCEQ Region 15	Quarterly

Hydrologic Characteristics

Segment 2202 is a freshwater segment of the Arroyo Colorado River. Streamflow in Segment 2202 is largely influenced by wastewater discharges, agricultural irrigation return flows, urban runoff, and base flows from shallow groundwater.

Segment 2202: Land Use in the Arroyo Colorado Above Tidal

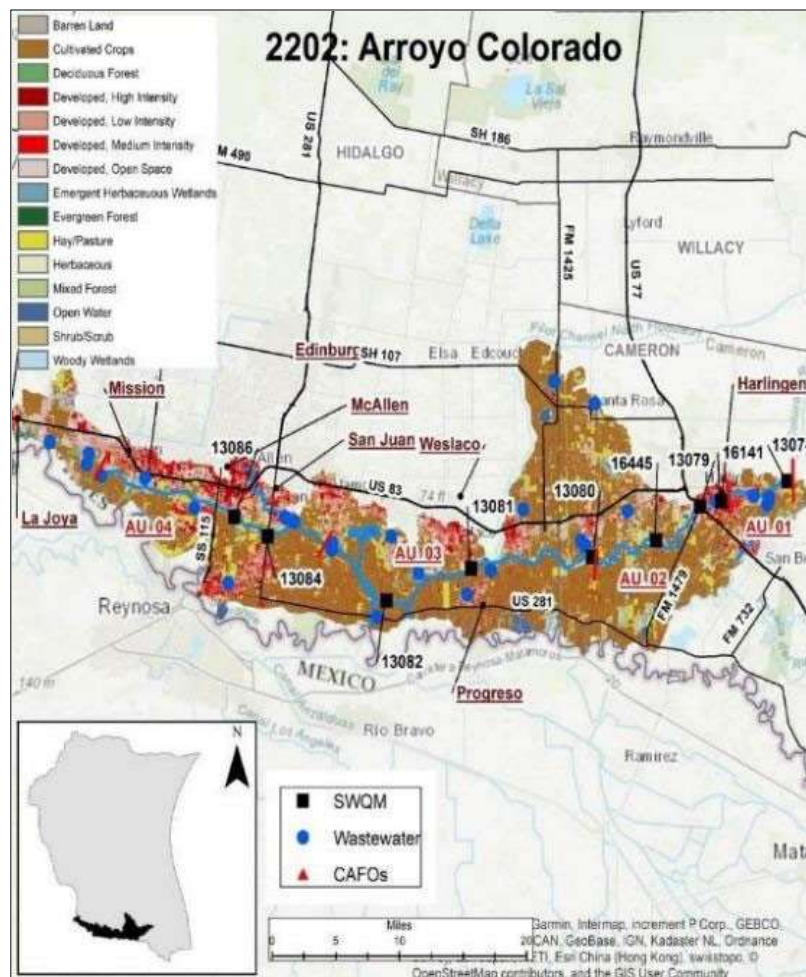


Figure 4: Map of the Arroyo Colorado

Water Quality Assessment

All four AUs have **impairments** for **bacteria** (*E. coli*) and have been impaired since the 1996 Assessment. They remain listed in the 2024 IR. All four AUs also have water quality **concerns** for **chlorophyll-a**, **nitrate**, and **total phosphorus**. Newly installed wind turbines catching fire and causing farms to burn.

Fish consumption warnings continue for all AUs for **PCBs** and **mercury in edible fish tissue**. More information on fishing advisories and bans are available at <http://dshs.texas.gov/seafood/advisories-bans.aspx>.

In **Segment 2202: 13074 (AU_01)** the nitrate failed to meet the nutrient screening level of 0.17 mg/L; the average exceedance value was 4.95 mg/L. For Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 32.31 mg/L. The total phosphorus failed to meet the screening level of 0.21 mg/L: the average exceedance was 0.86 mg/L.

In **Segment 2202: 13079 (AU_02)** the nitrate failed to meet the nutrient screening level of 0.17 mg/L; the average exceedance value was 4.94 mg/L. For Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 42 mg/L. The total phosphorus failed to meet the screening level of 0.21 mg/L: the average exceedance was 0.91 mg/L.

In **Segment 2202: 13081 and 13084 (AU_03)** the nitrate failed to meet the nutrient screening level of 1.95 mg/L; the average exceedance value was 4.2 mg/L. For Chlorophyll-a it failed to meet the screening level of 0.69 mg/L: the average exceedance was 32.36 mg/L. The total phosphorus failed to meet the screening level of 0.21 mg/L: the average exceedance was 1.16 mg/L.

Segment Name	AU	Description	Impairment	Concern
2202 Arroyo Colorado Tidal	01	From the downstream end of the segment to the confluence with Little Creek just upstream of State Loop 499	Bacteria-5r, Mercury in edible tissue, PCBs in edible tissue 5c	Chlorophyll-a, Nitrate, Total Phosphorus
	02	From the confluence with Little Creek to the confluence with La Feria Main Canal just upstream of Dukes Highway	Bacteria-5r, Mercury in edible tissue, PCBs in edible tissue 5c	Chlorophyll-a, Nitrate, Total Phosphorus
	03	From confluence with La Feria Main Canal to the confluence with La Cruz Resaca just downstream of FM 907	Bacteria-5r Mercury in edible tissue, PCBs in edible tissue 5c	Chlorophyll-a, Nitrate, Total Phosphorus
	04	From the confluence with La Cruz Resaca to the upper end of segment at FM 2062	Bacteria-5r Mercury in edible tissue, PCBs in edible tissue-5r	Chlorophyll-a, Nitrate, Total Phosphorus
	02	From the confluence with Little Creek to the confluence with La Feria Main Canal just upstream of Dukes Highway	Bacteria-5r, Mercury in edible tissue, PCBs in edible tissue 5c	Chlorophyll-a, Nitrate, Total Phosphorus

Segment 2203: Petronila Creek Tidal

Petronila Creek above Tidal flows 14 miles from a point 0.6 miles upstream of a private road crossing near Laureles Ranch in Kleberg County to the confluence with Chiltipin Creek / Alazan Bay in Kleberg County. Its watershed is 10,918 acres and is almost entirely within the King Ranch. It is divided into one AU and the segment has primarily farmland surrounding the waterway. This AU also only has one station within its boundaries which is station 13090.

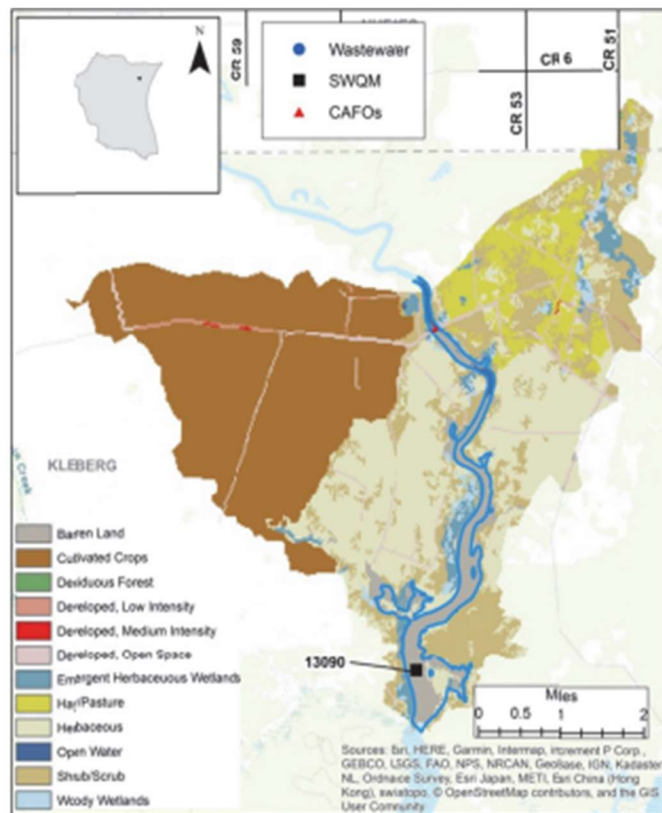


Figure 5: Map of Petronila Creek Tidal

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2203 Petronila Creek Tidal	13090 (AU_01)	At 1.2 KM Upstream of the Confluence with Tunas creek	TCEQ Region 14	Quarterly

Water Quality - The segment has been **impaired** for **Bacteria** in 2024 IR. Segment 2203 also has concerns for **chlorophyll-a**. A WAPP is under development or accepted by EPA for this parameter.

In **Segment 2203: 13090 (AU_01)** for Chlorophyll-a it failed to meet the screening level of 21 mg/L: the average exceedance was 106.53 mg/L. The Bacteria failed to meet the screening level of 35 mg/L: the average exceedance was 49.98 mg/L.

Segment Name	AU	Description	Impairment	Concern
2203 Petronila Creek Tidal	01	From 1.2 KM Upstream of the Confluence with Tubas Creek	Bacteria-5r	Chlorophyll-a

Segment 2204: Petronila Creek Above Tidal



Figure 6: Petronila Creek Above Tidal

Site Description- Segment 2204 flows 44 miles from the confluence of Agua Dulce and Banquete Creeks in Nueces County to a point 0.6 miles upstream of a private road crossing near Laureles Ranch in Kleberg County. The segment is part of the Baffin Bay watershed which is 1,867,755 acres. It is divided into two AUs and the segment is primarily farmland interspersed with numerous small communities and cities. It flows through the City of Driscoll (pop. 631) at US 77. There are nine WWTPs that discharge to this segment and a stormwater discharge permit for a hazardous waste landfill. Segment 2204 has three active stations: **13094** AU_01, **13096** AU_02, **20806** AU_02. These stations are often used as illegal dumping sites. Possible recommendations for special studies include the specific lethal dose of D.O. to cause fish kills.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field	Other
2204 Petronila Creek above tidal	13094 (AU_01)	At FM 892 SE of Driscoll	NRA	Quarterly	Monthly
	13096 (AU_02)	At FM 665 east of Driscoll	NRA	Quarterly	TDS, Chloride, Sulfate
	20806 (AU_02)	At 181 m West and 6 m South from the intersection of Alice Road and Lost Creek Road	NRA	Quarterly	

Hydrologic Characteristics

Petronila Creek Above Tidal (TCEQ Segment 2204) is a shallow waterway with a depth typically less than 2.0 meters. Streamflow in this segment is generally low, ranging from 0.5 to 3.0 cubic feet per second during dry conditions along the main channel. At site 13096, streamflow is directly measured by a USGS stream gauge located on FM 665, while at station 13094, streamflow is recorded using a Flowtracker2 device when conditions allow. Streamflow at the other sites is estimated based on gauges.

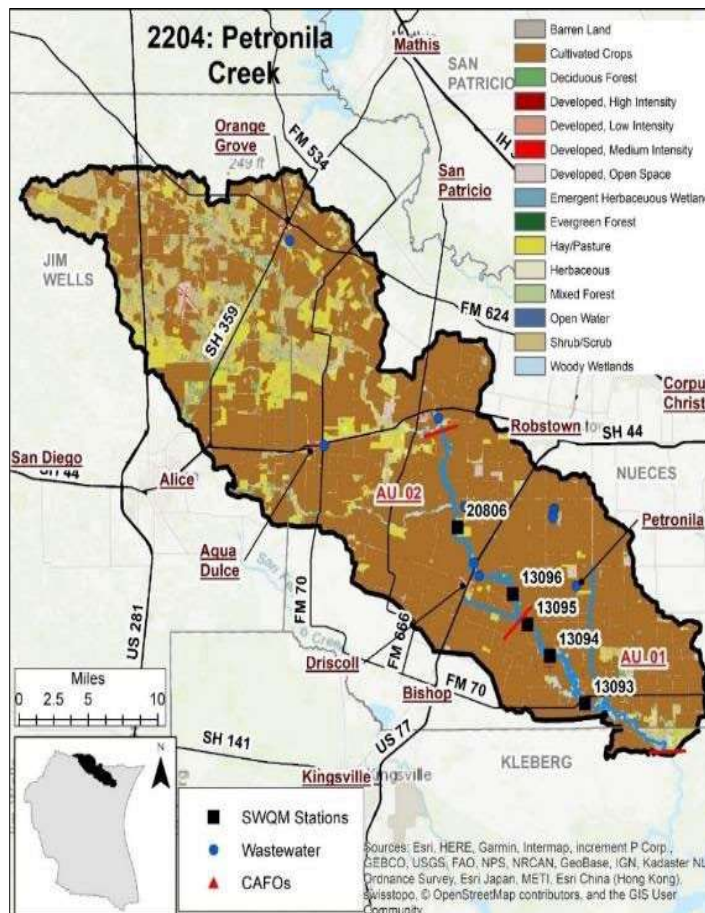


Figure 7: Map of Petronila Creek

Water Quality Assessment

Water Quality - The segment has been **impaired** for **TDS**, **chloride**, and **sulfates** since the 1999 IR. Excessive concentrations of these three parameters occur east of U.S. Hwy 77, in an area where man-made nonpoint sources such as produced water, brine pits, and brine injection wells are most numerous. Segment 2204 is also **impaired** for **bacteria** (*E. coli*) in both AUs. The segment also has **concerns** for **chlorophyll-a** in both AUs. AU_02 also has total phosphorus listed as a concern in the 2024 IR. A TMDL I-Plan was completed for Chlorides, Sulfate, and TDS (aka "Salts") in March 2014. Bacteria became a new impairment in 2016 IR. A review of standards is needed.

A Watershed Protection Plan (WPP) was developed for the Baffin Bay Watershed due to water quality concerns and impairments in the bay and tributaries including Petronila and San Fernando creeks. Partners of the project include TWRI, TSSWCB, NRA, Texas A&M University, and Texas Sea Grant. For more information, visit: <https://twri.tamu.edu/baffinwpp>

In **Segment 2204: 13094(AU_01)** for Chlorophyll-a it failed to meet the screening level of 14.1 mg/L: the average exceedance was 93.52 mg/L. The bacteria in water failed to meet the screening level of 126 mg/L: the average exceedance was 1261.02. The bacteria impairment is currently classified as 5r, meaning a WPP is under development or accepted by EPA for this parameter.

In **Segment 2204: 13096, 20806(AU_02)** for Chlorophyll-a failed to meet the screening level of 14.1 mg/L: the average exceedance was 129.78 mg/L. The total phosphorus failed to meet the screening level of 0.69 mg/L: the average exceedance was 4.46 mg/L. The bacteria in water failed to meet the screening level of 126 mg/L: the average exceedance was 147.38.

Segment Name	AU	Description	Impairment	Concern
2204 Petronila Creek Above Tidal	01	From downstream end of segment to the confluence with 2204A, unnamed drainage ditch tributary to Petronila Creek at N-97.7, W27.65 approximately 32.5 km (20.2 mi) upstream	Bacteria-5r TDS-4a Chloride, Sulfate- 4a	Chlorophyll-a
	02	From the confluence with 2204A, unnamed drainage ditch tributary of Petronila Creek at N-97.7, W27.65 to the upstream end of segment at the confluence with Agua Dulce and Banquete Creeks approximately 31.6 km (19.6 mi) upstream	Bacteria-5r TDS-4a Chloride, Sulfate- 4a	Chlorophyll-a, Phosphorus, DO

Basin 24: Bays and Estuaries

Several TMDLs and special studies have been conducted in the basin. Segment 2472, Copano Bay, for bacteria in oyster waters; Segment 2482, Nueces Bay, for zinc in oyster tissue; Segment 2485, Oso Bay for bacteria and depressed DO; Segment 2485A, Oso Creek for bacteria; and Segment 2491, Laguna Madre for depressed DO.

Beach Watch is a Texas General Land Office sponsored program that collects bacteria samples at Texas Beaches. There are five bays with Beach Watch Stations: Segment 2471, Aransas Bay – Rockport Beach; Segment 2481, Corpus Christi Bay; Segment 2483, Redfish Bay; Segment 2491, Laguna Madre; and Segment 2491, Baffin Bay - Cayo del Grullo Bay. Specific sites are discussed in their respective segments. The data are used to alert the public for times when it may be unsafe to be in the water, and can be found on the Beach Advisory and Closing Online Notification (BEACON) website: http://iaspub.epa.gov/waters10/beacon_national_page.main



Figure 8: Retama at Petronila Tributary FM 70 (Cefe #1)

Segment 2462: San Antonio Bay / Hynes Bay / Guadalupe Bay



Figure 9: San Antonio Bay

Segment Description - This segment is primarily in Refugio and Calhoun Counties and includes Guadalupe Bay. The official boundary for the San Antonio – Nueces Coastal Basin includes all of Hynes Bay and only a portion of San Antonio Bay. Its watershed is 69,939 acres. The area around the bay is dominated by farms and ranch lands. The small town of Austwell (pop. 133) is on the bay and is the only community in the area. Segment 2462 has one station numbered **13397**.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2462 San Antonio Bay/ Hynes Bay/ Guadalupe Bay	13397 (AU_01)	San Antonio Bay/ Hynes Bay/ Guadalupe Bay at mean high tide line	TCEQ Region 14	Quarterly

Hydrologic Characteristics

The Guadalupe Estuary typically receives an average of 2.5 million acre-feet of freshwater inflow per year from its major contributing rivers, the Guadalupe and San Antonio Rivers, as well as runoff from surrounding coastal watersheds. The bay's location makes it susceptible to seasonal flooding, particularly during heavy rainfall events or hurricanes. The bay's natural features, such as wetlands and floodplains, help with water storage and flood mitigation.

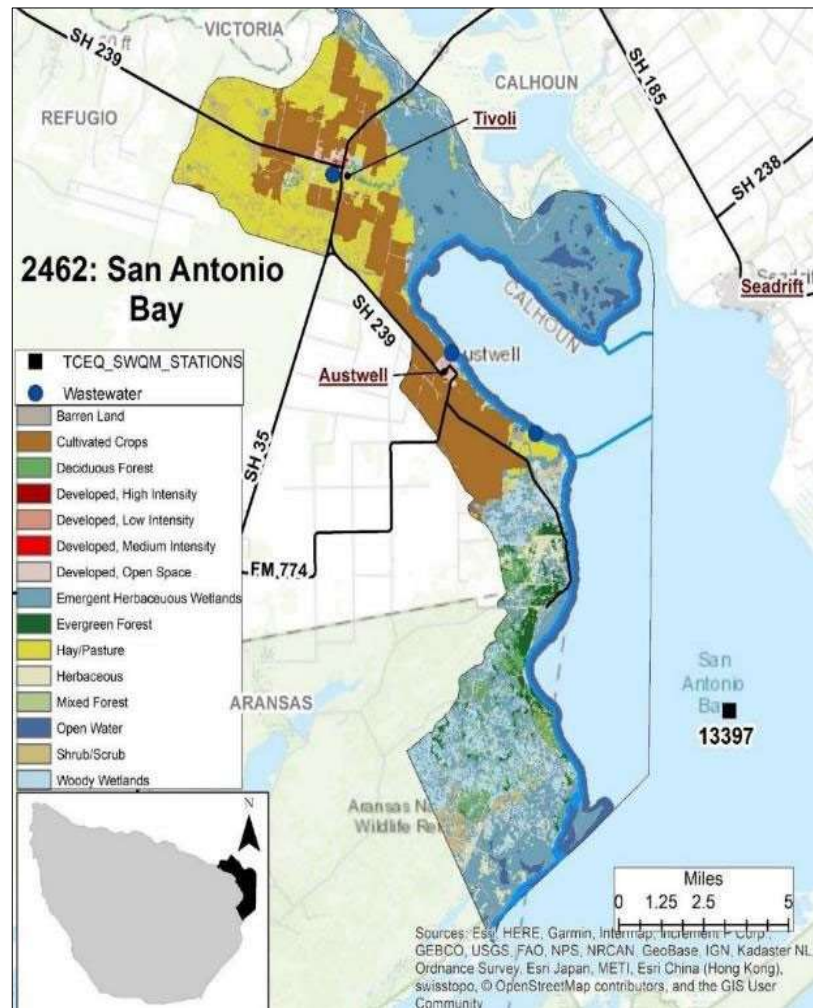


Figure 10: Map of San Antonio Bay

Water Quality Assessment

There is a water quality **concern** for **chlorophyll-a** in the 2024 IR. The Department of State Health Services (DSHS) shellfish restrictions in AU_01 for bacteria in oyster waters (OW) continued in Guadalupe Bay (2462OW_01) in the 2024 IR.

In **Segment 2462: 13397 (AU_01)** for Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 22.57 mg/L. The bacteria in oyster waters impairment is currently classified as 5a, meaning a TMDL is underway, scheduled, or will be scheduled.

Segment Name	AU	Description	Impairment	Concern
2462 San Antonio Bay/ Hynes Bay/ Guadalupe Bay	01	San Antonio Bay/ Hynes Bay/ Guadalupe Bay at mean high tide line	Bacteria (Oysters Waters)	Chlorophyll-a

Segment 2463: Mesquite Bay



Figure 11: Mesquite Bay

Segment Description - Mesquite Bay is in the northernmost bay in the monitoring jurisdiction located in Aransas County. Its watershed is 37,323 acres. The bay is surrounded by natural areas. The Aransas Wildlife Refuge is to the southeast. Segment 2463 has one station numbered 13400

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2463 Mesquite Bay	13400 (AU_01)	Mesquite Bay South of the Intracoastal Waterway Marker 13	TCEQ Region 14	Quarterly

Hydrologic Characteristics

Mesquite Bay receives freshwater primarily from the Mission and Aransas Rivers, as well as runoff from nearby lands. These inputs can cause fluctuations in the bay's salinity levels, especially during periods of heavy rain or seasonal river discharge.

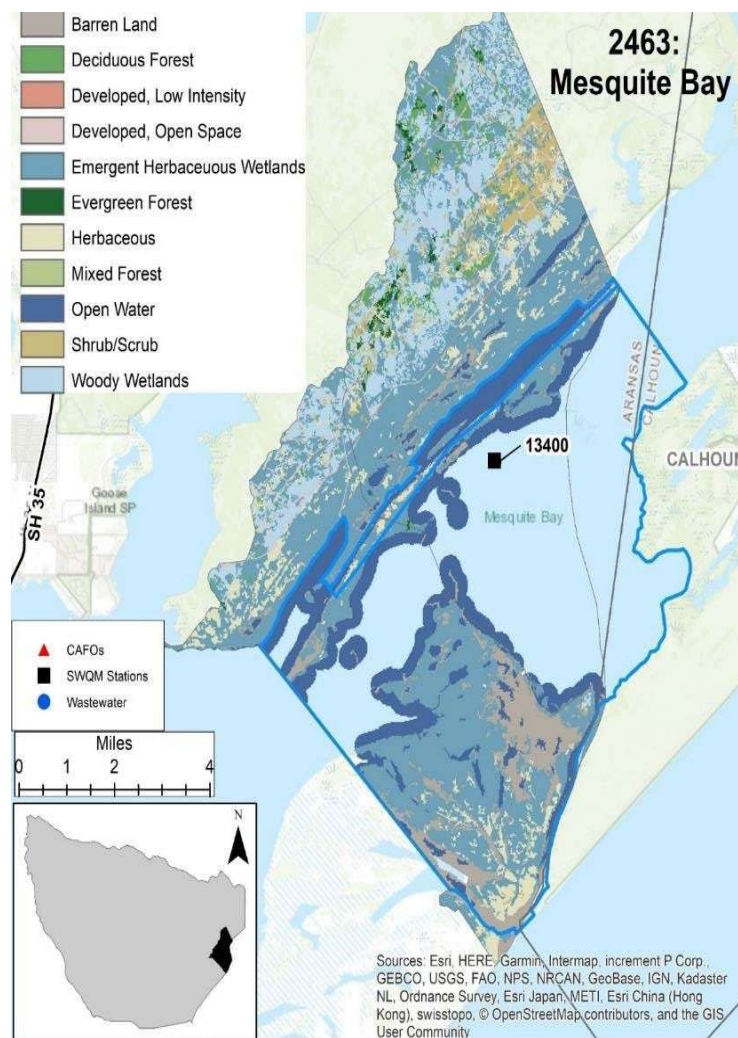


Figure 12: Map of Mesquite Bay

Segment Name	AU	Description	Impairment	Concern
2463 Mesquite Bay	01	South of Intracoastal Waterway Marker 13	Bacteria (Oysters Waters)	none

Water Quality Assessment

There is no water quality concerns for Segment 2463. There is however, an impairment for bacteria in oyster waters for Mesquite Bay (2463OW_01). A TMDL for this bacteria is underway, scheduled, or will be scheduled.

Segment 2471: Aransas Bay

Segment Description – Segment 2471 is primarily in Aransas County and is composed of one AU. Its watershed is 85,724 acres. The City of Rockport is along the western shore of the bay and the uninhabited Matagorda Island is on the east. The Aransas Wildlife Refuge is to the north.

Hydrologic Characteristics

Aransas Bay receives freshwater primarily from the Aransas River and from the surrounding watersheds, including runoff from urban and agricultural areas. The circulation in the bay is influenced by a combination of wind-driven currents, tidal action, and the freshwater inflow from surrounding rivers.

Water Quality Assessment

Water Quality - There are **no water quality concerns or impairments** in Segment 2471.

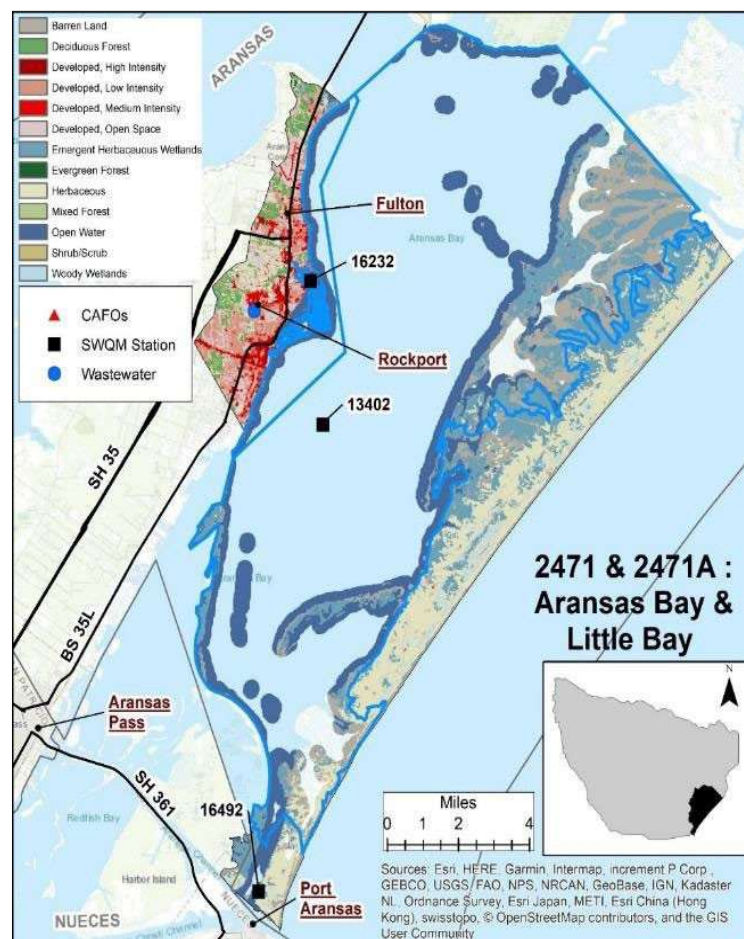


Figure 13: Map of Aransas Bay

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2471 Aransas Bay	13402 (AU_01)	At intersection of Intracoastal Canal and Lydia Ann Channel South of Rockport	TCEQ Region 14	Quarterly

Segment Name	AU	Description	Impairment	Concern
2471 Aransas Bay	01	At intersection of Intracoastal Canal and Lydia Ann Channel South of Rockport	None	None

Segment 2471A: Little Bay

Segment Description – This segment is located between Aransas Bay, Broadway Street in Rockport, and Rockport Beach. Segment 2471A has one station numbered **16232**.

Hydrologic Characteristics

Segment 2471A, or Little Bay, is a smaller estuarine area adjacent to Aransas Bay. This bay is smaller and shallower than Aransas Bay. Little Bay is influenced by freshwater inflows from surrounding small streams, runoff, and occasional direct contributions from the Aransas River.

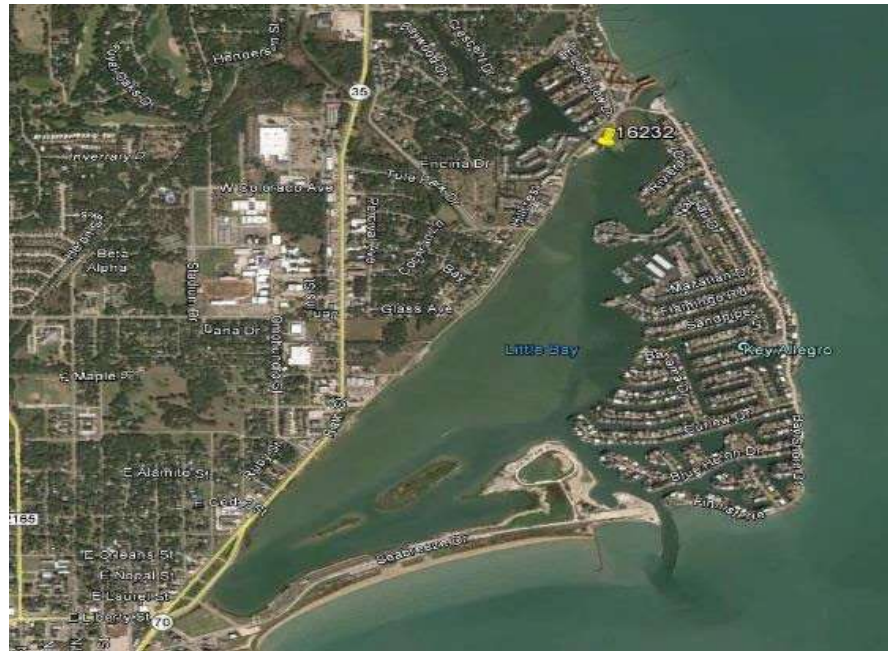


Figure 14: Overview of Little Bay

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2471A Little Bay	16232 (AU_01)	At Broadway and the Inlet Canal to Canoe Lake in Rockport	TCEQ Region 14	Quarterly

Water Quality Assessment

Water Quality - There is a **concern** for **chlorophyll-a, ammonia, and total phosphorus** in the 2024 IR, which is likely attributed to limited circulation within the bay

In **Segment 2471A: 16232 (AU_01)** for Chlorophyll-a it failed to meet the screening level of 0.69 mg/L: the average exceedance was 15.08 mg/L. The total phosphorus failed to meet the screening level of 0.21 mg/L: the average exceedance was 0.24 mg/L. The ammonia failed to meet the screening level of 0.1 mg/L: the average exceedance was 0.38 mg/L.

Segment Name	AU	Description	Impairment	Concern
2471A Little Bay	01	At Broadway and the Inlet Canal to Canoe Lake in Rockport	None	Chlorophyll-a, Ammonia, Total Phosphorus

Segment 2472: Copano Bay/ Port Bay/ Mission Bay



Figure 15: Mission Bay

Segment Description- These bays are in Refugio and Aransas counties. Its watershed is 249,235 acres. Segment 2472 is composed of three bays and three AUs. The south and west bay have multiple developments and small communities. The north and west sides are mostly farm and ranch lands. Segment 2472 has three stations: **14783** AU_01, **17724** AU_02, **13405** AU_03.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2472 Copano Bay/ Port Bay/ Mission Bay	14783 (AU_01)	East of Copano Bay at Spoonbill east of Bayside	TCEQ Region 14	Quarterly
	17724 (AU_02)	3.5 mi west of Copano Bay Fishing Pier	TCEQ Region 14	Quarterly
	13405 (AU_03)	At SH 188 west of Rockport	NRA	Bi-annual metals and Conventional

Hydrologic Characteristics

These bays receive freshwater inflows from several sources, including the **Mission River**, **Copano Creek**, and smaller tributaries. The inflows can vary greatly depending on rainfall and seasonal changes, significantly affecting the salinity in the bays

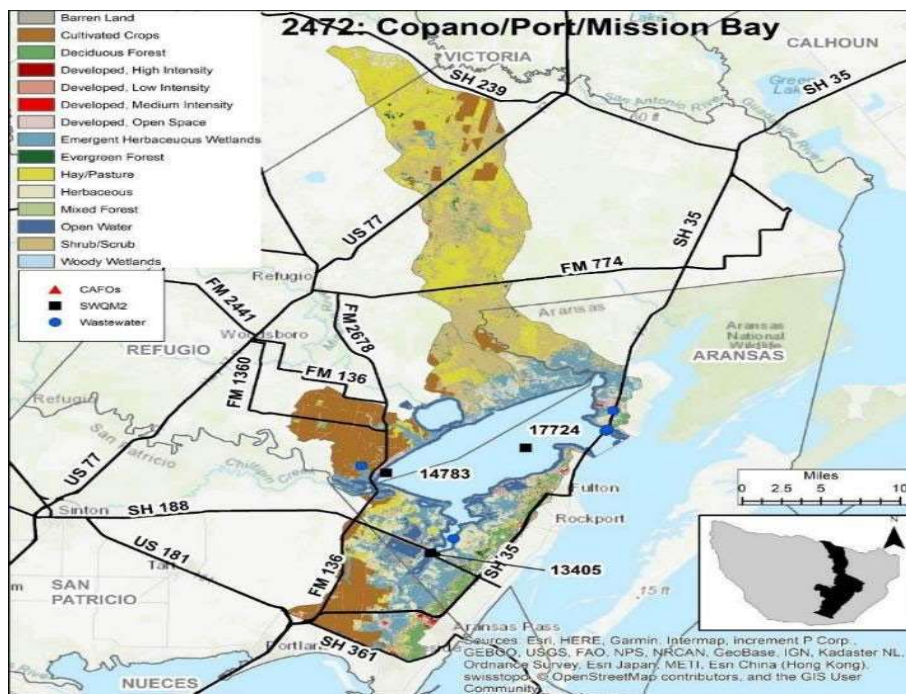


Figure 16: Map of Mission Bay

Water Quality Assessment

There are no water quality concerns or impairments in AU_01 or AU_02. AU_03 has a listed water quality concern for chlorophyll-a and it has an impairment bacteria in water. All other assessed water quality parameters met the criteria in the 2024 IR for AU_03.

The DSHS shellfish restrictions in AU_01 for bacteria in oyster waters in 2472OW_02 continue in the 2024 IR.

In **Segment 2471A: 16232 (AU_01)** for Chlorophyll-a it failed to meet the screening level of 0.69 mg/L: the average exceedance was 15.08 mg/L. The total phosphorus failed to meet the screening level of 0.21 mg/L: the average exceedance was 0.24 mg/L. The ammonia failed to meet the screening level of 0.1 mg/L: the average exceedance was 0.38 mg/L.

Segment Name	AU	Description	Impairment	Concern
2472 Copano Bay/ Port Bay/ Mission Bay	01	At Broadway and the Inlet Canal to Canoe Lake in Rockport	none	none
	02	3.5 mi west of Copano Bay Fishing Pier	none	none
	03	At SH 188 west of Rockport	, Bacteria in water	Chlorophyll-a

Segment 2473: St. Charles Bay



Figure 17: St. Charles Bay

Segment Description - Segment 2473 is in Aransas County and consists of one AU. Its watershed is 162,401 acres. The bay is nearly surrounded by the Aransas Wildlife Refuge. The small community of Lamara, home to the “Big Oak”, is located on the southwest side adjacent to Aransas Bay. Segment 2473 has one station numbered **17692**.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2473 St. Charles Bay	17692 (AU_01)	At approx. 0.5 mi northeast of Hail Point on Lamar Peninsula	TCEQ Region 14	Quarterly

Hydrologic Characteristics

St. Charles Bay receives freshwater inflows primarily from local creeks and runoff from the surrounding watershed. It's part of the Mission-Aransas Estuary, which also includes Aransas Bay, Copano Bay, Mission Bay, and Redfish Bay.

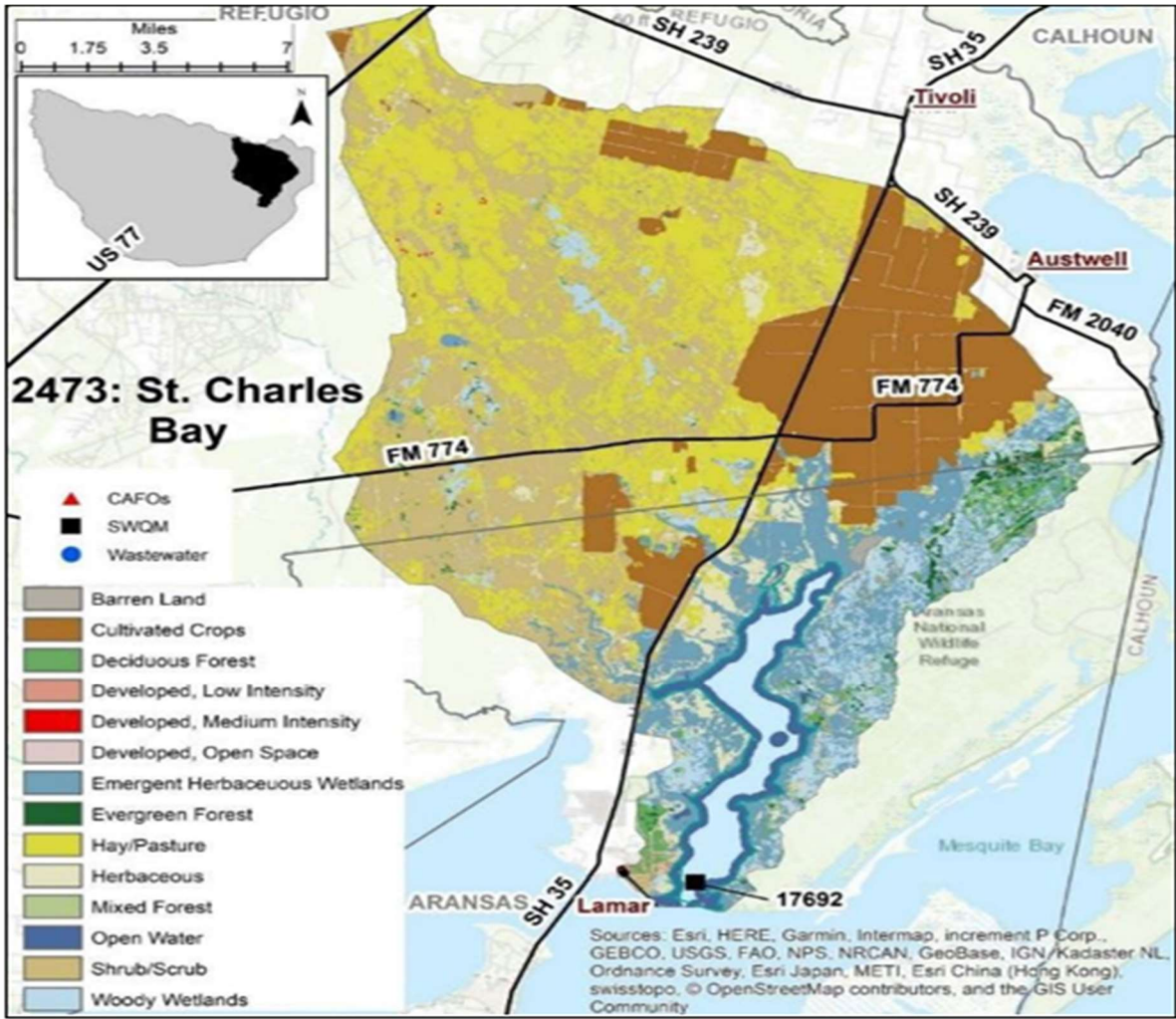


Figure 18: Map of St. Charles Bay

Water Quality Assessment

Water Quality- The 2024 IR shows an impairment for Bacteria in Oyster waters 2473 (OW_02)

In **Segment 2473**: The bacteria in oyster waters impairment is currently classified as 5c, additional data and information will be collected or evaluated before a management strategy is selected.

Segment Name	AU	Description	Impairment	Concern
2473 St. Charles Bay	OW_02	At approx. 0.5 mi northeast pf Hail Point on Lamar Peninsula	Bacteria in Oyster Waters	None

Segment 2481: Corpus Christi Bay

Segment Description: Corpus Christi Bay is in Nueces County and is split between the San Antonio-Nueces and the Nueces-Rio Grande Coastal Basins. The bay is divided into four AUs and the watershed is 147,878 acres. The bay is nearly surrounded by cities and industries. The City of Corpus Christi borders the south side of the bay and encompasses a large portion of Mustang Island. Along the northern shore are the cities of Portland, Ingleside, and Ingleside-By-The-Bay. There are several industries located along La Quinta Channel, along with the closed Naval Station Ingleside. Segment 2481 has three stations: **13409 AU_01**, **13411 AU_02**, **14355 AU_03**.



Figure 19: Corpus Christi Bay

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2481 Corpus Christi Bay	13409 (AU_01)	At La Quinta Channel Marker 16	TCEQ Region 14	Quarterly 2x Metals in Water 2x Metals in Sediment 2x Organics in Sediment
	13411 (AU_02)	1 km northeast of Intersection of Doddridge St. and Ocean Drive	TCEQ Region 14	Quarterly
	14355 (AU_03)	0.4 km east of Shamrock Island	TCEQ Region 14	Quarterly

Hydrologic Characteristics

Corpus Christi Bay receives freshwater inflows from the Nueces River, and Oso Creek. On an average year, the Corpus Christi Bay system receives 314,000 acre-feet of water from these sources. Due to its size, water circulation can vary across different parts of the bay. The deeper central areas of the bay experience stronger circulation, while shallow areas, especially in the northern parts and along the coastline, may experience more limited water movement.

Water Quality Assessment

There are no water quality impairments in Segment 2481 but near shore impairments exist for bacteria (*Enterococcus*) for Cole Park (Segment 2481B_03), Ropes Park (Segment 2481CB_04) and Poenisch Park (Segment 2481B_06). There is a concern for bacteria in Emerald Beach (2481CB_07) The oyster waters (Segment 2481OW_01) shows impairment for bacteria.

Segment Name	AU	Description	Impairment	Concern
2481 Corpus Christi Bay	01	From the Corpus Christi Ship Channel east to Pelican Island, from Pelican Island south to Demit Island including the La Quinta Channel and the Corpus Christi Ship Channel adjacent to Redfish Bay	none	none
	02	From the Corpus Christi Ship Channel east to Pelican Island, from Pelican Island south to Demit Island including the area from the Corpus Christi Ship Channel to Demit Island (Oso Bay and City of Corpus Christi area)	none	none
	03	From Pelican Island south to Demit Island, from Demit Island to Mustang Island and the area along Mustang Island State Park to the Corpus Christi Ship Channel	none	none
2481CB Corpus Christi Bay (Rec. Beaches)	01	Corpus Christi Marina (Beach ID TX305317)	none	none
	02	Corpus Christi Beach – Main (Beach ID TX546628)	none	none
	03	Cole Park (Beach ID TX259473)	Bacteria	none
	04	Ropes Park (Beach ID TX821303)	Bacteria	none
	05	McGee Beach (Beach ID TX536781)	none	none
	06	Poenisch Park (Beach ID TX682648)	Bacteria	none
	07	Emerald Beach (Beach ID TX199413)	None	Bacteria
	08	University Beach (Beach ID TX149569)	None	None
	09	Packery Channel Park (Beach ID TX227625)	None	None

Segment 2482: Nueces Bay



Figure 20: Nueces Bay

Segment Description: Nueces Bay is a shallow, secondary bay in Nueces County. Nueces Bay provides the boundary between the San Antonio – Nueces and Nueces – Rio Grande Coastal Basins and consists of a single AU. Its watershed is 92,834 acres. The bay is bordered on the south by the City of Corpus Christi where there are many industries associated with the ship channel. A large portion of the Nueces Delta has been bought and designated as a preserve. The area north of the bay is primarily farm and ranch lands. Segment 2482 has one station numbered **13422**.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2482 Nueces Bay	13422 (AU_01)	0.50 mi from South Shore at east Overhead Powerline	TCEQ Region 14	Quarterly 2x Metals in Water 2x Metals in Sediment 2x Organics in Sediment

Hydrologic Characteristics

Nueces Bay is an estuarine bay located on the Texas Gulf Coast, just east of Corpus Christi Bay and separated by North Padre Island. Nueces Bay receives freshwater primarily from the Nueces River and some smaller tributaries and runoff from the surrounding watershed. This bay is typically shallow throughout.

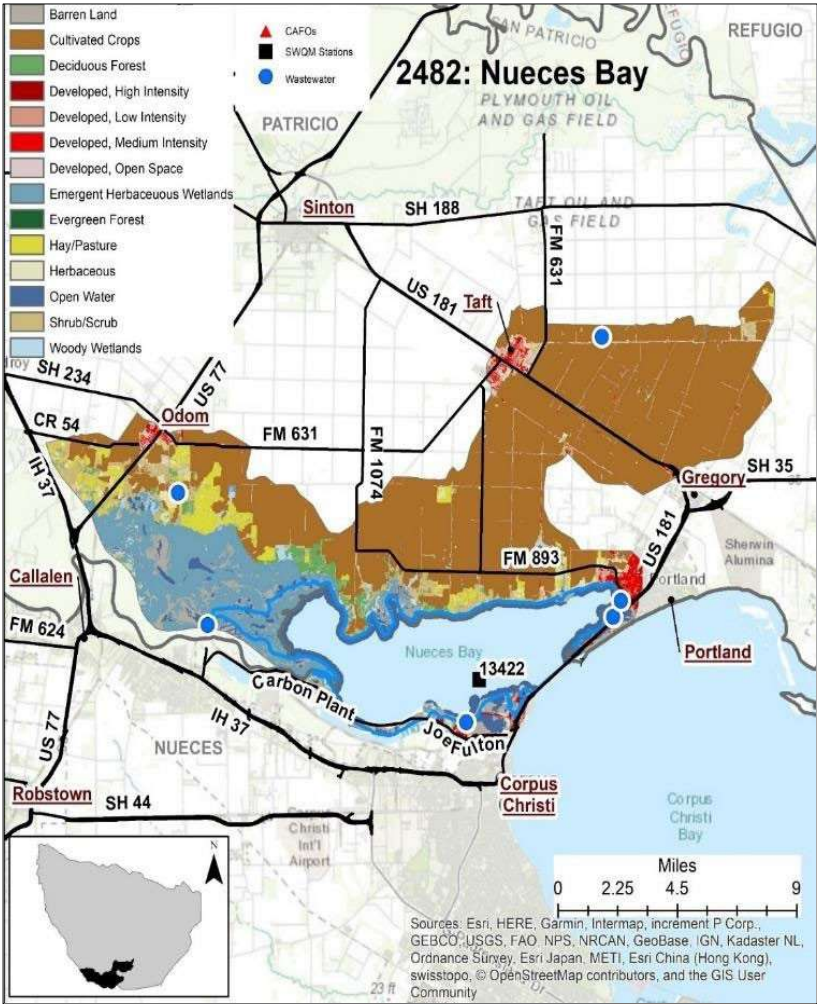


Figure 21: Map of Nueces Bay

Water Quality Assessment

The segment has an **impairment** for **copper** (acute and chronic toxicity) and has no concerns based-on data in the 2024 IR. The DSHS **shellfish restrictions** for **zinc in edible tissue** continued in the 2024 IR.

In **Segment 2482**: for chloride in water, it failed to meet the screening level of 13.5 mg/L: the average exceedance was 17.6 mg/L. Chloride in sediment it failed to meet the screening level of 0.69 mg/L: the average exceedance was 15.08 mg/L.

Segment Name	AU	Description	Impairment	Concern
2482 Nueces Bay	01	0.50 mi from South Shore at east Overhead Powerline	Copper in water and sediment	None

Segment 2483: Redfish Bay



Figure 22: Redfish Bay

Segment Description - Redfish Bay is in Nueces County and its watershed is 45,936 acres. There is very little undeveloped land on the western shore of the bay. The main cities are Ingleside (pop. 10,165) and Aransas Pass (pop. 8,088), with numerous small communities all the way to Rockport (10,841). Port Aransas (pop. 4,123) encompasses most of the eastern shoreline. Segment 2483 has one station numbered **13426**.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2483 Redfish Bay	13426 (AU_01)	At SH 361 at 3rd Bridge between Aransas Pass and Port Aransas	NRA	Quarterly

Hydrologic Characteristics

Redfish Bay is primarily influenced by Nueces Bay and the Nueces River, which contribute freshwater inflows.



Figure 23: Map of Redfish Bay

Water Quality Assessment

There is a **concern for nitrate and impairment for bacteria (Segment 2483_01)**.

In **Segment 2483**: for Nitrate in water, it failed to meet the screening level of 0.17 mg/L: the average exceedance was 6.88 mg/L. Bacteria in water failed to meet the screening level of 130 mg/L: the average exceedance was 1145.38 mg/L.

Segment Name	AU	Description	Impairment	Concern
2483 Redfish Bay	01	At SH 361 at 3rd Bridge between Aransas Pass and Port Aransas	Bacteria	Nitrate

Segment 2483A: Conn Brown Harbor



Figure 24: Conn Brown Harbor

Segment Description - The harbor is within the City of Aransas Pass. The northeast end is in Aransas County and the southwest end is in San Patricio County. Conn Brown Harbor was a commercial harbor used primarily by shrimpers, for many years, ending in the mid-2000s. The harbor is now used mainly by recreational fishermen and boaters. Segment 2483A consists of one station numbered **18848**.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2483A Conn Brown Harbor	18848 (AU_01)	At mid-harbor 50 m northeast of intersection of Huff St. and East Maddox Ave. in Aransas Pass	NRA	Biannual 2x metals in water

Hydrologic Characteristics

Conn Brown Harbor has limited freshwater inflows directly impacting it. The harbor is located near the mouth of Aransas Pass, which connects to Aransas Bay and Redfish Bay.

Water Quality Assessment

There is a **concern** for **copper** (acute and chronic toxicity) in the 2024 IR. The concern is likely associated with anti-fouling paint application in the harbor. Additionally, there is an impairment for bacteria single sample and geomean (*Enterococcus*).

In **Segment 2483A**: for Copper in water, it failed to meet the screening level 3.6 µg/L : the average exceedance was 5.06 µg/L. Bacteria in water (geomean) failed to meet the screening level of 130 mg/L: the average exceedance was 1599 mg/L. Bacteria in water (single sample) also failed to meet the screening level of 35 mg/L: the average assessed was 102.17 mg/L.

Segment Name	AU	Description	Impairment	Concern
2483A Conn Brown Harbor	01	At mid-harbor 50 m northeast of intersection of Huff St. and East Maddox Ave. in Aransas Pass	Bacteria	Copper in water

Segment 2484: Corpus Christi Inner Harbor



Figure 25: Corpus Christi Inner Harbor

Segment Description - The Corpus Christi Inner Harbor (CCIH) is in the City of Corpus Christi (pop. 326,554) in Nueces County. Its watershed is 13,360 acres and it comprises of one segment. CCIH is home to the Port of Corpus Christi, the second deepest port in the State of Texas. Many refineries and other industries are located all along the harbor. There are also numerous permitted wastewater outfalls, many of which are stormwater. Segment 2484 consists of two stations: **13432** and **13439**.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2484 Corpus Christi Inner Harbor	13432 (AU_01)	Approx. 0.4 km east of Navigation Blvd Draw Bridge	TCEQ Region 14	Quarterly
	13439 (AU_01)	At Inner Harbor in Viola Turning Basin	TCEQ Region 14	Quarterly 2x Metals in Water

Hydrologic Characteristics

The Corpus Christi Inner Harbor is influenced primarily by the Corpus Christi Bay, which itself is a tidally dominated estuarine system.

Water Quality Assessment

Segment 2484 has a copper in waters impairment.

Segment Name	AU	Description	Impairment	Concern
2484 Corpus Christi Inner Harbor	01	At SH 361 at 3rd Bridge between Aransas Pass and Port Aransas	Copper	None

Segment 2485: Oso Bay



Figure 26: Oso Bay

Segment Description - Oso Bay is in the City of Corpus Christi (pop. 326,554) in Nueces County. The bay is divided into three AUs and its watershed is 29,661 acres. The northwest portion of the bay between Ward Island and Ennis Joslin Road in AU_03 is known as the Blind Oso. Oso Bay receives much of the storm water runoff from the City of Corpus Christi as well as the cooling water from the Barney Davis Power Plant. The housing developments around the bay range from large, multi-acre tracts to neighborhoods with many houses per acre, to apartment complexes. Segment 2485 consists of two stations: **13440** AU_02, **13442** AU_03.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2485 Oso Bay	13440 (AU_02)	Immediately offshore at tip of peninsula at Padre Island Drive/southbound SH 358	NRA	Quarterly
	13442 (AU_03)	Oso Bay at Ocean Drive	NRA	Quarterly

Hydrologic Characteristics

Oso Bay receives freshwater inputs primarily from Oso Creek, which drains into the bay. As an estuary, Oso Bay is subject to tidal fluctuations.

Water Quality Assessment

According to the 2024 IR, AU_02 has water quality **impairments** for **depressed dissolved oxygen** (24-hour minimum), bacteria (Enterococcus), and **concerns** for **Nitrate** and chlorophyll- a. AU_03 has a water quality **impairment** for **bacteria** (Enterococcus) and concerns for **Nitrate, and chlorophyll-a**. AU_03 has had an impairment for bacteria for primary contact recreation and oyster waters since 2004.

In **Segment 2485: 13440 (AU_02)** for Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 25.12 mg/L. Nitrate it failed to meet the screening level of 0.17 mg/L: the average exceedance was 4.25 mg/L. Depressed dissolved oxygen in water failed to meet the screening level of 4.5 mg/L: the average exceedance was it failed to meet the screening level of 0.17 mg/L: the average exceedance was 4.25 mg/L. Bacteria in water failed to meet the screening level of 130 mg/L; the average exceedance was 2130 mg/L. The bacteria impairment is currently classified as 4a, meaning a state-developed TMDL has been approved by EPA or a TMDL has been established by EPA for any water-pollutant combination.

In **Segment 2248: 13442 (AU_03)** for Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 19.12 mg/L. Nitrate failed to meet the screening level of 0.17 mg/L: the average exceedance was 4.24 mg/L. Bacteria in water failed to meet the screening level of 130 mg/L; the average exceedance was 1516 mg/L. The bacteria impairment is currently classified as 4a, meaning a state-developed TMDL has been approved by EPA or a TMDL has been established by EPA for any water-pollutant combination.

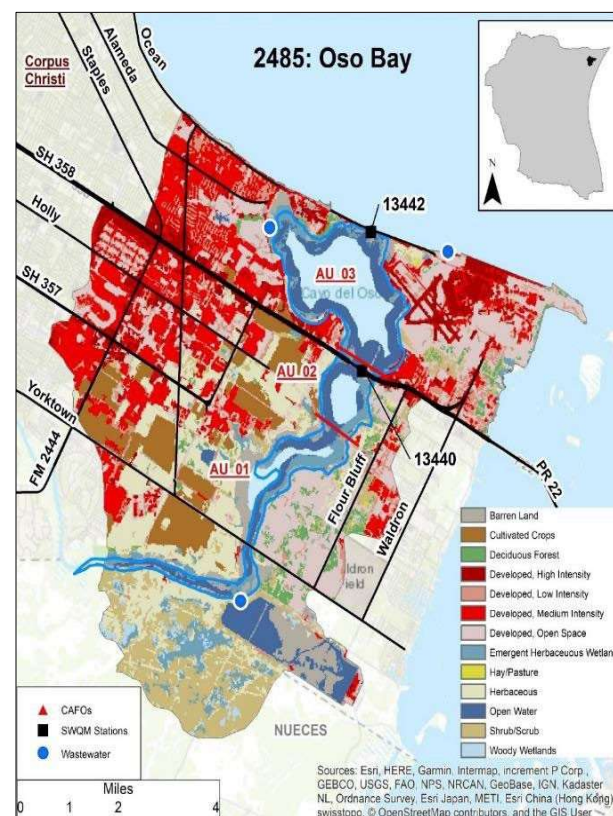


Figure 27: Map of Oso Bay

Segment Name	AU	Description	Impairment	Concern
2485 Oso Bay	02	At SH 361 at 3rd Bridge between Aransas Pass and Port Aransas	Depressed Oxygen, Bacteria in water	Nitrate, Chlorophyll-a
	03	Oso Bay at Ocean Drive	Bacteria in water	Nitrate, Chlorophyll-a

Segment 2485A: Oso Creek



Figure 28: Oso Creek at SH286

Segment Description - Oso Creek flows 29.5 miles from a point 3 miles upstream of SH 44 west of Corpus Christi (pop. 326,554) to the confluence with Oso Bay in Nueces County. Its watershed is 118,380 acres. The southeastern end of the creek flows through highly developed areas of Corpus Christi. The northwestern end is primarily rural, but development is rapidly encroaching. Segment 2485A consists of two stations: **13028** and **13029**.

Hydrologic Characteristics

Oso Creek is a key freshwater source that flows into Oso Bay. The creek flows through both developed and natural landscapes before it reaches Oso Bay. Oso Creek's flow can vary significantly depending on rainfall patterns, seasons, and human activity.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2485A Oso Creek	13028 (AU_02)	Immediately downstream of SH 286 South of Corpus Christi	NRA	Quarterly
	13029 (AU_03)	Immediately downstream of SH 763 Southwest of Corpus Christi	NRA	Quarterly

Water Quality Assessment

Water Quality - The creek has had an **impairment** for **bacteria** (enterococcus) for primary contact recreation since 2002. The creek also has concerns for **nitrate**, **chlorophyll-a**, and **total phosphorus** in the 2024 IR.

In **Segment 2248: 13442 (AU_03)** for Chlorophyll-a it failed to meet the screening level of 21 mg/L: the average exceedance was 105.98 mg/L. Nitrate failed to meet the screening level of 1.1 mg/L: the average exceedance was 6.81 mg/L. Total Phosphorus failed to meet the screening level of 0.66 mg/L: the average exceedance was 1.88 mg/L. Bacteria in water failed to meet the screening level of 130 mg/L; the average exceedance was 1516 mg/L. The bacteria impairment is currently classified as 4a, meaning a state-developed TMDL has been approved by EPA.

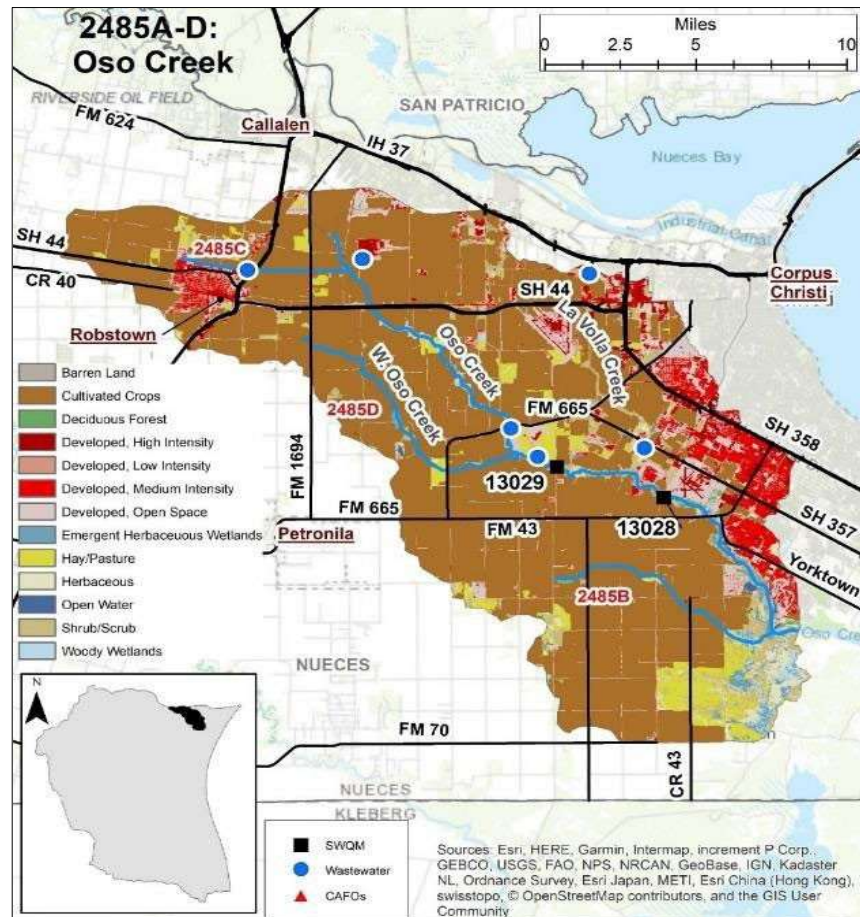


Figure 29: Map of Oso Creek

Segment Name	AU	Description	Impairment	Concern
2485A Oso Creek	01	Immediately downstream of SH 286 south of Corpus Christi	Bacteria in water	Total Phosphorus, Chlorophyll-a, Nitrate

Segment 2485B: Unnamed Tributary of Oso Creek



Figure 30: Unnamed Tributary of Oso Creek

Segment Description - The unclassified water body is from a point 3.2 miles west of SH 286 to the confluence with Oso Creek. This tributary is a primarily rural area, but development is rapidly encroaching.

Water Quality Assessment

Water Quality - There are no active monitoring sites on the segment. Data for the assessment were collected during the TMDL studies.

Segment 2485D: West Oso Creek

Segment Description - The unclassified water body is from a point 0.3 miles west of FM 1694 to the confluence with Oso Creek. This tributary is a primarily rural area, but development is rapidly encroaching.

Water Quality Assessment

Water Quality - There are no active monitoring sites on the segment.



Figure 31: West Oso Creek

Segment 2491: Laguna Madre



Figure 32: Laguna Madre

Segment Description - The Laguna Madre runs along the Texas coast from Corpus Christi Bay in Nueces County to the Brownsville Ship Channel in Cameron County. It is divided into three AUs and its watershed is 4,222,224 acres. The only development is in the very northern and very southern ends: Corpus Christi and Port Isabel, respectively. Padre Island National Seashore encompasses most of the barrier island to the east. The land to the west is predominantly large ranches such as the King Ranch. There are numerous WWTPs permitted to discharge to the Laguna Madre via the North Floodway, some of which are as far west as McAllen. Segment 2491 consists of six stations: **13445 AU_01**, **13446 AU_03**, **13447 AU_02**, **13448 AU_01**, **13449 AU_01**, **14870 AU_03**.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2491 Laguna Madre	13445 (AU_01)	At Intracoastal Waterway approximately 1.6 km southwest from the southernmost point of south Bird Island	TCEQ Region 14	Quarterly
	13446 (AU_03)	ICWW at Marker 129 east of Port Isabel	TCEQ Region 15	Quarterly
	13447 (AU_02)	Intersection of Intracoastal Waterway and Arroyo Colorado	TCEQ Region 15	Quarterly
	13448 (AU_01)	Intersection of Intracoastal Waterway and Port Mansfield Channel	TCEQ Region 15	Bi-annually
	13449 (AU_01)	CM C-225A North of Port Mansfield	TCEQ Region 15	Bi-annually
	14870 (AU_03)	200 yards off Laguna Vista shoreline	TCEQ Region 15	Quarterly

Hydrologic Characteristics

The freshwater input to Laguna Madre is limited. The primary sources are rainfall and inflow from nearby rivers such as the **Rio Grande** and **Arroyo Colorado**, but these rivers are often affected by drought conditions, which can limit their flow.

Water Quality Assessment

Water Quality – AU_01 has a water quality **impairment** for **depressed dissolved oxygen** (24-hour minimum) and a **concern** for **chlorophyll-a** in the 2024 IR.

AU_02 has water quality **impairments** for **depressed dissolved oxygen** (24-hour minimum) and **bacteria** (Enterococcus) and **concerns** for **nitrate**, and **chlorophyll-a**. 2491OW_02 has had an impairment for bacteria in oyster waters since 2006. AU_03 has a water quality **concern** for **bacteria** (Enterococcus).

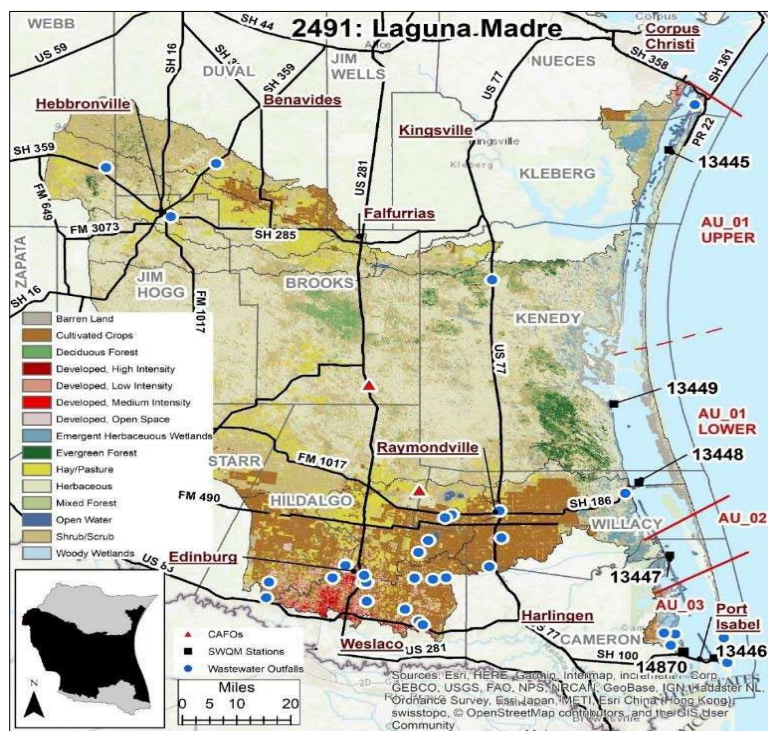


Figure 33: Map of Laguna Madre

In **Segment 2491: (AU_01)** for

Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 18.83 mg/L. The depressed dissolved oxygen impairment is currently classified as 5b, a review of the standards for the water body will be conducted before a management strategy is selected.

In **Segment 2491: (AU_02)** for Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 26.68 mg/L. Nitrate failed to meet the screening level of 0.17 mg/L: the average exceedance was 0.75 mg/L. The bacteria impairment is currently classified as 5r, a WPP is under development or accepted by EPA for this parameter

Segment Name	AU	Description	Impairment	Concern
2491 Laguna Madre	01	Intersection of ICWW and Port Mansfield Channel	Depressed Oxygen	Chlorophyll-a
	02	Intersection of ICWW and Arroyo Colorado	Depressed Oxygen, Bacteria in water	Chlorophyll-a, Nitrate
	03	200 yds off Laguna Vista shoreline and port Isabel		Bacteria

Segment 2491B: North Floodway



Figure 34: North Floodway Station 20930

Segment Description – Located in the Lower Rio Grande Valley (LRGV), the North Floodway is used to drain WWTP effluent, return flows from irrigation, and diverted flood waters flows from the Arroyo Colorado. It runs 2.5 kilometers south of the intersection of US 77 and FM 2629 in Sebastian.

Water Quality Assessment

Water Quality - There is an impairment for Bacteria (E coli) and concern for Chlorophyll-a and Nitrate in the 2024 IR.

Segment Name	AU	Description	Impairment	Concern
2491B North Floodway	01	North Floodway at US 77 South of Intersection of US 77 and FM 2629 in Sebastian.	Bacteria in water	Chlorophyll-a, Nitrate

In **Segment 2491B:** (AU_01) for Chlorophyll-a it failed to meet the screening level of 14.1 mg/L: the average exceedance was 56.61 mg/L. Nitrate failed to meet the screening level of 1.95 mg/L: the average exceedance was 3.32 mg/L.

Segment 2491C: Raymondville Drain



Figure 35: Raymondville Drain at CR 445

Segment Description – Raymondville Drain flowing into the Laguna Madre. Segment 2491C consists of one active station numbered 22004 AU_01.

Water Quality Assessment

In **Segment 2491C: (AU_01)** for Chlorophyll-a it failed to meet the screening level of 14.1 mg/L: the average exceedance was 56.61 mg/L. Nitrate failed to meet the screening level of 1.95 mg/L: the average exceedance was 3.32 mg/L.

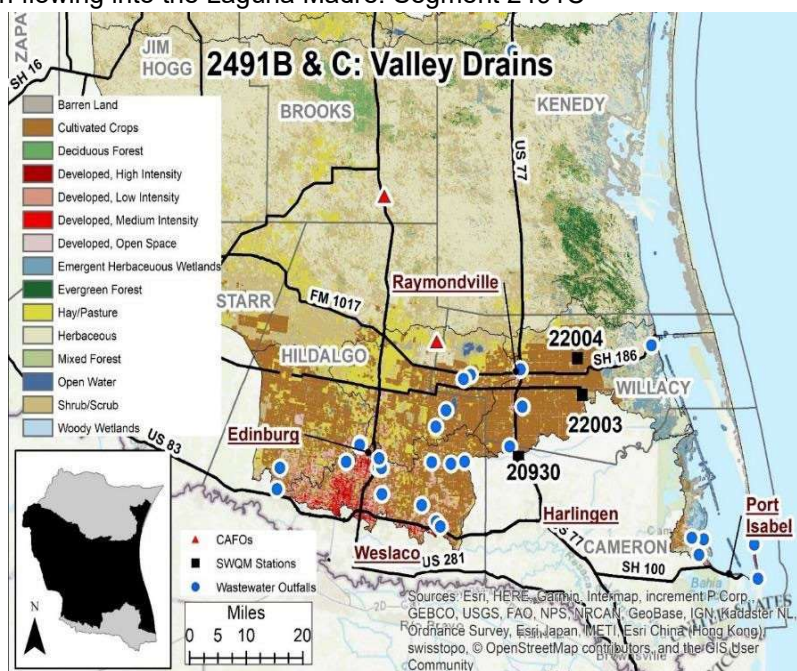


Figure 36: Map of the Valley Drains

Segment Name	AU	Description	Impairment	Concern
2491C Raymondville Drain	01	Drainage ditches flowing into Lower Laguna Madre	Bacteria in water	Chlorophyll-a, Nitrate

Segment 2491C: Hidalgo Main Drain



Figure 37: Hidalgo Main Drain

Hidalgo Main Floodwater Channel flowing into Laguna Madre. Segment 2491C_03 consists of one station numbered **22003** AU_01.

Water Quality Assessment

There are concerns for total phosphorus, nitrate, chlorophyll-a and Bacteria (E coli).

In **Segment 2491C: (AU_03)** for Chlorophyll-a it failed to meet the screening level of 14.1 mg/L: the average exceedance was 128.83 mg/L. Nitrate failed to meet the screening level of 1.95 mg/L: the average exceedance was 4.36 mg/L. Total phosphorus failed to meet the screening level of 0.69 mg/L: the average exceedance was 0.81 mg/L.

Segment Name	AU	Description	Impairment	Concern
2491C Hidalgo Main Drain	03	At FM 1420 1.65 KM South of Intersection with FM 490 East of Raymondville		Chlorophyll-a, Nitrate, Total Phosphorus, Bacteria in water

Segment 2492: Baffin Bay / Alazan Bay / Cayo del Grullo / Laguna Salado



Figure 38: Alazan Bay

Segment Description - Baffin Bay is a hypersaline secondary bay located in Kleberg and Kenedy counties. Alazan Bay is a tertiary bay located in the northeastern arm of Baffin Bay in Kleberg County, Cayo del Grullo is the northwestern arm in Kleberg County, and Laguna Salado is the western arm in Kleberg and Kenedy Counties. Its watershed is 1,376,310 acres. The City of Kingsville (pop. 25,487) is the only large city in the watershed. Most of the bay is surrounded by large ranches such as the King Ranch. There are only a few public access points. Segment 2492 consists of two stations: **13450 AU_01** and **13452 AU_01**.

Water Quality Assessment

Water Quality – Baffin Bay has a water quality **concern** for **chlorophyll-a** listed in the 2024 IR.

In **Segment 2492 : (AU_01)** for Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 21.38 mg/L.

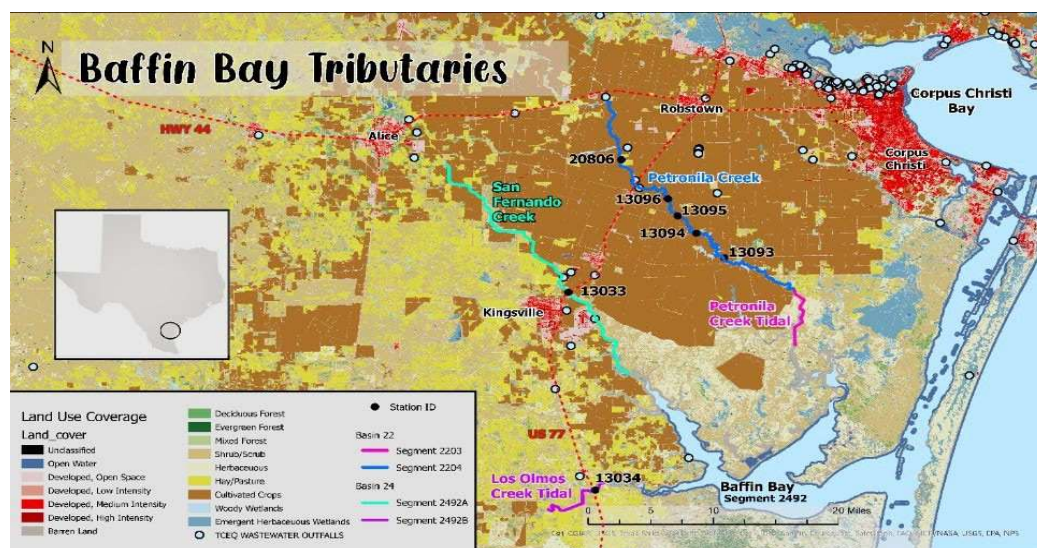


Figure 39: Map of Baffin Bay Tributaries

Segment 2492A: San Fernando Creek



Figure 40: San Fernando Creek at US 77

Segment Description - San Fernando Creek flows 45.6 miles from a point just east of the Nueces and Jim Wells County lines to the confluence of the Cayo del Grullo arm of Baffin Bay in Kleberg County. Its watershed is 288,572 acres. While primarily rural, the creek flows through the City of Alice (pop. 18,887) and the City of Kingsville (pop. 25,487). There are a number WWTPs that discharge into the creek providing consistent flow. The watershed also has several small communities on septic systems. Segment 2492A consists of one station numbered **13033**.

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2492A San Fernando Creek	13033 (AU_01)	At US 77 at Kingsville	NRA	Quarterly

Hydrologic Characteristics

San Fernando Creek is a significant watercourse that flows into Baffin Bay. The creek is characterized by a combination of perennial freshwater streams and tidal sections near its mouth.

Water Quality Assessment

Water Quality – San Fernando Creek is currently listed as **impaired** for **bacteria** (*E. coli*), and concerns for Chlorophyll-a, Nitrate, and Total Phosphorus in the 2024 IR. The creek was previously listed for enterococci bacteria (marine water), but the sampling location was determined to be upstream of the tidal boundary.

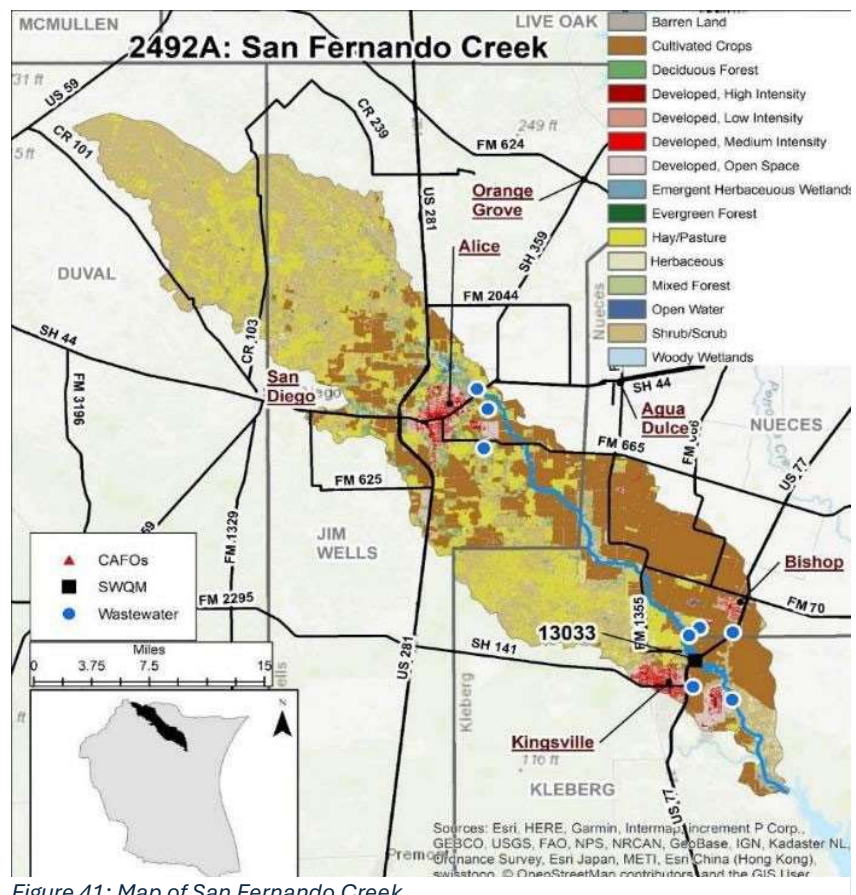


Figure 41: Map of San Fernando Creek

In **Segment 2492A: (AU_03)** for Chlorophyll-a it failed to meet the screening level of 14.1 mg/L: the average exceedance was 61.97 mg/L. Nitrate failed to meet the screening level of 1.95 mg/L: the average exceedance was 6.03 mg/L. Total phosphorus failed to meet the screening level of 0.69 mg/L: the average exceedance was 2.44 mg/L.

Segment Name	AU	Description	Impairment	Concern
2492A San Fernando Creek	03	Drainage ditches flowing into Lower Laguna Madre	Bacteria in water	Chlorophyll-a, Nitrate, Total Phosphorus

Segment 2492B: Los Olmos Creek Tidal



Figure 42: Los Olmos Creek at US 77

Segment Description – The tidal portion of Los Olmos Creek starts from the confluence with Laguna Salada upstream 10.9 km (6.8 mi) southwest of Riviera. Segment 2492B consists of one station numbered **13034** AU_01.

<i>Segment Name</i>	<i>Station ID #</i>	<i>Description</i>	<i>Monitoring Entity</i>	<i>Conventional Field</i>
2492B Los Olmos Creek Tidal	13034 (AU_01)	At Highway 77 Bridge, south of the City of Riviera	NRA	Quarterly

Hydrologic Characteristics

Los Olmos Creek flows toward **Baffin Bay**, which is part of the **Laguna Madre** system. In tidal creeks like Los Olmos Creek, the water level fluctuates based on the tide cycle.

Water Quality Assessment

Water Quality – This segment has an impairment for bacteria (*Enterococcus*) there are concerns for Nitrate, depressed dissolved oxygen (grab minimum and grab screening level), and chlorophyll-a.

In **Segment 2492B: 13034 (AU_01)** for Chlorophyll-a it failed to meet the screening level of 21 mg/L: the average exceedance was 18 mg/L. Nitrate failed to meet the screening level of 1.1 mg/L: the average exceedance was 17.61 mg/L. The bacteria impairment is currently classified as 5c, a WPP is under development or accepted by EPA for this parameter

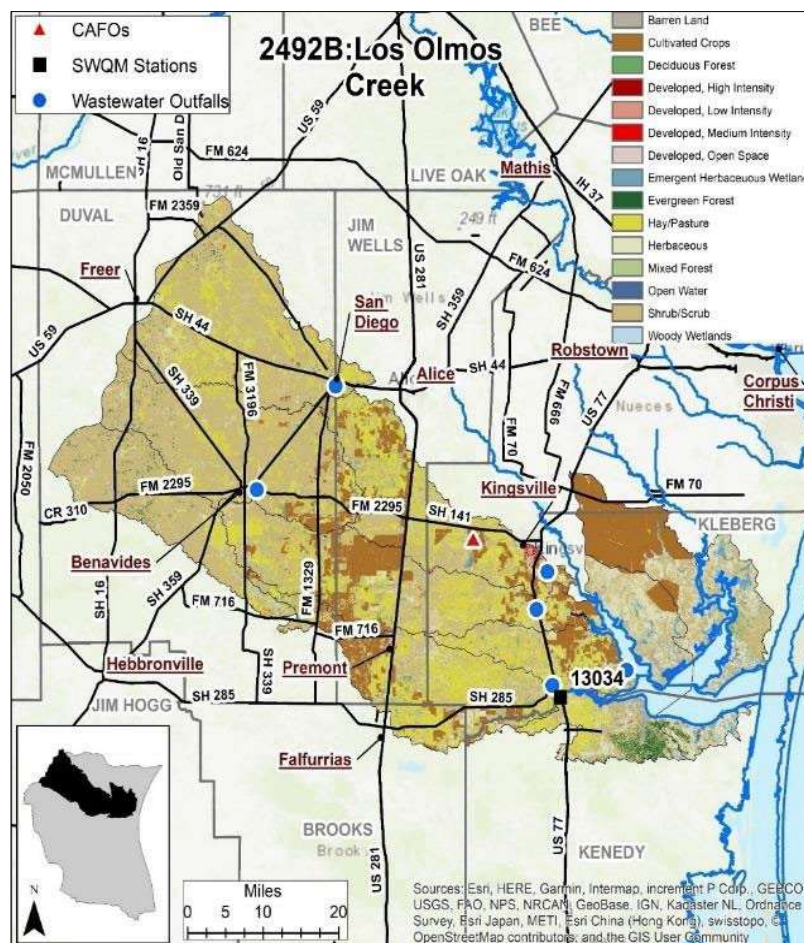


Figure 43: Map of Los Olmos Creek

Segment Name	AU	Description	Impairment	Concern
2492B Los Olmos Creek Tidal	01	Upstream of 77 Bridge, south of the city of Rivera	Bacteria in water	Chlorophyll-a, Nitrate, Dissolved Oxygen

Segment 2493: South Bay

Segment Description - South Bay is located south of the Brownsville Ship Channel in Cameron County. Its watershed, combined with that of Segment 2493, South Bay, and Segment 2494, the Brownsville Ship Channel, is 225,554 acres. South Bay is the southernmost bay in Texas and is part of the South Bay Coastal Preserve. It supports the largest concentration of oysters in the Lower Laguna Madre and is relatively inaccessible. Segment 2493 consists of two stations: **13459 AU_01** and **14865 AU_01**.

Water Quality Assessment

Water Quality - All assessed parameters met the standards in the 2024 IR.

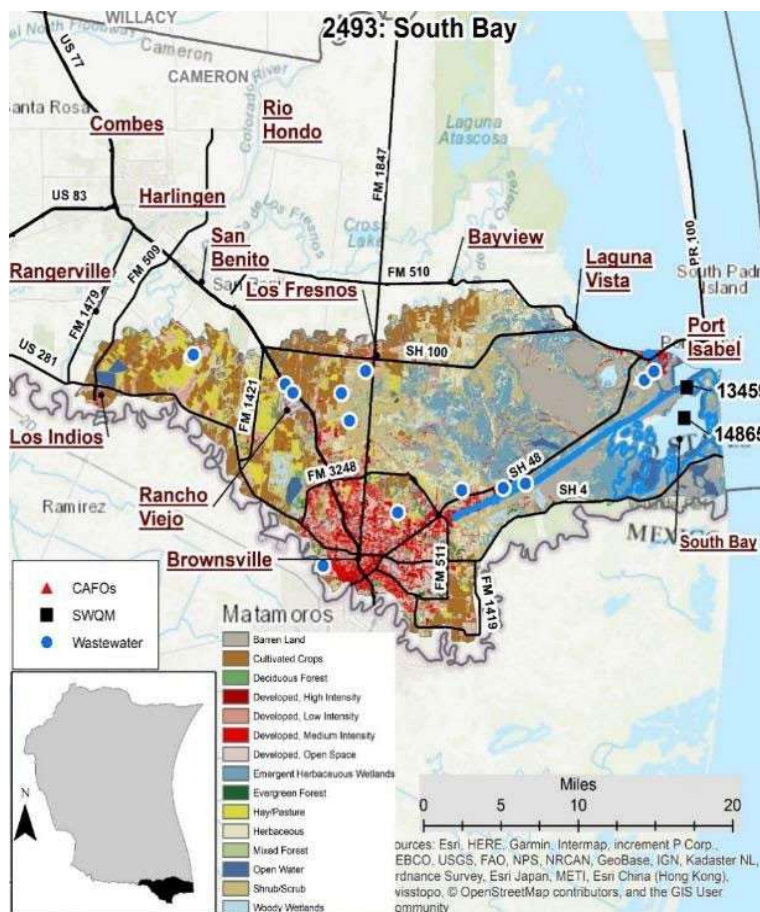


Figure 44: Map of South Bay

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2493 South Bay	13459 (AU_01)	Approximately 0.1 KM West of Clark Island	TCEQ Region 15	Quarterly
	14865 (AU_01)	Middle of bay	TCEQ Region 15	Quarterly

Segment 2494: Brownsville Ship Channel

Segment Description – The Brownsville Ship Channel extends from the Port of Brownsville to the Laguna Madre. Its watershed, combined with that of the Segment 2493, South Bay, and Segment 2494A, the Port Isabel Fishing Harbor is 225,554 acres. The ship channel is part of the Port of Brownsville, a major center of industrial development with over 230 companies doing business there. Segment 2494 consist of three stations: **13460** AU_01, **14875** AU_01, and **14871** AU_01.

Water Quality Assessment

Water Quality - The segment is listed as having a water quality **concern** for **depressed dissolved oxygen** (grab screening level) in the 2024 IR.

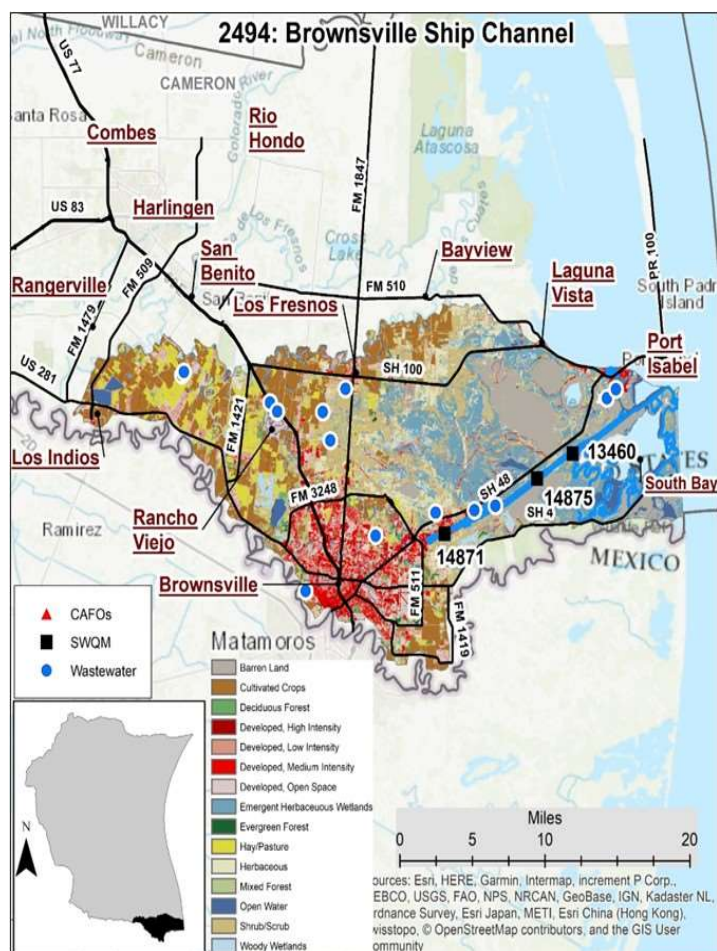


Figure 45: Map of Brownsville Ship Channel

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2494	13460 (AU_01)	Near ship CM 35/ black buoy	TCEQ Region 15	Quarterly
Brownsville Ship Channel	14871 (AU_01)	Middle channel 595 m east of SH 48 at Foust Rd.	TCEQ Region 15	Quarterly
	14875 (AU_01)	Middle channel at entrance to San Martin Lake	TCEQ Region 15	Quarterly

Segment 2494A: Port Isabel Fishing Harbor

Segment Description – The Port Isabel Fishing Harbor is located within the City of Port Isabel in Cameron County. It is connected to the Laguna Madre to the north and to the Brownsville Ship Channel to the south. Its watershed, combined with that of the Segment 2493, South Bay, and Segment 2494, the Brownsville Ship Channel is 225,554 acres. The properties along the canals are a combination of businesses and residential properties. Segment 2494A consist of one station numbered **13285**.

Water Quality Assessment

Water Quality – The water body is listed as being **impaired** for **bacteria** (Enterococcus) for primary contact recreation since the 2010 IR. The impairment carries forward in the 2024 IR. The source of the bacteria is thought to be from nonpoint source runoff since there are no permitted discharges into the harbor. Due to the eight-hour holding time and because there are no local labs accredited for Enterococcus analysis, bacteria sample collection has been suspended.

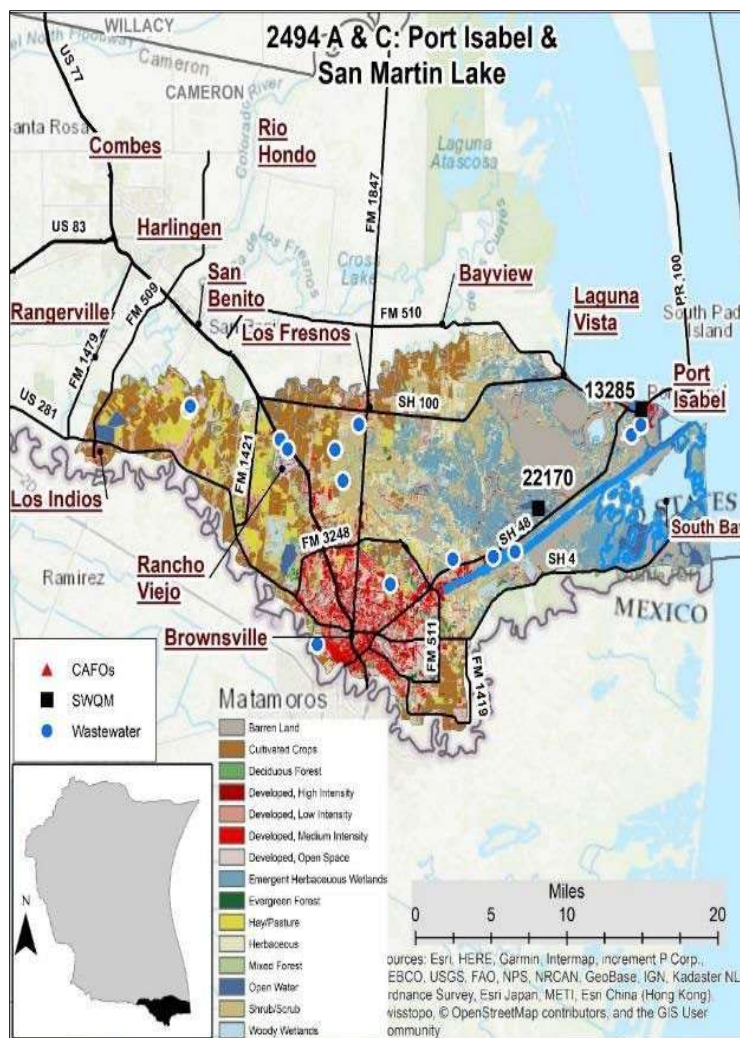


Figure 46: Map of Port Isabel Fishing Harbor and San Martin Lake

Segment Name	Station ID #	Description	Monitoring Entity	Conventional Field
2494A Port Isabel Fishing Harbor	13285 (AU_01)	Port Isabel Fishing Harbor	TCEQ Region 15	Quarterly

Segment 2494C: San Martin Lake Tidal



Figure 47: San Martin Lake Tidal

Segment Description – San Martin Lake starts from the confluence with the Brownsville Ship Channel. upstream to the confluence with drainage ditches flowing into San Martin Lakes. Segment 2494C consists of one station numbered **22170 AU_01**.

Segment Name	AU	Description	Impairment	Concern
2494C San Martin Lake	01	San Martin Lake Mid Estuary 2.04 KM East and 0.80 KM North of the HWY 48 Bridge Northeast of Brownsville	Bacteria in water	Chlorophyll-a, Total phosphorus

Water Quality Assessment

Water Quality – San Martin Lakes has impairment for Bacteria (enterococcus),and concerns for total Phosphorus in water and Chlorophyll-a in water.

In **Segment 2494C: 22170 (AU_01)** for Chlorophyll-a it failed to meet the screening level of 11.6 mg/L: the average exceedance was 24.83 mg/L. Total phosphorus failed to meet the screening level of 0.21 mg/L: the average exceedance was 0.49 mg/L. The bacteria impairment is currently classified as 5r, a WPP is under development or accepted by EPA for this parameter.

Summary

CRP utilizes a watershed management approach to identify and evaluate water quality issues, establish priorities for corrective action, and work to implement those actions. Below is a brief narrative of the water quality conditions assessed in the report for each basin.

Water Quality in the Nueces – Rio Grande Coastal Basin

The issues within this basin differ greatly between the northern and southern areas. The primary issues in the northern area are being addressed by the Petronila Creek TMDL for chloride, sulfate, and TDS and the nutrient study. NRA has been monitoring the tributaries to the creek to try and pinpoint the source areas. The chloride, sulfate, and TDS concentrations are inversely correlated with the three-week antecedent rainfall amounts. The concentration rises quickly from groundwater seepage during low flow periods. The creek is listed as being impaired for bacteria, chloride, TDS, and sulfate in the 2024 Integrated Report. NRA will continue to conduct routine CRP monitoring in Petronila watershed, including tributary monitoring, to monitor chloride, sulfate, and TDS and nutrient concentrations. The southern area is dominated by the Arroyo Colorado. Water quality issues in the Arroyo Colorado include the following: elevated nutrients (nitrogen and phosphorus) and bacteria loads, high levels of chlorophyll-*a*, and legacy pollutants resulting in fish consumption advisories (polychlorinated biphenyls in the above tidal portion). These water quality issues are being addressed by the Arroyo Colorado WPP. NRA will continue to conduct routine CRP monitoring on the Arroyo Colorado and its tributaries, and any special studies that may be developed, to assist in the evaluation of the effectiveness of the BMPs that are implemented. While the impairments and concerns continue for both the tidal and above tidal segments, there does seem to be some improvement in the above tidal segment.

Water Quality in the Bays and Estuaries

Bacteria in oyster waters, chlorophyll-*a*, and bacteria at recreational beaches are the primary issues within the coastal bays. Other issues include low DO, nutrients, and copper. The Oso Bay and Oso Creek TMDL is addressing the bacteria issues in those segments. The Oso Bay and Laguna Madre TMDL is addressing the DO issues in those segments. Only two of the thirteen classified bays, Aransas Bay and South Bay, currently meet all water quality standards. Other bays, such as Mesquite Bay, Copano Bay, St. Charles Bay, and Redfish Bay, have developed impairments or concerns since the previous report. The remaining bays have at least one impairment or concern, including bacteria in oyster waters, elevated nutrient concentrations, or low DO levels.

The low DO, based on current standards, in Oso Bay and the Laguna Madre, are naturally occurring and do not appear to negatively affect aquatic life. Many studies have been conducted and proposed changes to the standards are being evaluated. A TMDL was adopted for Oso Creek in July 2019 and Oso Bay in 2007. Management measures include creating habitat away from the creek for birds and wildlife, addressing failing OSSFs, and how the maintenance of the drainage ditches from the City of Corpus Christi to the creek can be improved to reduce loadings from rainfall runoff events. NRA will continue to conduct routine CRP monitoring in the basin, and any special studies that may be developed, to assist in the evaluation of the effectiveness of the BMPs that are implemented. NRA will continue to attend the stakeholder meetings and to provide input into the implementation of the plan.

Recommendations

TCEQ depends on the CRP partner agencies to provide the majority of the data used for in the bi-annual water quality assessments. Therefore, dedicated funds for CRP should be reinstated in order to enhance the current level of monitoring and to provide additional monitoring to support the TCEQ, WPPs, RUAAAs, TMDLs, and Implementation Plans.

Collaborating and coordinating with all entities conducting water quality monitoring should be continued through the annual coordinated monitoring meetings. This reduces duplication of effort and increases the amount of information that can be collected and shared.

CRP should remain flexible to support proactive projects to protect water quality before a segment is listed on the 303 (d) List.

Annual CRP Partner meetings should be held to strengthen the program by promoting cooperative projects between the partner agencies and to provide opportunities to share knowledge and ideas.

To enhance the data available to TCEQ for assessments, CRP partners should continue to provide as much support to all water quality monitoring and protection efforts as possible as resources allow. Specifically related to NRA's CRP area of responsibility, NRA plans to:

- Continue to conduct routine CRP monitoring.
 - Continue to implement the management measures identified in the Lower Nueces WPP.
 - Continue the OSSF repair and replacement program.
 - Pursue opportunities to facilitate other studies in Petronila Creek and San Fernando Creek.
 - Add metals sampling to Los Olmos Creek to facilitate the Bring Baffin Back campaign and other scientific studies
 - Facilitate widespread education and outreach activities.
 - Expand its outreach program online
 - Continue to battle the *Arundo donax* invasion in the upper Nueces Basin, parts of the Lower Nueces, and a few of Petronila Creek's tributaries.
 - Continue to serve as stakeholders on all water quality related projects within our areas of jurisdiction and responsibility.
-

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NRA would like to recognize and thank our CRP partners for
their support and contributions to the program!!

We are honored to work with so many **legendary people!**

Bandera Country River Authority & Groundwater District
Center for Coastal Studies
Coastal Bays Foundation
Coastal Bend Bays & Estuaries Program
Harte Research Institute
Texas A&M University – Corpus Christi
Texas Commission of Environmental Quality
Texas Parks & Wildlife
San Antonio River Authority

Appendix A

Wastewater Discharge Permit Information

TPDES Water Quality Permit ID	Latitude	Longitude	County	Authorization Type	Original Approval Date	Segment	Expiration	Permittee(s) Name(s)	Site Name	Treatment Component	Coastal Zone	Toxic Rating	Average gpd (gallons per day) Annually
WQ0003596000	26.327500	-97.435277	Cameron	Industrial Wastewater	07/20/1995	2201	04/26/2023	Arroyo Aquaculture Association, Inc. Taiwan Shrimp Village Association, Inc.	Arroyo Aquaculture Wastewater Treatment Facility		Yes	3	100,000,000
WQ0010475002	26.249444	-97.580833	Cameron	Public Domestic Wastewater	1/1/1800	2201		City of Rio Hondo	City Of Rio Hondo WWTP	Transport To Another WWTP		0	400,000
WQ0014558001	26.211111	-97.532500	Cameron	Private Domestic Wastewater	04/21/2005	2201		East Rio Hondo Water Supply Corporation	Lozano WWTP	Package Plant		0	80,000
WQ0005137000	26.216388	-97.628055	Cameron	Industrial Wastewater	04/24/2015	2201	06/01/2020	La Paloma Energy Center, LLC	La Paloma Energy Center			2	
WQ0013462008	26.074166	-97.649444	Cameron	Private Domestic Wastewater	05/31/2001	2201		Military Highway Water Supply Corporation	Joines Road Regional WWTP	Commercial Land App (Register)		0	510,000
WQ0004792000	26.076388	-97.646388	Cameron	Reverse Osmosis Water Treatment	02/27/2007	2201		Military Highway Water Supply Corporation	Joines Road WTP			3	
WQ0005025000	26.052777	-97.757222	Cameron	Reverse Osmosis Water Treatment	07/21/2014	2201		Military Highway Water Supply Corporation	Las Rusias WTP			4	
WQ0010504001	26.148333	-98.053333	Hidalgo	Public Domestic Wastewater	1/1/1800	2202		City of Donna	City Of Donna WWTP	Dewatering - Sludge Drying B02		0	1,800,000
WQ0011080001	26.107222	-98.235277	Hidalgo	Public Domestic Wastewater	04/24/1970	2202		City of Hidalgo	City Of Hidalgo WWTP	Prelim Treatment - Bar Screen		0	1,900,000
WQ0010633003	26.172222	-98.275277	Hidalgo	Public Domestic Wastewater	06/19/1964	2202		City of McAllen	City Of Mcallen South WWTP	Ultra Violet Light		0	10,000,000
WQ0010347001	26.170833	-97.903055	Hidalgo	Public Domestic Wastewater	07/09/1963	2202		City of Mercedes	City Of Mercedes WWTP	Biomonitoring		0	5,000,000
WQ0010484001	26.197222	-98.330833	Hidalgo	Public Domestic Wastewater	07/25/1963	2202		City of Mission	South Mission 1 WWTP	Biomonitoring		0	13,500,000
WQ0010596001	26.166666	-98.173055	Hidalgo	Public Domestic Wastewater	02/14/1967	2202		City of Pharr	City Of Pharr WWTP			0	8,000,000
WQ0011512001	26.162222	-98.161666	Hidalgo	Public Domestic Wastewater	07/11/1963	2202		City of San Juan	City Of San Juan WWTP	Biomonitoring		0	4,000,000
WQ0010619005	26.116666	-98.020555	Hidalgo	Public Domestic Wastewater	08/28/1998	2202		City of Weslaco	Weslaco South WWTP	Ultra Violet Light		0	2,500,000
WQ0013680001	37.000000	-96.000000	Hidalgo	Public Domestic Wastewater	05/13/1994	2202	05/31/2015	Donna ISD	Runn Elementary School WWTP			0	
WQ0004051000	26.207222	-98.397222	Hidalgo	Industrial Wastewater	05/28/1999	2202		Frontera Generation Limited Partnership	Frontera Energy Center			3	
WQ0004837000			Hidalgo	Reverse Osmosis Water Treatment	01/21/2009	2202	06/01/2011	La Joya Water Supply Corporation	Bentsen Palm Reverse Osmosis WTP			2	
WQ0013462001	26.111944	-97.936666	Hidalgo	Private Domestic Wastewater	11/15/1988	2202		Military Highway Water Supply Corporation	Progreso WWTP	Dewatering - Sludge Drying B01		0	750,000
WQ0013462006	26.128611	-98.122500	Hidalgo	Private Domestic Wastewater	04/16/1999	2202		Military Highway Water Supply Corporation	Military Highway WSC WWTP	Dewatering - Sludge Drying B01		0	510,000

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WQ0004754000	26.093611	-97.963888	Hidalgo	Reverse Osmosis Water Treatment	07/11/2005	2202		Military Highway Water Supply Corporation	Progreso Water Treatment Plant			4	520,000
WQ0011541001	27.676944	-97.742500	Nueces	Public Domestic Wastewater	1/1/1800	2202	06/01/2020	City of Driscoll	Driscoll WWTP	Prelim Treatment - Bar Screen		0	100,000
WQ0010592001	27.943687	-97.935562	Jim Wells	Public Domestic Wastewater	06/17/1964	2204		City of Orange Grove	Orange Grove WWTP	Pumping Raw Wastewater		0	200,000
WQ0011689001			Nueces	Private Domestic Wastewater	1/1/1800	2204	06/01/2010		Coastal Bend Youth City WWTP			0	
WQ0011754001	27.672222	-97.636111	Nueces	Public Domestic Wastewater	1/1/1800	2204		Bishop Cisd	Bishop Cisd WWTP	Commercial Land App (Permit)	Yes	0	8,000
WQ0010140001	27.782476	-97.899300	Nueces	Public Domestic Wastewater	12/28/1962	2204		City of Agua Dulce	Agua Dulce WWTP	Dewatering - Sludge Drying B01		0	160,000
WQ0011541002	27.676930	-97.742690	Nueces	Public Domestic Wastewater	05/17/2024	2204		City of Driscoll	Driscoll WWTP	Dewatering - Sludge Drying B01	Yes	0	100,000
WQ0014981002	27.690833	-97.740277	Nueces	Private Domestic Wastewater	07/07/2021	2204		KB Foundation of Texas	Bcfs Driscoll Health & Amp Human Services WWTP	Pumping Raw Wastewater		0	9,000
WQ0014981001	27.696388	-97.739722	Nueces	Private Domestic Wastewater	02/11/2011	2204	06/01/2020	KB Foundation of Texas	Bcfs Driscoll Health & Amp Human Services WWTF	Chlorination For Disinfection		0	9,000
WQ0011583002	27.803611	-97.783055	Nueces	Public Domestic Wastewater	02/15/2017	2204		Nueces County Water Control and Improvement District No. 5	Banquete Wastewater Treatment Plant			0	100,000
WQ0011583001	27.803611	-97.783055	Nueces	Public Domestic Wastewater	1/1/1800	2204	05/31/2016	Nueces County WCID 5	Banquete WWTP	Dewatering - Sludge Drying B01		0	
WQ0005430000	27.711944	-97.727222	Nueces	Industrial Wastewater	01/15/2025	2204		Tesla, Inc.	Lynx Processing Facility			4	
WQ0014802001	27.734722	-97.752222	Nueces	Private Domestic Wastewater	10/31/2008	2204		The Geo Group, Inc.	Coastal Bend Detention Facility WWTP	Secondary Clarification		0	150,000
WQ0002888000	27.730774	-97.652965	Nueces	Industrial Stormwater	12/05/1988	2204,2492		US Ecology Texas, Inc.	Us Ecology Texas			2	
WQ0004165000	35.000000	-97.000000	Nueces	Industrial Wastewater	11/22/2002	2481	03/31/2015	The Texas A&M University System	Texas Agrilife Research Mariculture Lab Port Aransas			3	
WQ0002317000	27.703333	-97.285000	Nueces	Industrial Wastewater	1/1/1800	2481		U.S. Department of the Navy	Naval Air Station Corpus Christi		Yes	3	
WQ0004200000	27.758611	-97.438333	Nueces	MS4 Phase I	04/21/1995	2481,2485		Del Mar College District Texas A&M University - Corpus Christi Port of Corpus Christi Authority of Nueces County City of Corpus Christi	City Of Corpus Christi MS4			2	
WQ0004158000	27.814444	-97.428055	Nueces	Industrial Wastewater	06/01/2000	2484		Corpus Christi Cogeneration, LLC Calpine Operating Services Company, Inc.	Corpus Christi Cogeneration			2	
WQ0000457000	27.812368	-97.421803	Nueces	Industrial Wastewater	02/20/1963	2484		Flint Hills Resources Corpus Christi, LLC	Flint Hills Resources Corpus Christi East Refinery		Yes	4	2,160,000
WQ0000465000	27.806944	-97.446111	Nueces	Industrial Wastewater	02/21/1963	2484		Valero Refining-Texas, L.P.	Valero Refining East Plant			5	
WQ0010261001	27.800555	-97.650000	Nueces	Public Domestic Wastewater	1/1/1800	2485		City of Robstown	Robstown WWTP			0	2,400,000

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WQ0011134001	35.000000	-97.000000	Nueces	Private Domestic Wastewater	1/1/1800	2485	05/31/2015	Corpus Christi Peoples Baptist Church	Roloff WWTP			0	
WQ0004200000	27.758611	-97.438333	Nueces	MS4 Phase I	04/21/1995	2481,2485		Del Mar College District Texas A&M University - Corpus Christi Port of Corpus Christi Authority of Nueces County City of Corpus Christi	City Of Corpus Christi MS4			2	
WQ0013742001	26.336388	-97.800277	Cameron	Public Domestic Wastewater	10/31/1994	2491		Sebastian Municipal Utility District	Sebastian Mud WWTP	Secondary Clarification		0	225,000
WQ0010503002	26.310000	-98.135000	Hidalgo	Public Domestic Wastewater	1/1/1800	2491		City of Edinburg	City Of Edinburg WWTP	Biomonitoring		0	13,500,000
WQ0010973001	35.000000	-97.000000	Hidalgo	Public Domestic Wastewater	1/1/1800	2491	06/30/2015	Hidalgo County	Delta Lake Park WWTP			0	
WQ0010401008	27.670951	-97.272365	Nueces	Public Domestic Wastewater	09/23/1969	2491		City of Corpus Christi	Laguna Madre WWTP			0	3,000,000
WQ0010536002	27.722500	-98.031666	Jim Wells	Public Domestic Wastewater	07/23/1969	2492		City of Alice	Southside WWTP			0	2,600,000
WQ0013374001	27.315000	-97.682222	Kleberg	Public Domestic Wastewater	09/22/1987	2492		Kleburg County	Kaufer Hubert Memorial Park And Sea Wind Rv Park WWTP			0	33,000
WQ0013374003	27.415580	-97.851230	Kleberg	Public Domestic Wastewater	05/24/1996	2492		Kleburg County	Ricardo WWTP	Chlorination For Disinfection		0	48,500
WQ0002888000	27.730774	-97.652965	Nueces	Industrial Stormwater	12/05/1988	2204,2492		US Ecology Texas, Inc.	Us Ecology Texas			2	
WQ0014355001	25.962222	-97.394722	Cameron	Public Domestic Wastewater	11/20/2002	2494		Brownsville Navigation District	Turning Basin WWTP	Transport To Another WWTP	Yes	0	100,000
WQ0010332001	25.971388	-97.358333	Cameron	Public Domestic Wastewater	02/20/1963	2494		Brownsville Navigation District	Northside WWTP	Secondary Clarification	Yes	0	98,000
WQ0010397005	25.955555	-97.454166	Cameron	Public Domestic Wastewater	08/03/1989	2494		Public Utilities Board of the City of Brownsville, Texas	Robindale WWTP		Yes	0	14,500,000

