



*Nueces River Authority*

## **Basin Highlights Report**

### **Nueces River Basin**

### **San Antonio-Nueces Coastal Basin**

### **Nueces-Rio Grande Coastal Basin**

**May 2007**

**Prepared in cooperation with the Texas Commission on Environmental Quality  
Clean Rivers Program**



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## LIST OF ACRONYMS

CBCOG	Coastal Bend Council of Governments
CCS	Center for Coastal Studies
CPL	Central Power and Light Company
CR	County Road
CRP	Clean Rivers Program
DSHS	Department of State Health Services
DO	Dissolved Oxygen
EPA	United States Environmental Protection Agency
FM	Farm to Market Road
FY	Fiscal year
gpd	Gallons per Day
GIWW	Gulf Intracoastal Waterway
ICWW	Intracoastal Waterway
IH	Interstate Highway
ISD	Independent School District
LP	Limited Partnership
MUD	Municipal Utility District
NAS	Naval Air Station
NRA	Nueces River Authority
PCB	polychlorinated biphenols
RR	Railroad / Ranch Road
SH	State Highway
SHP	State Historic Park
SNA	State Natural Area
SP	State Park
SWQM	Surface Water Quality Monitoring
TAMUCC	Texas A&M University – Corpus Christi
TCEQ	Texas Commission on Environmental Quality
TDS	Total Dissolved Solids
TGLO	Texas General Land Office
TMDL	Total Maximum Daily Load
TPWD	Texas Parks and Wildlife Department
TSSWCB	Texas State Soil and Water Conservation Board
TxDOT	Texas Department of Transportation
WCID	Water Control and Improvement District / Water Conservation and Improvement District
US	U. S. Highway
USDA	U.S. Department of Agriculture
WSC	Water Supply Corporation
WPP	Watershed Protection Plan
WWTP	Wastewater Treatment Plant



## INTRODUCTION

In 1991, the Texas Legislature passed the Texas Clean Rivers Act which requires basin-wide water quality assessments to be conducted for each river basin in Texas. Under this act, the Clean Rivers Program (CRP) has 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 Nueces River Basin, the San Antonio – Nueces Coastal Basin, and the Nueces – Rio Grande Coastal Basin (Figure 1), an area roughly 31,500 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.



**Figure 1. NRA's Basins of Responsibility**

The Nueces River Basin covers approximately 17,000 square miles, encompassing all or part of 23 counties in South-Central Texas. Other rivers within the basin include the Frio, Leona, Sabinal, and Atascosa Rivers. The basin is bordered by the Colorado, Guadalupe, and San Antonio River Basins to the north, the San Antonio – Nueces Coastal Basin to the southeast, the Nueces – Rio Grande Coastal Basin to the south, and the Rio Grande River basin to the south and southwest. Throughout the basin, the rivers are used for water supply and recreational purposes. The basin is home to numerous state-operated recreational areas including: Choke Canyon State Park (SP) on the south side of Choke Canyon Reservoir near Three Rivers, Lake Corpus Christi SP on the southeast bank of Lake Corpus Christi near Mathis, Garner SP north of Concan, Tips State Recreational Area on the Frio River in Three Rivers, Lipantitlan

State Historic Park (SHP) near Sandia, Lost Maples State Natural Area (SNA) north of Vanderpool, and Hill Country SNA north of Hondo.

The San Antonio – Nueces Coastal Basin is approximately 3,100 square miles, covering all or part of 7 counties. The basin is bordered by the San Antonio River Basin to the north, the Lavaca-Guadalupe Coastal Basin to the northeast, bays, estuaries, and the Gulf of Mexico to the east, the Nueces-Rio Grande Coastal Basin to the south, and the Nueces River Basin to the northwest. Being a coastal area, the basin is naturally host to several state-operated recreational areas. These include Goose Island SP near Rockport, Copano Bay State Fishing Pier along State Highway 35 north of Fulton, Fulton Mansion SHP in Fulton, and the Aransas National Wildlife Refuge in Aransas County.

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 Mexico to the east, and the Rio Grande River Basin to the south and southwest. 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 SP, Port Isabelle Light House SHP in Port Isabel, and the Padre Island National Seashore.

## 2006 BASIN HIGHLIGHTS

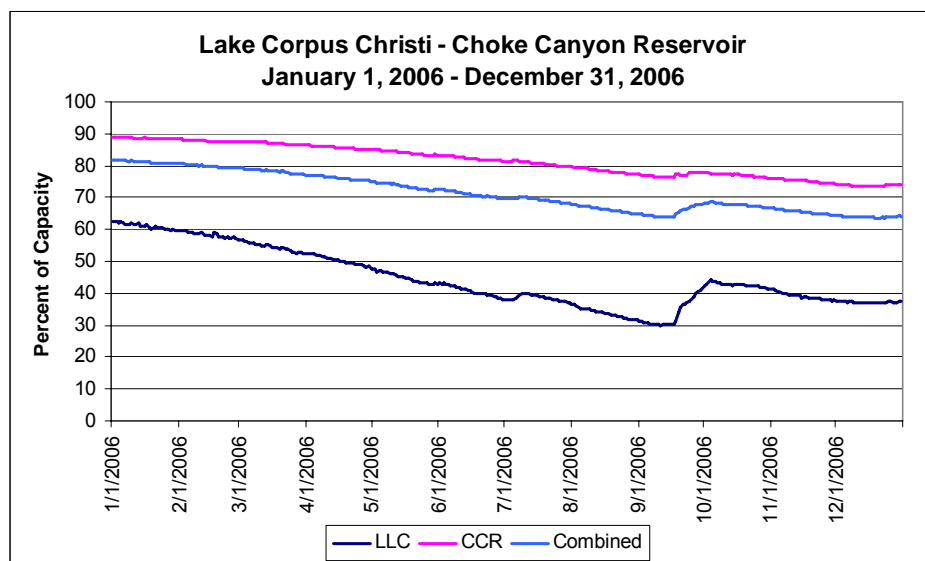
### Drought Update

2006 was another dry year. Lake Corpus Christi and Choke Canyon Reservoir, which are collectively referred to as the reservoir system, began the year with a combined capacity of 81.8% (Figure 2). Lake Corpus Christi was at 62.3% and Choke Canyon Reservoir was at 89.1%. Rain events in late September and late December helped slow the decline. However, on December 31, 2006, the combined capacity had dropped to 64.1%. Lake Corpus Christi was at 37.4% and Choke Canyon Reservoir was at 74.1%.

### 2006 Water Quality Assessment

TCEQ has completed the Draft 2006 Water Quality Assessment. The assessment is a full assessment, assessing all segments for all uses, where applicable, using data from December 1, 1999 to November 30, 2004. This report provides the information from the Draft 2006 Assessment. Updates on Total Maximum Daily Load (TMDL) and related studies are included where applicable. Please note that some of the assessment units have changed.

Each segment in NRA's area of responsibility is discussed in detail in the Water Quality Data Review section of this report, beginning on Page 3.



**Figure 2. Lake Corpus Christi and Choke Canyon Reservoir**

### Total Maximum Daily Load Projects

There are eight TMDL projects, on 17 segments, and one Watershed Protection Plan (WPP), on three segments, underway within NRA's area of responsibility. They are all discussed in more detail in the respective segment discussions in the Water Quality Data Review section. Links to the official TMDL websites are also provided. NRA participates in as many of the stakeholder meetings as possible.

### Bacteria Task Force

On September 27, 2006 TCEQ and the Texas State Soil and Water Conservation Board (TSSWCB) met jointly to strengthen their efforts to clean up waters impaired by bacteria, and to renew their partnership to improve the environment through TMDLs and WPPs. At the meeting, TCEQ and TSSWCB strengthened their partnership to preserve the quality of water resources by updating the cooperation agreement between the two agencies. The agreement provides a framework for collaboration between the two agencies and describes the programmatic mechanisms the agencies will employ to develop and implement TMDLs and watershed plans. TCEQ and TSSWCB also established the Task Force on Bacteria TMDLs. Bacteria accounted for 47 percent of the impairments listed in the 2002 Texas Water Quality Inventory and 303(d) List.

The Task Force, chaired by Dr. Allan Jones with the Texas Water Resources Institute, is charged with:

- examining approaches that other states use to develop and implement bacteria TMDLs;
- recommending cost-effective and time-efficient methods for developing TMDLs;
- recommending effective approaches for developing implementation plans;

- evaluating the variety of models and bacteria-source-tracking methods available for developing TMDLs and implementation plans, and recommending under what conditions certain methods are more appropriate; and
- developing a roadmap for further scientific research needed to reduce uncertainty about how bacteria behave under different water conditions in Texas.

Task Force members include Drs. George DiGiovanni with Texas Agricultural Experiment Station–El Paso, Larry Hauck with the Texas Institute for Applied Environmental Research, Joanna Mott with Texas A&M University–Corpus Christi (TAMUCC), Hanadi Rifai with the University of Houston, Raghavan Srinivasan with Texas A&M University, and George Ward with the University of Texas at Austin.

The Task Force had 120 days to complete its assessment and report back to the TCEQ and TSSWCB. Stakeholders with expertise on the issues had opportunity to provide information to the Task Force. Additionally, local, state, and federal agencies with authorities related to bacteria and water quality support its efforts.

TCEQ and TSSWCB will use the Task Force's recommendations to keep Texas at the forefront in implementing water quality prevention and abatement projects that lead to cleaner water and safer recreation.

Complete information on the Task Force, including schedules and draft reports, is available at <http://twri.tamu.edu/bacteriatmdl/>.

## OVERVIEW OF WATER QUALITY MONITORING

NRA coordinates with TCEQ's TMDL team and Surface Water Quality Monitoring (SWQM) personnel from Regions 13, 14, 15, and 16 and other monitoring entities every spring to develop the monitoring schedule for the next fiscal year (FY). This coordination allows each entity to maximize their sampling efforts by avoiding duplication of effort, and assures that the parameters needed for assessment are being collected at the required stations.

The Lower Colorado River Authority has implemented a state-wide monitoring schedule: <http://cms.lcra.org>. The online schedule is an invaluable tool for water quality monitoring coordination. The program enables users to keep their individual monitoring schedules up-to-date and allows all users access to the most current information. The program is easy to use and has saved numerous hours previously spent on generating updated schedules and disseminating that information.

A detailed list of stations, the type of monitoring being performed, the monitoring entity, and the monitoring frequency for FY 2007 are included in the Water Quality Data Review section of this report. Routine monitoring consists of conventional and field parameters, bacteria, and flow, where applicable. Appendix 1 lists the individual parameters for conventional, bacteria, field, and metals for those stations monitored by NRA. Appendix 2 gives a brief explanation of each parameter.



The data collected are used to assess the water quality with respect to aquatic life use, contact recreation, general use, public water supply, and fish consumption as defined in the Texas Surface Water Quality Standards.

The standards associated with aquatic life use are designed to protect plant and animal species that live in and around the water. They establish optimal conditions for the support of aquatic life and define indicators used to measure if these conditions are met. Some pollutants or conditions that may violate this standard include low levels of dissolved oxygen (DO), or toxic substances such as metals or pesticides. The concentration of DO is a single, easy-to-measure characteristic of water that typically correlates with the occurrence and diversity of aquatic life in a water body. A water body that can support diverse, abundant aquatic life is a good indication of high water quality. A related problem is an excess of nutrients in water. Large quantities of nutrients in water can cause excessive growth of vegetation. This excessive vegetation, often called an algal bloom, reduces DO in the water column as dead plant material decomposes. Water with a low concentration of DO is called hypoxic. Changes in dissolved solids concentrations also affect the quality of habitat for aquatic life. Metals pose a threat to livestock and aquatic life.

The standard associated with contact recreation use measures the level of certain bacteria in water to estimate the relative risk of swimming or other sports involving direct contact with the water. It is possible to swim in water that does not meet this standard without becoming ill; however, the probability of becoming ill is higher than it would be if bacteria levels were lower. *E. coli* in fresh waters and Enterococci in marine waters are measured to determine the relative risk of swimming. Bacteria originate from the wastes of warm-blooded animals; their presence indicates that pathogens from these wastes may be reaching a body of water from such sources as inadequately treated sewage, improperly managed animal waste from livestock, pets in urban areas, aquatic birds and mammals, or failing septic systems.

Standards associated with general use include water temperature and pH. Water temperature affects the oxygen content of the water, with warmer water not able to hold as much oxygen. When the water temperature is too cold, cold-blooded organisms may either die or become weaker or more susceptible to other stresses, such as disease or parasites. Colder water can be caused by reservoir releases. Warmer water can be caused by removing trees from riparian zones, soil erosion, or use of water to cool manufacturing equipment. Most aquatic life is adapted to live within a narrow pH range. Some organisms can live at and adjust to differing pH ranges, but all fish die if the pH is below 4 (the acidity of orange juice) or above 12 (the pH of ammonia). Industrial and wastewater discharge, runoff from quarry operations, and accidental spills can affect pH levels.

Standards associated with public water supply indicate whether water from a lake or river is suitable for use as a source for a public water supply system. Source water is treated before it is delivered to the tap; a separate set of standards govern treated drinking water. Indicators used to measure the safety or usability of surface water bodies as a source for drinking water include the presence or absence of substances such as metals or pesticides. Concentrations of salts, such as sulfate or chloride, are also measured, since treatment to remove high levels of salts from drinking water is

expensive. High levels of dissolved solids such as chloride and sulfate can cause water to be unusable, or simply too costly to treat, for drinking water uses. High concentrations of metals such as cadmium, mercury, and lead pose a threat to drinking water supplies and human health.

The standards associated with fish consumption are designed to protect the public from consuming fish or shellfish that may be contaminated by pollutants in the water. The standards identify levels at which there is a significant risk that certain toxic substances dissolved in water may accumulate in the tissue of aquatic species. However, because these levels do not always predict when toxic substances will accumulate in fish to unsafe concentrations, the state also conducts tests on fish and shellfish tissue to determine if there is a risk to the public from consuming fish caught in state waters. The standards also specify bacterial levels in marine waters to assure that oysters or other shellfish that may accumulate bacteria from the water are safe for commercial harvest, sale, and consumption by the public. Eating fish contaminated with metals can cause these toxic substances to accumulate in human tissue, posing a significant health threat. Toxic substances from pesticides and industrial chemicals, called organics, pose the same concerns as metals. Polychlorinated biphenols (PCBs), for example, are industrial chemicals that are toxic and probably carcinogenic. Although banned in the United States in 1977, PCBs remain in the environment, and they accumulate in fish and human tissues when consumed.

The Department of State Health Services (DSHS), formerly the Texas Department of Health, conducts chemical testing of fish tissue to determine whether there is a risk to human health from consuming fish or shellfish caught in Texas streams, lakes, and bays. Fish seldom contain levels of contaminants high enough to cause an imminent threat to human health, even to someone who eats fish regularly. Risk increases for those persons who regularly consume larger fish and predatory fish from the same area of contaminated water over a long period of time. To reduce health risks in areas of contamination, people should eat smaller fish from a variety of water bodies. When a fish consumption advisory is issued, a person may legally take fish or shellfish from the water body under the advisory, but should limit how much fish he or she eats, and how often. When a fish consumption closure is issued, it is illegal to take fish from the water body.

## WATER QUALITY DATA REVIEW

This section is divided into four subsections, one for the Nueces River Basin, the San Antonio-Nueces Coastal Basin, the Nueces-Rio Grande Coastal Basin, and the Bays, Estuaries, and Gulf of Mexico. The discussion for each section contains:

- A description of the segment, the use assessments, and the assessment units
- A map of the segment with FY 2007 monitoring stations (red dot), additional 2006 Assessment stations (green dot), active permitted outfalls (yellow square), and stream flow gauges (purple diamond) plotted
- Detailed information about the FY 2007 monitoring stations (parameters sampled, frequency of sampling, and the responsible agency)
- A discussion of any impairments or concerns in the segment
- Stream gauge graphs for Calendar Year 2006
- A list of active permitted outfalls

The additional stations used for the 2006 Assessment are labeled on the maps, when feasible, and listed in Appendix 3.

There are two tables at the beginning of each subsection. The first table summarizes identified concerns, impairments and TMDL projects. The second table lists the FY 2007 monitoring stations in each segment.

Generally, a concern is identified when a parameter exceeds the standard in 10% - 25% of the samples. An impairment is identified when a parameter exceeds the standard in 25% or more of the samples.

TCEQ has completed the Draft 2006 Water Quality Assessment. The assessment is a full assessment, assessing all segments for all uses, were applicable, using data from December 1, 1999 to November 30, 2004. This report provides the information from the Draft 2006 Assessment and provides updates on TMDLs and related studies. Please note that some of the assessment units have changed.

Appendix 1 lists the individual parameters for conventional, bacteria, field, and metals for those stations monitored by NRA. Appendix 2 gives a brief explanation of each parameter.

The Nueces River Basin will be discussed first, followed by the San Antonio – Nueces Coastal Basin, the Nueces – Rio Grande Coastal Basin, and finally the bays. Segment discussions are organized numerically.

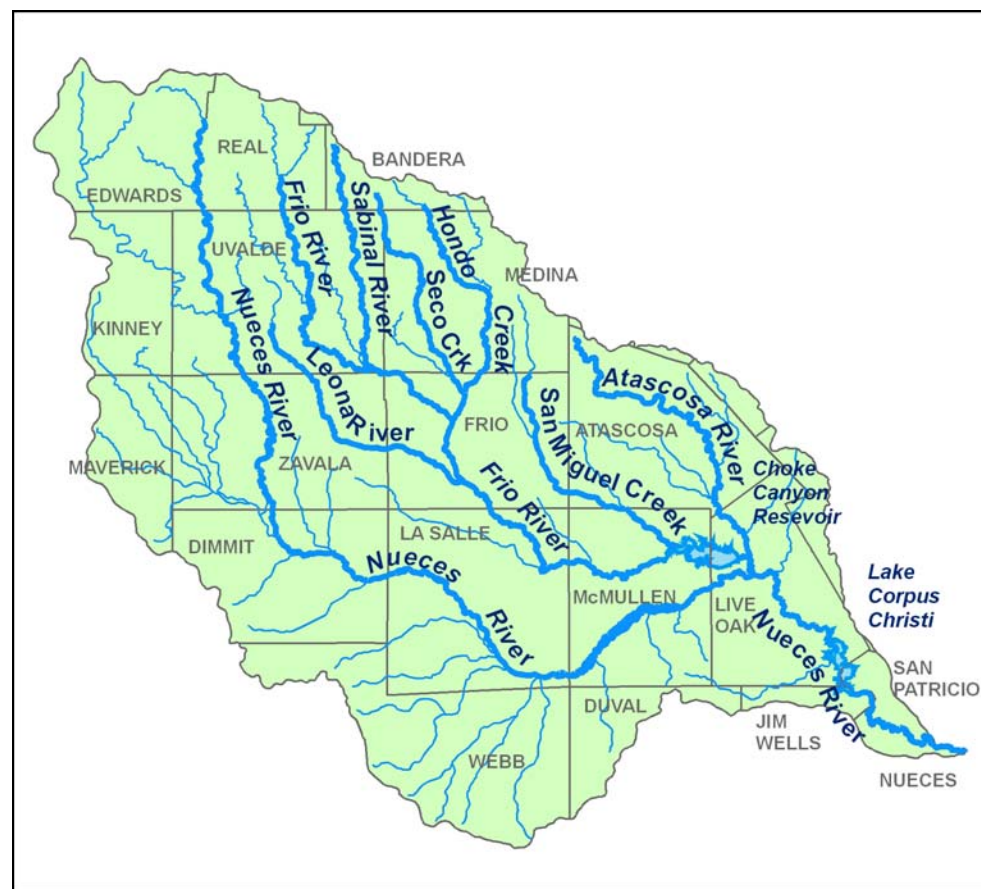
### New Water Bodies

TCEQ has added one new segment id in the San Antonio – Nueces Coastal Basin and four in the Nueces – Rio Grande Coastal Basin. All are unclassified stream segments:

- 2004A – Aransas Creek
- 2202B – Unnamed Drainage Ditch Tributary (B) to S. Arroyo Colorado
- 2202C – Unnamed Drainage Ditch Tributary (C) to S. Arroyo Colorado
- 2204A – Unnamed Drainage Ditch Tributary (A) to Petronila Creek
- 2204B – Unnamed Tributary (B) to Petronila Creek

## Nueces River Basin

The Nueces River Basin covers approximately 17,000 square miles, encompassing all or part of 23 counties in South-Central Texas. Other rivers within the basin include the Frio, Leona, Sabinal, and Atascosa Rivers. The basin is bordered by the Colorado, Guadalupe, and San Antonio River Basins to the north, the San Antonio – Nueces Coastal Basin to the southeast, the Nueces – Rio Grande Coastal Basin to the south, and the Rio Grande River basin to the south and southwest. Throughout the basin, the rivers are used for water supply and recreational purposes. The basin is home to numerous state-operated recreational areas including: Choke Canyon State SP on the south side of Choke Canyon Reservoir near Three Rivers, Lake Corpus Christi SP on the southeast bank of Lake Corpus Christi near Mathis, Garner SP north of Concan, Tips State Recreational Area on the Frio River in Three Rivers, Lipantitlan SHP near Sandia, Lost Maples SNA north of Vanderpool, and Hill Country SNA north of Hondo.



There are 15 stream and two lake segments in the basin. TMDLs are being or have been conducted on four of the stream segments. Water quality monitoring for FY 2007 includes 34 sites with at least one site on every segment. All of the segments will be discussed in detail in the following sections.

### **Nueces River**

The Nueces River originates in Edwards County in the Texas Hill Country and discharges into Nueces Bay in Nueces County. The river crosses the Edwards Aquifer Recharge Zone in Uvalde County. During extended dry periods, surface flows may disappear, but re-emerge near US 90 as a result of spring flows. The braided reach of the river, primarily in McMullen County, is an area with a very low gradient, resulting in many interconnected channels and low flow. The Frio River flows into the Nueces River below Choke Canyon Reservoir near Three Rivers, Texas. The Nueces River is impounded by Wesley Seale Dam near Mathis, Texas to create Lake Corpus Christi, a primary water supply for the City of Corpus Christi and surrounding area. The reach below Lake Corpus Christi is prone to flooding, especially when Lake Corpus Christi is full and unable to capture flood waters. The tidal segment begins at the Calallen saltwater barrier dam in Corpus Christi. The Nueces River is divided into six classified stream segments and one reservoir segment. Water quality monitoring for FY 2007 includes 17 sites with at least one site on every segment (includes one on the Frio River in Segment 2106).



### **Atascosa River**

The Atascosa River originates in Atascosa County and terminates at its confluence with the Frio River below Choke Canyon Reservoir in Live Oak County. There are 2 water quality monitoring sites on this segment.

### **Leona River**

The Leona River originates in Uvalde County in the Texas Hill Country and terminates at its confluence with the Frio River in Frio County. There are 3 water quality monitoring sites on this segment.

### **Sabinal River**

The Sabinal River originates in Bandera County in the Texas Hill Country and terminates at its confluence with the Frio River in Uvalde County. The river crosses the Edwards Aquifer Recharge Zone in Uvalde County. During extended dry periods, surface flows may disappear, but re-emerge at the town of Sabinal on US 90. The Sabinal River is divided into two classified stream segments with one monitoring site on segment.

### **Frio River**

The Frio River originates in Real County in the Texas Hill Country and terminates at its confluence with the Nueces River in Live Oak County. The river crosses the Edwards Aquifer Recharge Zone in Uvalde County. During extended dry periods, surface flows may disappear, but re-emerge a few miles south of US 90 as a result of spring flows. The Frio River is impounded by Choke Canyon Dam near Three Rivers, Texas, to create Choke Canyon Reservoir, part of the water supply system for the City of Corpus Christi and surrounding area. The reach below Choke Canyon Reservoir travels a short distance to the Nueces River. This short reach comprises the upper portion of Segment 2106. The Frio River is divided into four classified stream segments, one of those being Segment 2106, and one reservoir segment. Water quality monitoring for FY 2007 includes 8 sites (includes one on Segment 2106) with at least one site on every segment.

### **San Miguel Creek**

San Miguel Creek originates in Frio County in the Texas Hill Country and terminates in Choke Canyon Reservoir in McMullen in Frio County. There is 1 water quality monitoring site on this segment.

### **Hondo Creek**

Hondo Creek originates in Bandera County in the Texas Hill Country and terminates at its confluence with the Frio River in Frio County. During extended dry periods, surface flows may disappear, but re-emerge above US 90. There is 1 water quality monitoring site on this segment.

### **Seco Creek**

Seco Creek originates in Bandera County in the Texas Hill Country and terminates at its confluence with Hondo Creek in Frio County. During extended dry periods, surface flows may disappear, but re-emerge above US 90. There is 1 water quality monitoring site on this segment.

**Table 1. 2006 Assessment Summary for the Nueces River Basin**

Segment	Description	Assessment Unit	Concerns	Impairments
2103	Lake Corpus Christi	Mid-lake near dam	Orthophosphorus Total Phosphorus	
		Upper portion of lake on opposite shore from Hideaway Hill	Depressed DO	
		Remainder of lake	Orthophosphorus	
2104	Nueces River Above Frio River	Lower 20 miles	Impaired Fish Community* Impaired Habitat* Impaired Macroinvertebrate Community*	
		25 miles surrounding SH 16	Impaired Fish Community*	
		Upper 46 miles	Impaired Fish Community* Depressed DO (Grab)	Depressed DO (24 hr average)
2106	Nueces/Lower Frio River	Lower 17 miles		TDS**
		Upper 10 miles	Chlorophyll a Depressed DO	TDS**
2107	Atascosa River	Lower 25 miles	TDS	Bacteria
		25 miles surrounding FM 541	TDS Orthophosphorus Bacteria (Single sample)* Depressed DO (Grab)	Depressed DO (Grab minimum)*** Impaired Fish Community** Bacteria (Geomean)
		25 miles surround SH 97	Bacteria (Single sample)* TDS	Impaired Fish Community** Impaired Habitat** Bacteria (Geomean)
2108	San Miguel Creek	Lower 25 miles	Chlorophyll a	Bacteria**
2109	Leona River	Lower 25 miles	Bacteria* Nitrate	
		25 miles surrounding US 57	Nitrate	Bacteria**
2110	Lower Sabinal River	Entire segment	Nitrate	Nitrate***
2113	Upper Frio River	Lower 25 miles		Depressed DO*** Impaired Macroinvertebrate Community** Impaired Fish Community** Impaired Habitat**
2116	Choke Canyon Reservoir	5120 acres near dam		Bacteria***
		Small north arm near dam and Willow Hollow Tank		Bacteria***
		Large north arm near mid-lake and Jacob oil field		Bacteria***
		Southern arm near mid-lake and Rec. Road 7 west of Calliham		Bacteria***
		Western end of lake to RR 99 bridge	Depressed DO (24 hr minimum)* Depressed DO (Grab)	Bacteria*** Depressed DO (24 hr average)
		Remainder of lake		Bacteria***
2117	Frio River Above Choke Canyon Reservoir	Lower 25 miles	Nitrate	Depressed DO***
		1.5 miles downstream of SH 97 to 23.5 miles upstream of SH 97	Nitrate Bacteria*	Depressed DO***
		33 miles surrounding SH 85	Nitrate	Depressed DO***
		40 miles surrounding US 57	Nitrate	Depressed DO***

\*Near non-attainment

\*\*New listing

\*\*\*Carried forward from 2004 Assessment

**Table 2. FY 2007 Monitoring Stations for the Nueces River Basin**

Segment	Station ID	Station Description
2101	12960	Nueces River Tidal North of Viola Turning Basin
2102	12964	Nueces River Below Lake Corpus Christi at Bluntzer Bridge on FM 666
	12965	Nueces River Below Lake Corpus Christi At La Fruta Bridge, SH 359
2103	12967	Lake Corpus Christi Mid-lake at the Dam
	17648	Lake Corpus Christi At Live Oak CR 151 near River Creek Acres Upstream of Lake Corpus Christi
	18350	Lake Corpus Christi Mid-lake 1.42 KM East of the Intersection of Canyon Dr and McWhorter Dr in the Lagarto Subdivision
2104	12972	Nueces River Bridge on County Road 1042 1.2 Miles North of Simmons
	12973	Nueces River Above Frio River At SH 16 South of Tilden
2105	12975	Nueces River Above Holland Dam At IH 35 South of Cotulla
	12976	Nueces River at Bridge on FM 190 North of Asherton
2106	12977	Nueces River / Lower Frio River At US 72 in Three Rivers
	12978	Nueces River / Lower Frio River At US 59 East of George West
	12979	Nueces River / Lower Frio River At Nueces River Bridge on US 281 South of Three Rivers
2107	12980	Atascosa River At FM 99 Bridge West of Whitsett
	12982	Atascosa River At US 281 at Pleasanton
2108	12983	San Miguel Creek At SH 16 North of Tilden
2109	12985	Leona River At FM 1581 Southwest of Pearsall
	12987	Leona River At Hwy 57 Near Batesville
	18418	Leona River 370 M KM Upstream of FM 140
2110	12993	Lower Sabinal River Bridge on US 90 West Of Sabinal
2111	12994	Upper Sabinal River 12.5 Miles North of Sabinal and 2.3 Miles Downstream From the Mouth of Onion Creek
2112	12996	Upper Nueces River US 57 South of Uvalde
	13005	Upper Nueces River At SR-55, South of Barksdale
	16704	Upper Nueces River At SH 55 Bridge, 2.5km South of Laguna
	17143	Upper Nueces River Lake Averhoff (Upper Nueces Lake) Mid-Lake at Boat Ramp Off Dirt Road 0.5 mi North of FM 1025, 6.5 mi North of Crystal City
2113	13006	Upper Frio River At SH 127 East of Concan
2114	13010	Hondo Creek Downstream From Bridge on Ranch Road 462 Near Tarpley
2115	13013	Seco Creek At Miller Ranch Near Utopia
2116	13020	Choke Canyon Reservoir Mid-lake on Live Oak/McMullen County Line (Near Old Hwy 99)
	17389	Choke Canyon Reservoir Approximately 0.5 km Southeast of RR 66 Southern Most Bridge Crossing the Frio River Arm
2117	13023	Frio River Above Choke Canyon Reservoir At SH 16 in Tilden
	13024	Frio River Above Choke Canyon Reservoir At US 35 North of Dilley
	15449	Frio River Above Choke Canyon Reservoir At FM 187 8 Mi. South of Sabinal
	18373	Frio River Above Choke Canyon Reservoir Immediately Upstream of SH 97 North of Fowlerton



## 2101 – Nueces River Tidal



12 miles: from the confluence with Nueces Bay in Nueces County to Calallen Dam 1.7 km (1.1 miles) upstream of US 77/IH 37 in Nueces/San Patricio County.

### Use Assessments

Aquatic Life : General :  
Recreation  
AU\_1 – entire segment

### 2007 Monitoring

#### 12960 – North of Viola Turning Basin

Parameter	Frequency	Agency
24hr DO	1	TCEQ Region 14
Conventional	4	
Bacteria	4	
Field	4	

### Impairments and Concerns

There are no impairments or concerns in this segment. As a result of the Draft 2006 Assessment, chlorophyll a has been removed as a concern.

### Active Wastewater Permits

**WQ000531-000 – Flint Hill Resources Limited Partnership (LP):** ditch to Nueces River Tidal, Outfalls 005, 008, and 010.

**WQ0010401-006 – City of Corpus Christi (Allison Plant):** 5,000,000 gpd via Outfalls 001 and 002 (Nueces Bay).

**WQ0013644-001 – San Patricio County Municipal Utility District (MUD) No. 1:** 75,000 gpd: unnamed ditch to Hondo Creek to Nueces River Tidal.

WQ0001255-000, Central Power and Light Company (CPL) Lon C. Hill Power Station included in previous reports, is no longer in operation. The permit was allowed to lapse in December 2006.

## 2102 – Nueces River Below Lake Corpus Christi



39 miles: from Calallen Dam 1.7 km (1.1 miles) upstream of US 77/IH 37 in Nueces/San Patricio County to Wesley E. Seale Dam in Jim Wells/San Patricio County.

### Use Assessments

Aquatic Life : General :  
Public Water Supply :  
Recreation  
AU\_1 – lower 25 miles  
AU\_2 – upper 14 miles.

### 2007 Monitoring

#### AU\_1: 12964 – At Bluntzer Bridge on FM 666

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

#### AU\_2: 12965 – At La Fruta Bridge, SH 359

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

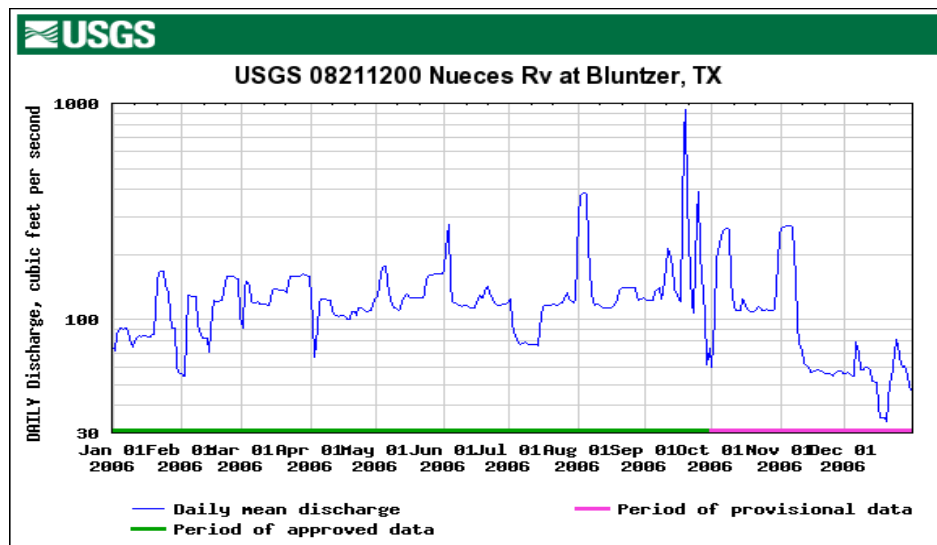
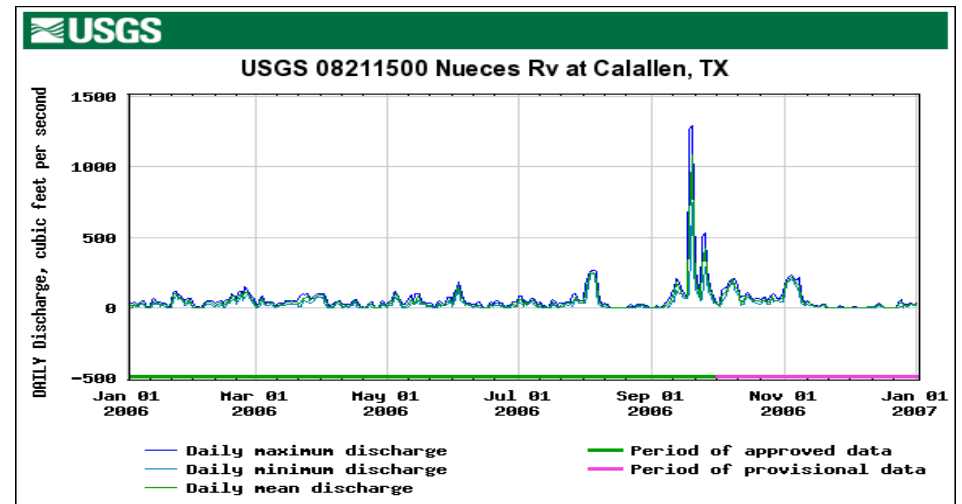
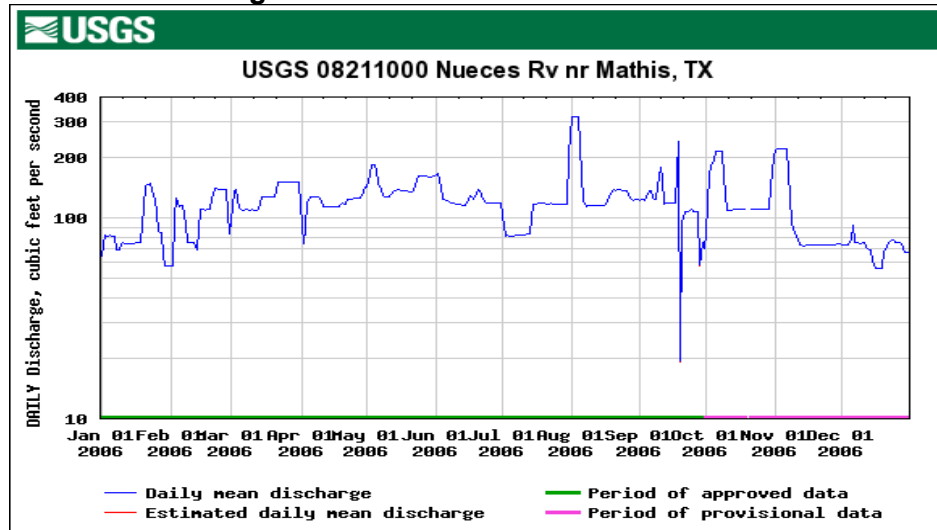
### Impairments and Concerns

There are no impairments or concerns in this segment.

### Active Wastewater Permits

**WQ0002027-000 – Wright Materials, Inc.**

## Stream Flow Gauges



Station 12964 – November 2006

## 2103 – Lake Corpus Christi



21,900 acres: from Wesley E. Seale Dam in Jim Wells/San Patricio County to a point 100 m (110 yards) upstream of US 59 in Live Oak County, up to the normal pool elevation of 94.0 feet (impounds Nueces River).

### Use Assessments

Aquatic Life : Fish Consumption :  
General : Public Water Supply : Recreation

AU\_1 – mid-lake near dam

AU\_2 – area approximately 4 miles SE of FM 3162 and FM 534 intersection near western shore

AU\_3 – western arm of lake near Lagarto Creek inlet

AU\_4 – upper portion of lake on opposite shore from Hideaway Hill

AU\_5 – upper arm of lake at FM 534 crossing

AU\_6 – remainder of the lake.

### 2007 Monitoring

AU\_1: 12967 – Mid-lake at the Dam

Parameter	Frequency	Agency
Metals in Water	2	NRA
Conventional	4	
Bacteria	4	
Field	4	

AU\_2: 18350 – Mid-lake 1.42 KM East of the Intersection of Canyon Dr. and McWhorter Dr. in the Lagarto Subdivision

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

AU\_6: 17648 – At Live Oak CR 151 near River Creek Acres Upstream of Lake Corpus Christi

Parameter	Frequency	Agency
Metals in Water	2	NRA
Conventional	4	
Bacteria	4	
Field	4	

### Impairments

There are no impairments in this segment.

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Orthophosphorus	13	12	0.05
	Total Phosphorus	20	8	0.2
4	DO Grab Screening	10	2	5
6	Orthophosphorus	4	2	0.05

The water level at Lake Corpus Christi continued to fall throughout 2006. Inflow into the reservoir system was calculated to be only 53,529 acre feet (AF) of which 29,873 AF were required to be passed through to the Nueces Estuary. 76,795 AF were diverted for municipal and industrial use, and evaporation from just Lake Corpus Christi was 65,975 AF. A graph showing the change in volume, as percent of capacity, is shown on Page 1 of this report.

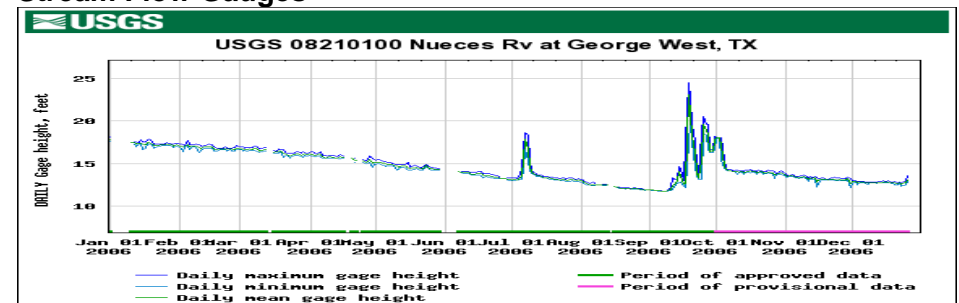
### Active Wastewater Permits

WQ0010015-001 – City of Mathis: 947,000 gpd: ditch to an unnamed reservoir to an unnamed tributary to Lake Corpus Christi.

WQ0010455-001 – City of George West: 639,000 gpd: Timon Creek to the Nueces River.

WQ0011165-001 – Texas Parks and Wildlife Department (TPWD) – Lake Corpus Christi SP: 67,000 gpd via evaporation and surface irrigation of 25 acres of non-public access land.

### Stream Flow Gauges





## 2104 – Nueces River Above Frio River



91 miles: from the confluence of the Frio River in Live Oak County to Holland Dam in LaSalle County.

### Use Assessments

Aquatic Life : Fish Consumption : General : Public Water Supply : Recreation

AU\_1 – lower 20 miles

AU\_2 – 25 miles surrounding SH 16

AU\_3 – upper 46 miles

### 2007 Monitoring

**AU\_1: 12972 – Nueces River Bridge on County Rd 1042 1.2 Miles North of Simmons**

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

**AU\_2: 12973 – At SH 16 South of Tilden**

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

Station 12972 added was added to the monitoring schedule beginning FY 2007 as a result of discussions at the FY 2006 and FY 2007 coordinated monitoring meetings. This was one of two sites that were considered and it was identified as the one that would most likely have more of a consistent stream flow.

### Impairments

AU	Impairment	#Samples	#Exceedences	Criteria Value
3	DO 24Hr Average	11	3	5

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
3	DO Grab Screening	12	3	5

Chloride and TDS have been removed as concerns in the Draft 2006 Assessment.

### Concerns: Near Non-Attainment

AU	Concern	#Samples	Mean	Criteria Value
1	Fish Community	2	33.0	37
	Habitat	2	20.0	20
	Macroinvertebrate Community	2	24.0	29
2	Fish Community	2	33.0	37
3	Fish Community	2	33.0	37

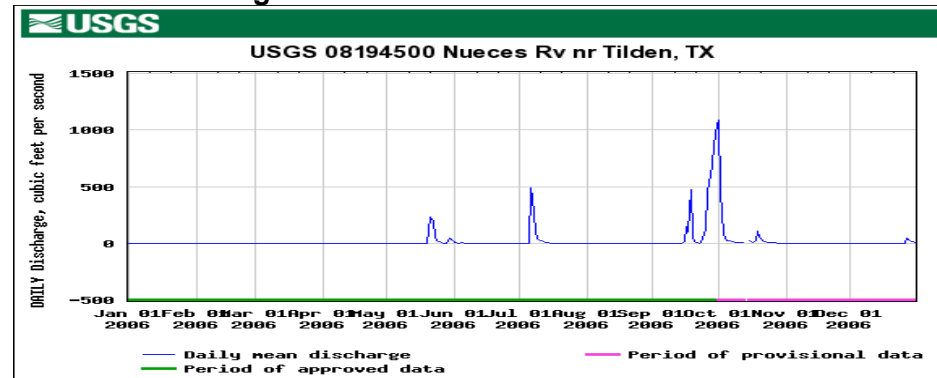
### Active Wastewater Permits

**WQ0004184-000 – Webb County – Colorado Acres Water Plant:** 28,800 gpd via evaporation.

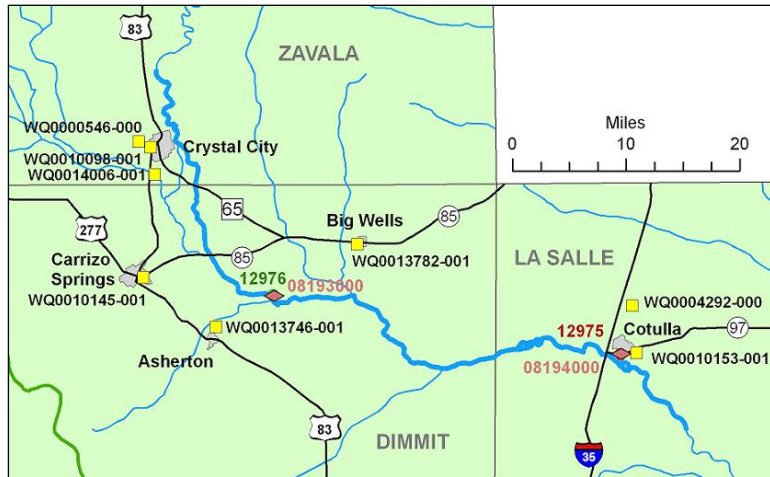
**WQ0010088-001 – Freer Water Control and Improvement District (WCID):** 280,000 gpd via surface irrigation on 250 acres of nonpublic access agricultural land.

**WQ0013943-001 – Encinal Water Supply Corporation (WSC):** 95,000 gpd via irrigation on 40 acres.

### Stream Flow Gauges



## 2105 – Nueces River Above Holland Dam



78 miles:  
from Holland  
Dam in  
LaSalle  
County to a  
point 100 m  
(110 yards)  
upstream of  
FM 1025 in  
Zavala  
County.

### Use Assessments

Aquatic Life : General : Public Water Supply : Recreation

AU\_1 – lower 25 miles

AU\_2 – 25 miles surrounding FM 190

### 2007 Monitoring

AU\_1: 12975 – At IH 35 South of Cotulla

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 16
Bacteria	4	
Field	4	

AU\_1: 12976 – Bridge on FM 190 North of Asherton

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 13
Bacteria	4	
Field	4	

### Impairments and Concerns

There are no impairments or concerns in this segment.

### Active Wastewater Permits

WQ000546-000 – Del Monte Foods (Crystal City Plant)

WQ0004292-000 – Cotulla Border Patrol Station

WQ0010098-001 – City of Crystal City

WQ0010145-001 – City of Carrizo Springs: 950,000 gpd: Carrizo Creek to Soldier Slough to the Nueces River.

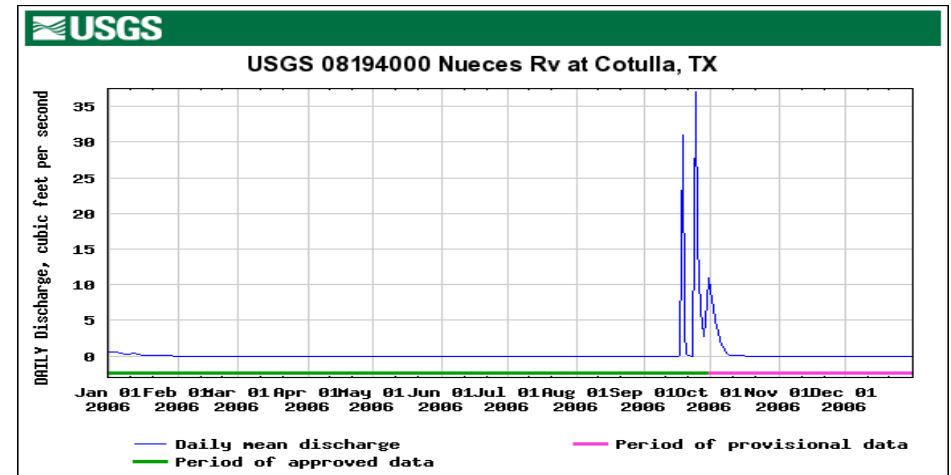
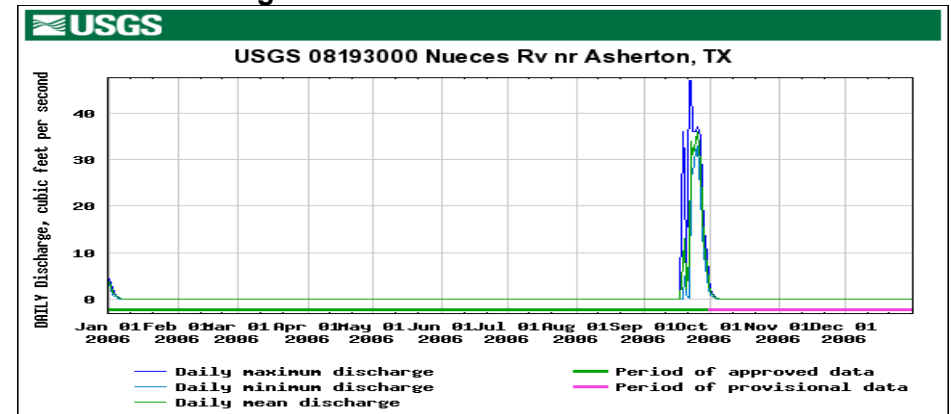
WQ0010153-001 – City of Cotulla: 990,000 gpd: Mustang Creek to the Nueces River.

WQ0013746-001 – City of Asherton: 180,000 gpd: unnamed tributary to El Moro Creek to Soldier Slough to the Nueces River.

WQ0013782-001 – City of Big Wells: 150,000 gpd: unnamed tributary to Arroyo Negro to the Nueces River.

WQ0014006-001 – Zavala County (Crystal City Land Fill): 50,000 gpd: Turkey Creek to Espantosa Lake to Soldier Slough to Soldier Lake to Soldier Slough to the Nueces River.

### Stream Flow Gauges



## 2106 – Nueces River / Lower Frio River



27 miles: from a point 100 m (110 yards) upstream of US 59 in Live Oak County to Choke Canyon Dam in Live Oak County.

### Use Assessments

Aquatic Life : Fish  
Consumption : General :  
Public Water Supply :  
Recreation  
AU\_1 – lower 17 miles  
AU\_2 – upper 10 miles

### 2007 Monitoring

AU\_1: 12978 – At US 59 East of George West

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

AU\_1: 12979 – Nueces River Bridge on US 281 South of Three Rivers

Parameter	Frequency	Agency
Metals in Water	2	NRA
Conventional	4	
Bacteria	4	
Field	4	

AU\_2: 12977 – At US 72 in Three Rivers

Parameter	Frequency	Agency
Metals in Water	2	NRA
Conventional	4	
Bacteria	4	
Field	4	

### Impairments

AU	Impairment	#Samples	Geometric Mean	Criteria Value
1	TDS	93	626.0	500
2	TDS	93	626.0	500

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
2	DO Grab Screening	36	5	5
	Chlorophyll a	24	7	14.1

### Active Wastewater Permits

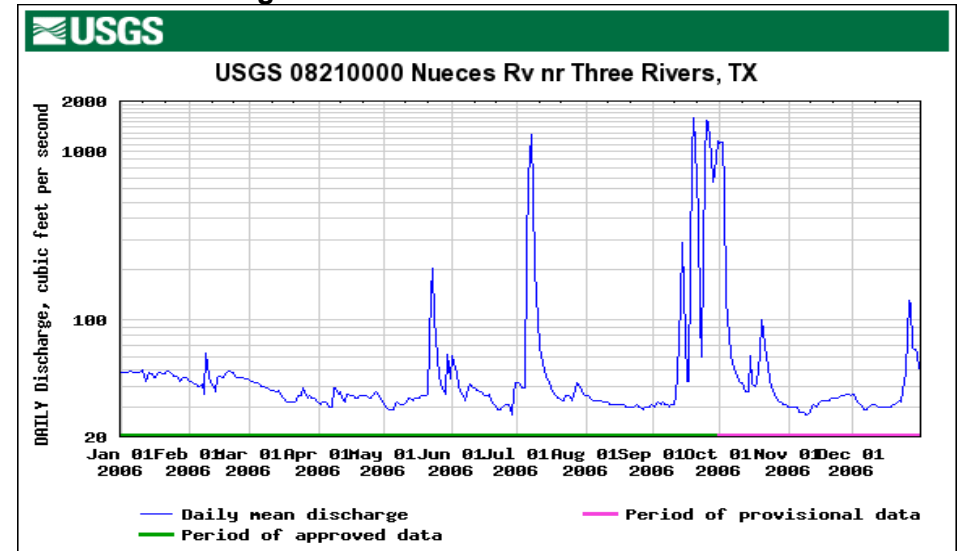
**WQ0001353-000 – Diamond Shamrock Refining Company:** 3,000,000 gpd: unnamed ditch to the Lower Frio River. Diamond Shamrock Refining Company has applied for a major amendment to this permit to:

- increase the daily average and maximum permitted flow at Outfall 001
- increase effluent limitations for all limited parameters at Outfall 001;
- remove monitoring/reporting requirements for metals and toxic chemicals

The discharge from this plant is upstream of Lake Corpus Christi, the main water supply for the City of Corpus Christi and the surrounding area. The City and NRA are concerned about the water quality standards being exceeded on this segment, primarily TDS, and about the potential for contamination of Lake Corpus Christi. The City and NRA have met with Diamond Shamrock officials to express their concerns and to try and develop a compromise.

**WQ0010301-001 – City of Three Rivers:** 400,000 gpd, 2 outfalls

### Stream Flow Gauges



## 2107 – Atascosa River



AU\_1 – lower 25 segment  
 AU\_2 – 25 miles surrounding FM 541  
 AU\_3 – 25 miles surrounding SH 97  
 AU\_4 – upper 28 miles

### 2007 Monitoring

#### AU\_1: 12980 – At FM 99 Bridge West of Whitsett

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Flow	4	
Field	4	

103 miles: from the confluence with the Frio River in Live Oak County to the confluence of the West Prong Atascosa River and the North Prong Atascosa River in Atascosa County.

### Use Assessments

Aquatic Life : General :  
 Public Water Supply :  
 Recreation

#### AU\_3: 12982 – At US 281 at Pleasanton

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Flow	4	
Field	4	

### Impairments

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	E. coli(Single Sample)	20	11	394
	Fecal coliform (Single Sample)	14	10	400
2	DO Grab Minimum*	13	0	3
	Fecal coliform (Single Sample)	12	6	400

\*Carried forward from 2004 Assessment

AU	Impairment	#Samples	Mean	Criteria Value
1	E. coli (Geometric Mean)	20	379.0	126
	Fecal coliform (Geometric Mean)	14	559.0	200
2	Fish Community	2	36.0	42
	E. coli (Geometric Mean)	13	333.0	126
3	Fecal coliform (Geometric Mean)	12	324.0	200
	Fish Community	6	39.0	42
	Habitat	6	18.0	20
	Fecal coliform (Geometric Mean)	34	219.0	200

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
2	DO Grab Screening	13	8	5

AU	Concern	#Samples	Mean	Criteria Value
1	TDS	98	1,113.0	1000
2	TDS	98	1,113.0	1000
3	TDS	98	1,113.0	1000

### Concerns: Near Non-Attainment

AU	Concern	#Samples	#Exceedences	Criteria Value
2	E. coli (Single Sample)	13	5	394
3	Fecal coliform (Single Sample)	34	10	400



## Active Wastewater Permits

**WQ0002043-000 – San Miguel Electric Cooperative:** 62,000 gpd via evaporation and mine pit water and storm water runoff on an intermittent and flow variable basis via nine outfalls. Outfalls 001A – 001M discharge to Caballos Creek, Souse Creek, La Parita Creek, Christine Creek, and Metate Creek, and/or their tributaries; to the Atascosa River. (Outfall 002 discharges to San Miguel Creek, Segment 2108.)

**WQ0002601-000 – San Miguel Electric Cooperative:** Intermittent and flow variable.

**WQ0010096-001 – City of Lytle:** 450,000 gpd: West Prong Atascosa River to Atascosa River.

**WQ0010418-001 – City of Jourdanton:** 330,000 gpd: unnamed tributary of Goose Creek to Goose Creek to La Parita Creek to Metate Creek to the Atascosa River.

**WQ0010598-001 – City of Pleasanton**

**WQ0013630-001 – City of Poteet**

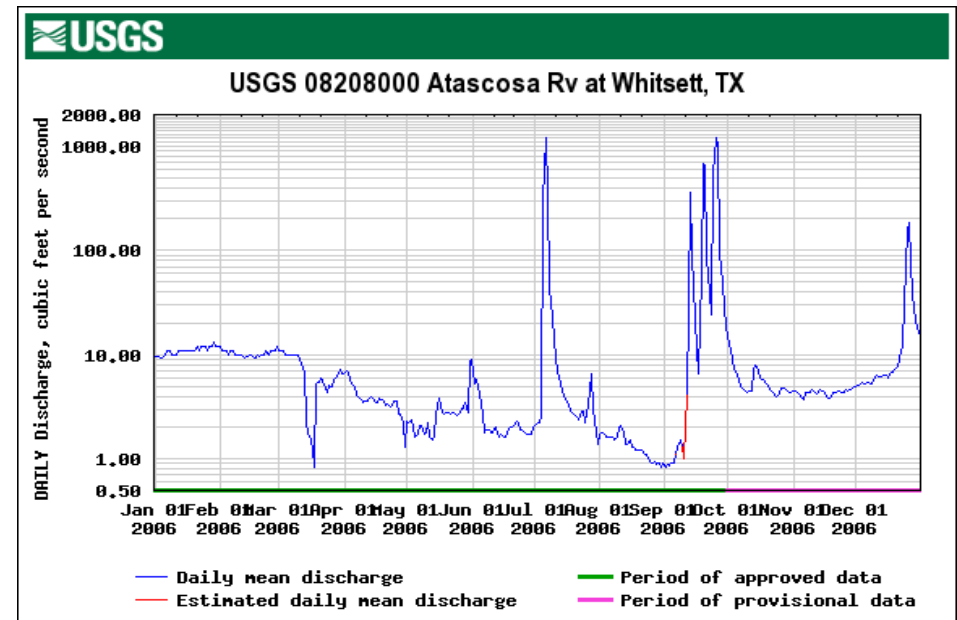
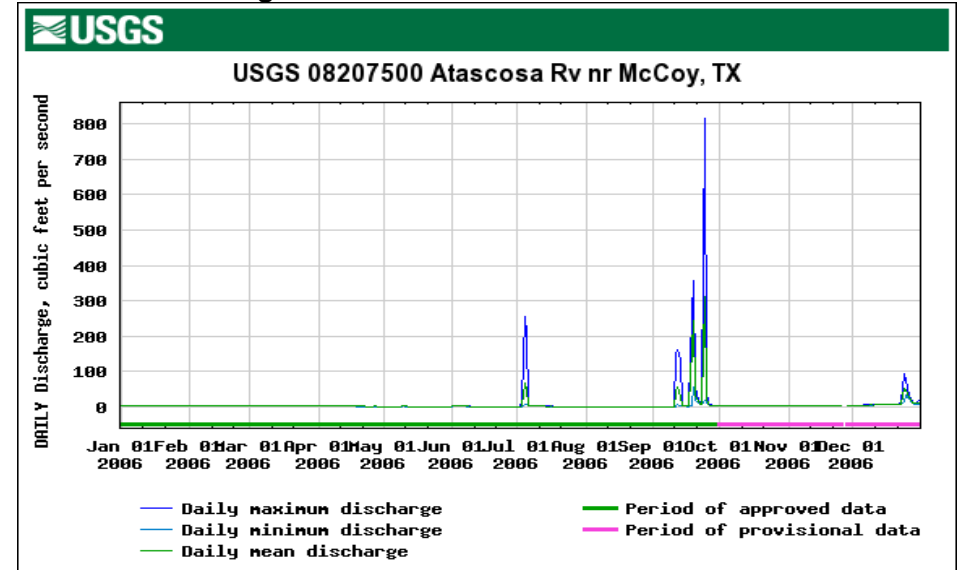
**WQ0014265-001 – Benton City WSC:** 15,000 gpd: unnamed tributary to the Atascosa River.

**WQ0014768-001 – TxDOT:** 10,000 gpd. Salt Branch Creek to the Atascosa River. Located approximately 9.6 miles north of the intersection of IH 37 and US 281 near the City of Three Rivers. (Not plotted on map)

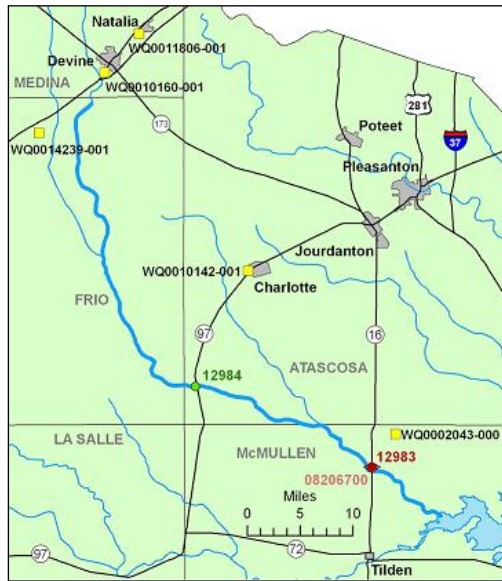


Station 12980 – October 2006

## Stream Flow Gauges



## 2108 – San Miguel Creek



66 miles: from a point immediately upstream of the confluence of Mustang Branch in McMullen County to the confluence of San Francisco Perez Creek and Chacon Creek in Frio County.

### Use Assessments

Aquatic Life : General : Public Water  
Supply : Recreation  
AU\_1 – lower 25 miles  
AU\_2 – upper 41 miles

### 2007 Monitoring

#### Lower 25 Miles

AU\_1 – 12983 – At SH 16 North of Tilden

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

### Impairments

AU	Impairment	#Samples	Mean	Criteria Value
1	E. Coli (Geometric Mean)	16		126
	Fecal coliform (Geometric Mean)	11	259.0	200

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Chlorophyll a	13	6	14.1

### Active Wastewater Permits

**WQ0002043-000 – San Miguel Electric Cooperative:** 62,000 gpd via evaporation and mine pit water and storm water runoff on an intermittent and flow variable basis via nine outfalls. Outfall 002 discharges to Hog Creek to La Jarita Creek, to San Miguel Creek. (All other outfalls discharge to the Atascosa River, segment 2107).

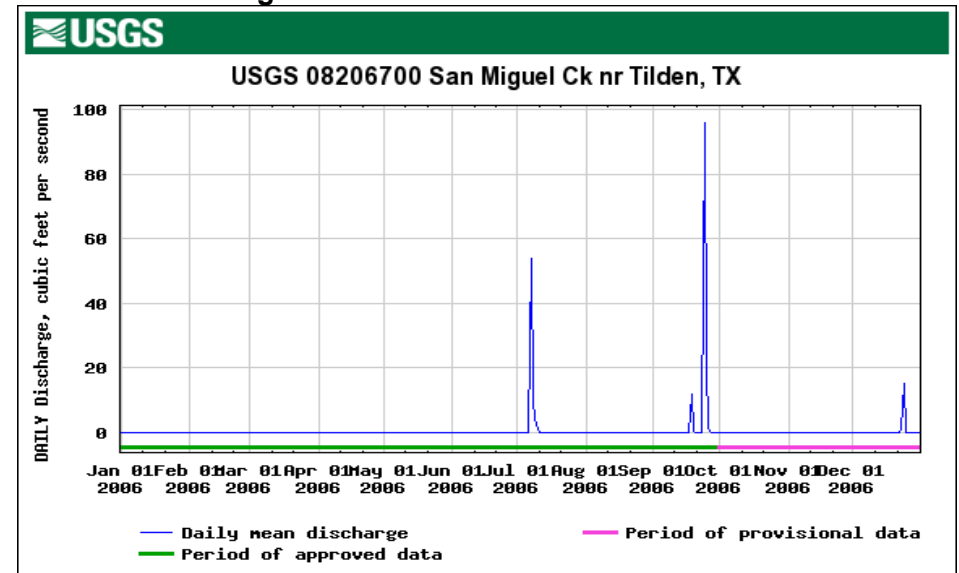
**WQ0010142-001 – City of Charlotte:** 220,000 gpd: unnamed tributary of Lagunillas Creek to Lagunillas Creek to San Miguel Creek.

**WQ0010160-001 – City of Devine:** 650,000 gpd: San Francisco Perez Creek to an unnamed reservoir to San Francisco Perez Creek to San Miguel Creek.

**WQ0011806-001 – City of Natalia:** 190,000 gpd: Fort Ewell Creek to Chacon Creek to San Miguel Creek.

**WQ0014239-001 – Moore WSC:** 65,000 gpd: Moore Hollow to Black Creek to San Miguel Creek.

### Stream Flow Gauges



## 2109 –Leona River



AU\_1 – lower 25 miles  
 AU\_2 – 25 miles surrounding US 57  
 AU\_3 – upper 28 miles

### 2007 Monitoring

#### AU\_1: 12985 – At FM 1581 Southwest of Pearsall

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 13
Bacteria	4	
Field	4	

#### AU\_2: 12987 – At Hwy 57 Near Batesville

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 13
Bacteria	4	
Field	4	

#### AU\_3: 18418 – 370M Upstream of FM 140

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

85 miles: from the confluence with the Frio River in Frio County to US 83 in Uvalde County.

### Use Assessments

Aquatic Life : General :  
 Public Water Supply :  
 Recreation

### Impairments

AU	Impairment	#Samples	Mean	Criteria Value
2	Bacteria (Geomean)	11	196	126

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Nitrate	17	15	1.95
2	Nitrate	14	14	1.95

### Concerns: Near Non-Attainment

AU	Concern	#Samples	Mean	Criteria Value
1	E. coli (Geometric Mean)	9	168.0	126
	Fecal coliform (Geometric Mean)	8	338	200

### Concerns: Near Non-Attainment

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Fecal coliform (Single Sample)	8	3	400

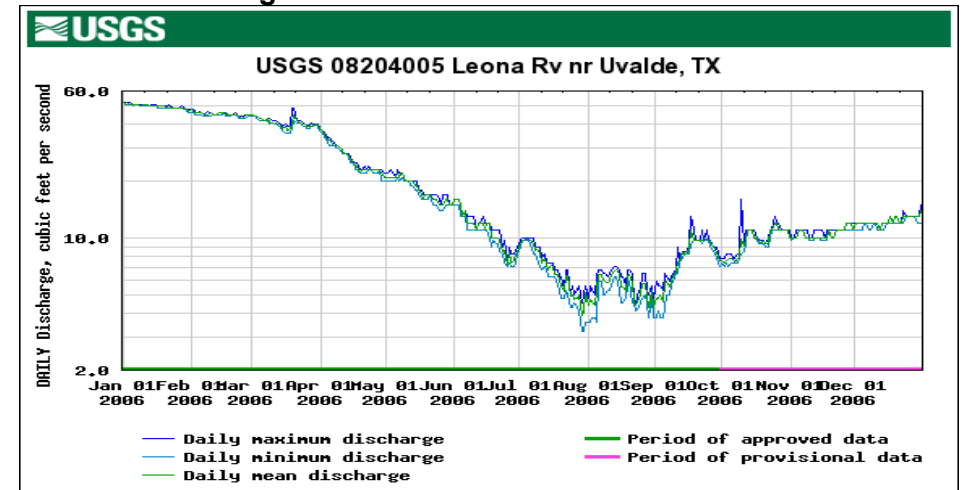
### Active Wastewater Permits

WQ0002752-000 – TAFMI, Inc., Agrilink Foods: 250,000,000 gallons per year via irrigation. The facility is currently not in operation.

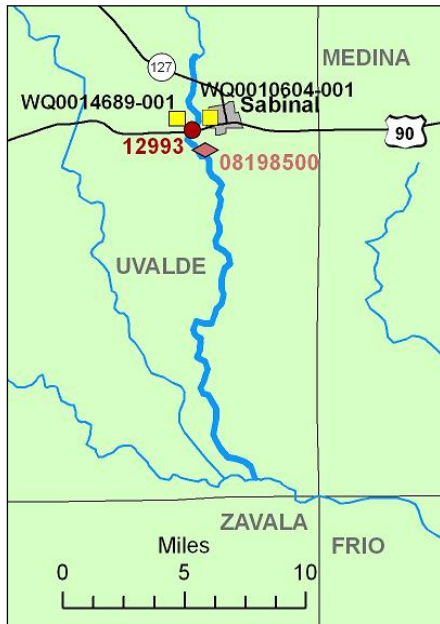
WQ0010306-001 – City of Uvalde

WQ0014394-001 – Batesville WSC: 184,000 gpd: Gallina Slough to Leona River.

### Stream Flow Gauges



## 2110 – Lower Sabinal River



27 miles: from the confluence with the Frio River in Uvalde County to a point 100 m (110 yards) upstream of SH 127 in Uvalde County.

### Use Assessments

Aquatic Life : General : Public Water Supply : Recreation

AU\_1 – entire segment

### 2007 Monitoring

AU\_1: 12993 – Bridge on US 90 West Of Sabinal

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 13
Bacteria	4	
Field	4	

### Impairments

AU	Impairment	#Samples	Mean	Criteria Value
1	Nitrate* (Public Water Supply)	18	6.0	10

Carried forward from 2004 Assessment

Nitrate+nitrite nitrogen had been listed as an impairment in this segment. The suspected source of the nitrogen is the Sabinal WWTP. An Implementation Plan has been approved. The plan calls for the construction of a new plant. The proposed new facility will include a mechanical screen, looped aeration basin, two clarifiers, and an ultraviolet disinfection system and will be permitted to discharge 0.34 million gallons per day of treated effluent to the Sabinal River. It is to be located outside of the floodplain and/or protected from flooding.

In 2003 the City of Sabinal submitted an application to the U.S. Department of Agriculture (USDA) Rural Development-Rural Utilities Services for a grant/loan to fund construction of the new WWTP. According to the local USDA representative, the project

has been approved and they are waiting for the money to be released by Washington. They are expecting the money to be available in January or February 2007.

Once the money is received, the City of Sabinal plans to secure a site for the new facility, develop final engineering plans, and solicit bids for the construction of the facility. It is anticipated that contractors will have 30 days to submit their proposals. Until the site is secured, specific engineering plans will not be available. The outfall location shown on the map is an approximate location. More information is available at <http://www.tceq.org/assets/public/implementation/water/tmdl/45-sabinaltmdladopted.pdf>.

NRA and TCEQ will keep stakeholders informed of the process of the Implementation Plan via newsletters. The first newsletter was distributed in December 2006 and is available at <http://www.nueces-ra.org/CP/CRP/tmdl.php>.

### Concerns

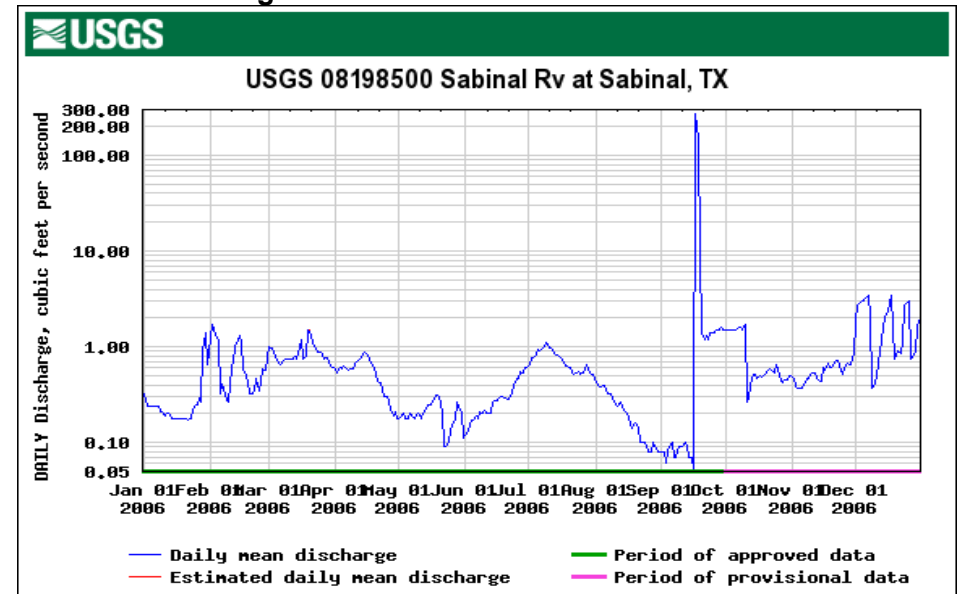
AU	Concern	#Samples	#Exceedences	Criteria Value
1	Nitrate (General)	18	14	1.95

### Active Wastewater Permits

WQ0010604-001 – City of Sabinal: 142,000 gpd: unnamed tributary of the Sabinal River to the Sabinal River.

WQ0014689-001 – City of Sabinal: 340,000 gpd: new permit to replace WQ0010604-001. The location shown on the map is an approximate location.

### Stream Flow Gauges







Lower Sabinal River at Hwy 147

## 2111 – Upper Sabinal River



48 miles: from a point 100 m (110 yards) upstream of SH 127 in Uvalde County to the most upstream crossing of FM 187 in Bandera County.

### Use Assessments

Aquatic Life : General : Public Water Supply :  
Recreation :  
AU\_1 – lower 25 miles  
AU\_2 – upper 23 miles

### 2007 Monitoring

AU\_1: 12994 – 12.5 Miles North of Sabinal and 2.3 Miles Downstream From the Mouth of Onion Creek

Parameter	Freq.	Agency
Conventional	4	TCEQ Region 13
Bacteria	4	
Field	4	

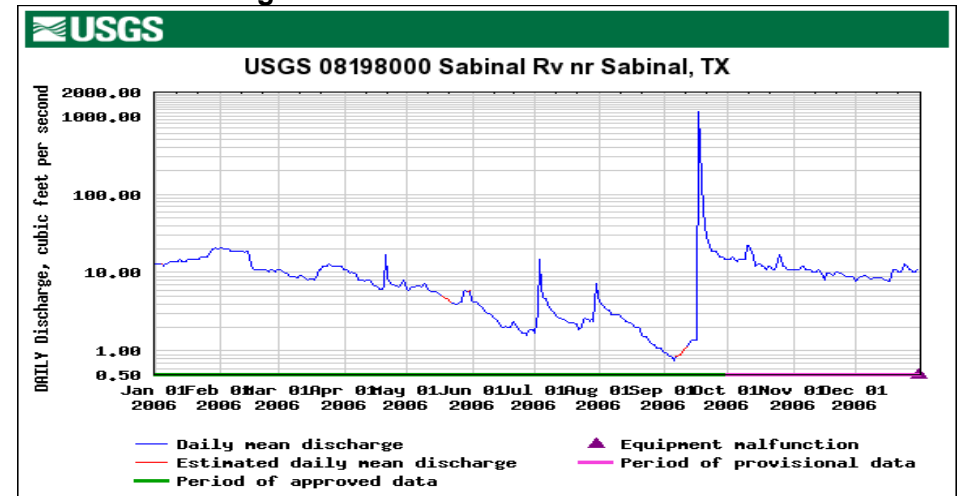
### Impairments and Concerns

There are no impairments or concerns in this segment. AU\_2 was not assessed.

### Active Wastewater Permits

WQ0011951-001 – TPWD – Lost Maples SP: 8,000 gpd via irrigation of 3.25 acres of non-public access grassland.

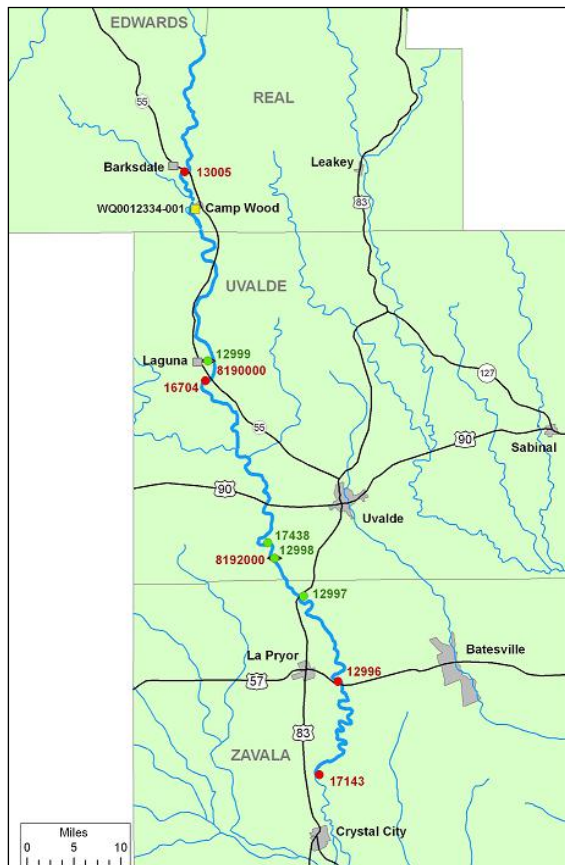
### Stream Flow Gauges



Sabinal River Dam at Utopia

Photo Courtesy of Sherry R. Cantrell, Webmaster for  
[www.TexasHillCountryGateway.com](http://www.TexasHillCountryGateway.com)

## 2112 – Upper Nueces River



123 miles: from a point 100 m (110 yards) upstream of FM 1025 in Zavala County to the confluence of the East Prong Nueces River and Hackberry Creek in Edwards County.

### Use Assessments

Aquatic Life : General : Public  
Water Supply : Recreation :

AU\_1 – lower 25 miles  
AU\_2 – 25 miles surrounding US 83  
AU\_3 – From US 90 to 25 miles upstream near RR 334  
AU\_4 – upper 43 miles

### 2007 Monitoring

#### AU\_1: 12996 – US 57 South of Uvalde

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 16
Bacteria	4	
Field	4	

#### AU\_1: 17143 – Lake Averhoff (Upper Nueces Lake) Mid-Lake at Boat Ramp Off Dirt Road 0.5 mi North of FM 1025, 6.5 mi North of Crystal City

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 16
Bacteria	4	
Field	4	

#### AU\_3: 16704 – At SH 55 Bridge, 2.5km South of Laguna

Parameter	Frequency	Agency
Conventional	4	TCEQ
Bacteria	4	
Field	4	

#### AU\_4: 13005 – At SH 55, South of Barksdale

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

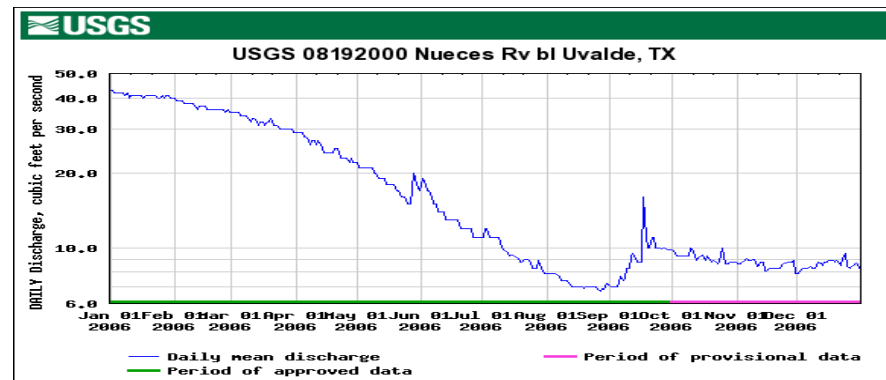
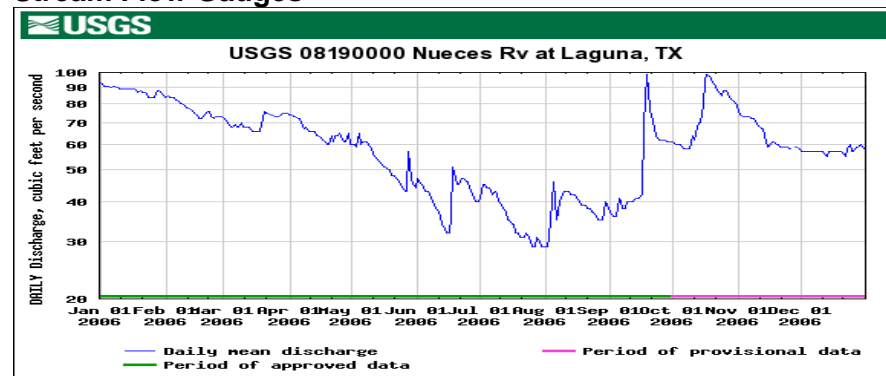
### Impairments and Concerns

There are no impairments or concerns on this segment.

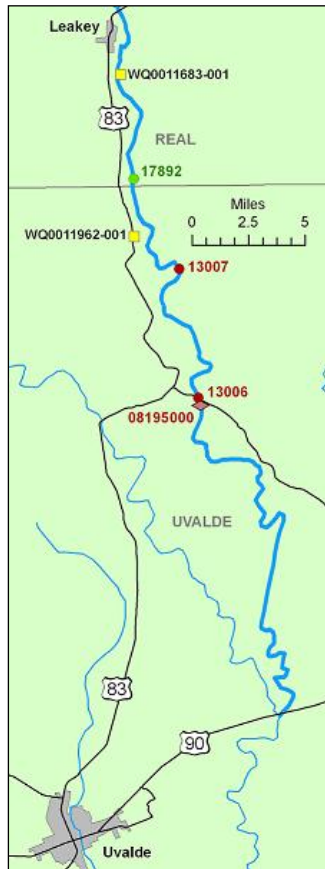
### Active Wastewater Permits

WQ0012334-001 – City of Camp Wood: 101,000 gallons per day (gpd) via irrigation on 14 acres.

### Stream Flow Gauges



## 2113 – Upper Frio River



47 miles: from a point 100 m (110 yards) upstream of US 90 in Uvalde County to the confluence of the West Frio River and the East Frio River in Real County.

### Use Assessments

Aquatic Life : Contact Recreation : General : Public Water Supply

AU\_1 – lower 25 miles

AU\_2 – upper 22 miles

### 2007 Monitoring

#### AU\_1: Lower 25 Miles

13006 – At SH 127 East of Concan

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 13
Bacteria	4	
Flow	4	
Field	4	

### Impairments

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	DO Grab Minimum*	58	0	4

\*Carried forward from 2004 Assessment

A TMDL has been conducted and the final report is available on the TCEQ website:

[www.tceq.state.tx.us/assess/public/implementation/water/tmdl/31-2113upperfrioriverfinalreport-pchem.pdf](http://www.tceq.state.tx.us/assess/public/implementation/water/tmdl/31-2113upperfrioriverfinalreport-pchem.pdf)

The Executive Summary states: “Based upon the 24-hour DO data collected for this study, the Upper Frio River appears to be meeting the exceptional aquatic life use and should be removed from the states list of impaired waters.”

The 2006 Assessment shows the AU is fully support for DO; however, not enough 24-hour DO measurements were taken during the appropriate time period to allow the impairment to be delisted.

AU	Impairment	#Samples	Mean	Criteria Value
1	Fish Community	3	47.0	52
	Habitat	3	22.0	26
	Macrobenthic Community	3	34.0	36

### Concerns

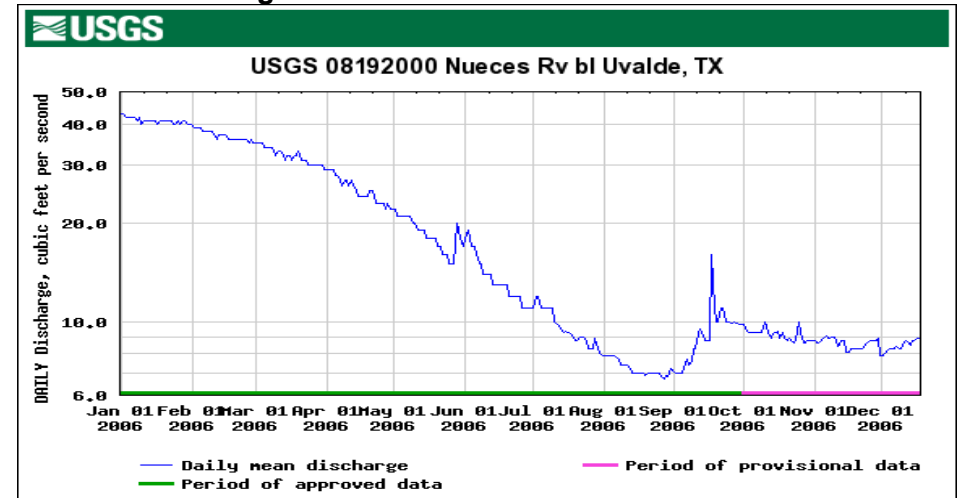
There are no concerns in this segment.

### Active Wastewater Permits

WQ0011683-001 – Alto Frio Baptist Encampment: 20,000 gpd via irrigation of 2.0 acres of pasture land.

WQ0011962-001 – Garner SP: 60,000 gpd via irrigation of 20 acres of non-public access land.

### Stream Flow Gauges



## 2114 – Hondo Creek



78 miles: from the confluence with the Frio River in Frio County to FM 470 in Bandera County.

### Use Assessments

Aquatic Life : General : Public Water Supply : Recreation

AU\_1 – lower 53 miles

AU\_2 – upper 25 miles

### 2007 Monitoring

**AU\_2: Upper 25 Miles**

**13010 – Downstream From Bridge on Ranch Road 462 Near Tarpley**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 13
Bacteria	4	
Field	4	

### Impairments and Concerns

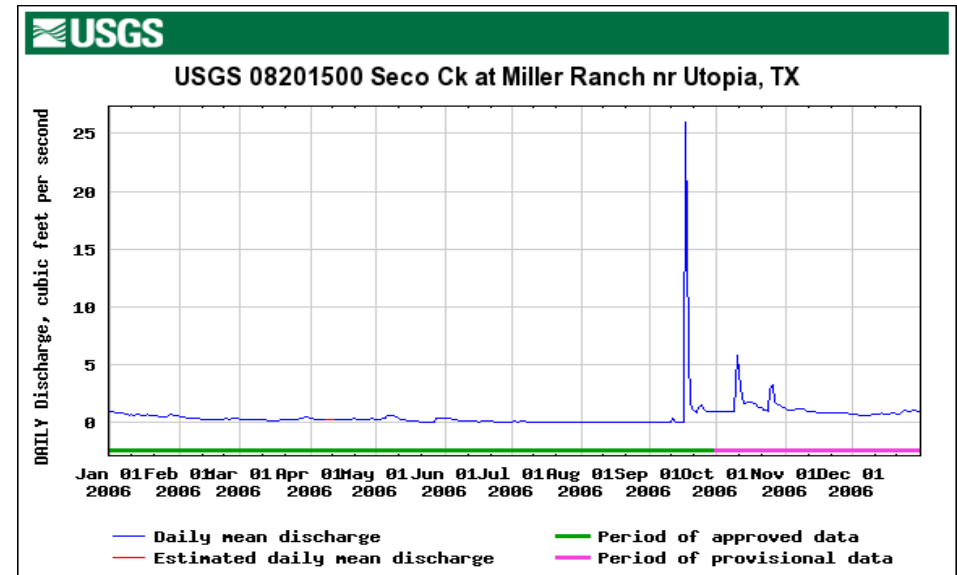
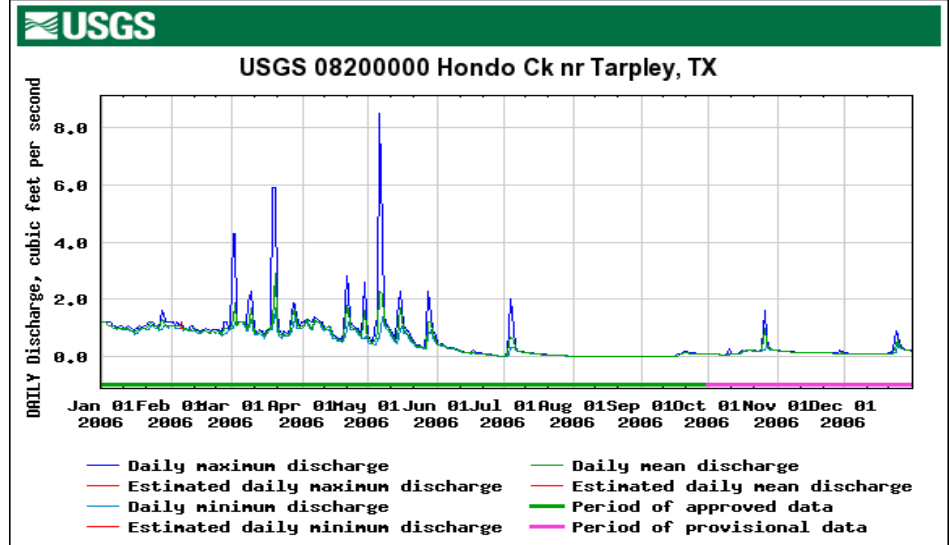
There are no impairments or concerns in this segment. AU\_1 was not assessed.

### Active Wastewater Permits

**WQ0001645-000 – Hondo Vitreous China Plant Wastewater Treatment Facility:** 30,000 gpd via evaporation.

**WQ001089-001 – City of Hondo:** 1,800,000 gpd: Elm Slough to Hondo Creek.

## Stream Flow Gauges



## 2115 – Seco Creek



70 miles: from the confluence with Hondo Creek in Frio County to the confluence of West Seco Creek in Bandera County.

### Use Assessments

Aquatic Life : Fish Consumption :

General : Public Water Supply :

Recreation

AU\_1 – lower 45 miles

AU\_2 – upper 25 miles

### 2007 Monitoring

#### AU\_2: Upper 25 Miles

#### 13013 – At Miller Ranch Near Utopia

Parameter	Frequency	Agency
24hr DO	2	TCEQ Region 13
Conventional	4	
Bacteria	4	
Field	4	

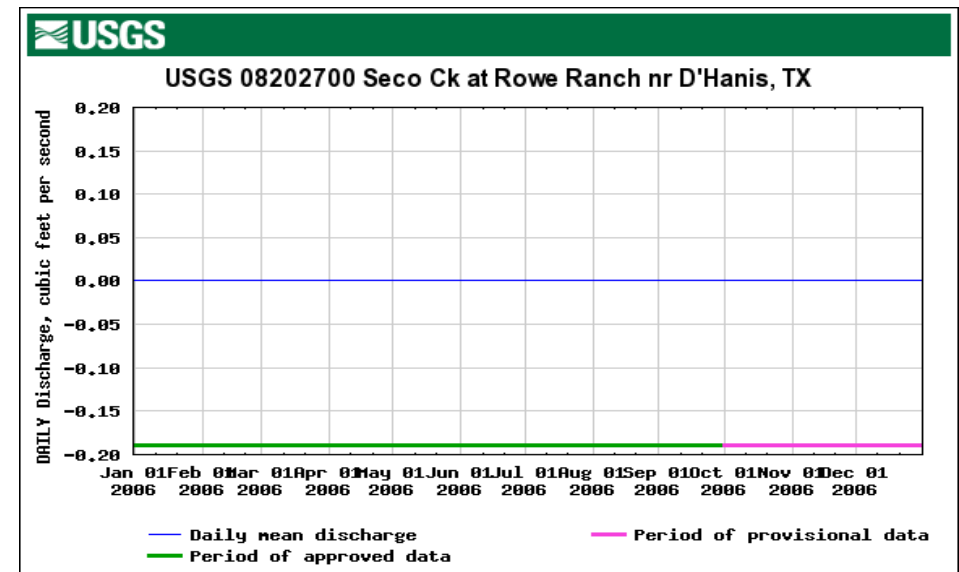
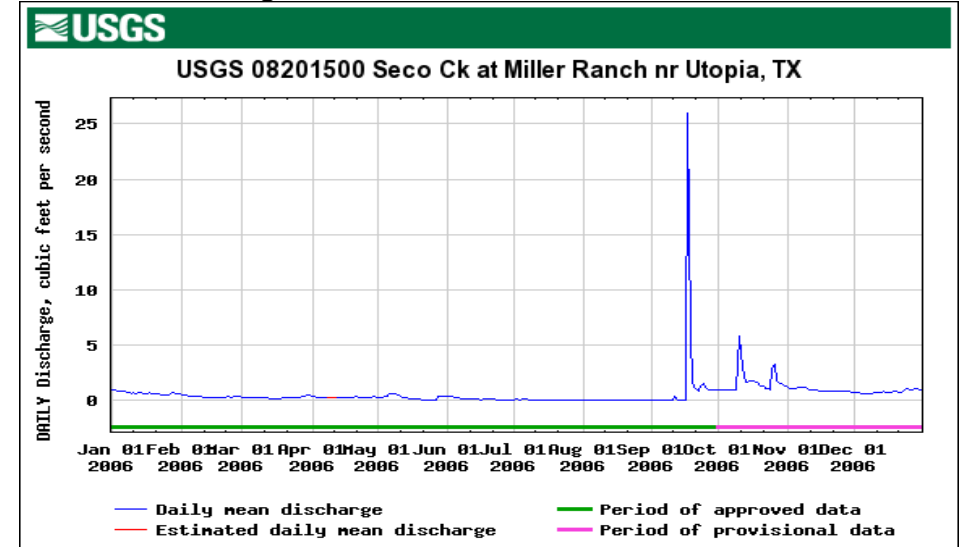
### Impairments and Concerns

There are no impairments or concerns in this segment. AU\_1 was not assessed.

### Active Wastewater Permits

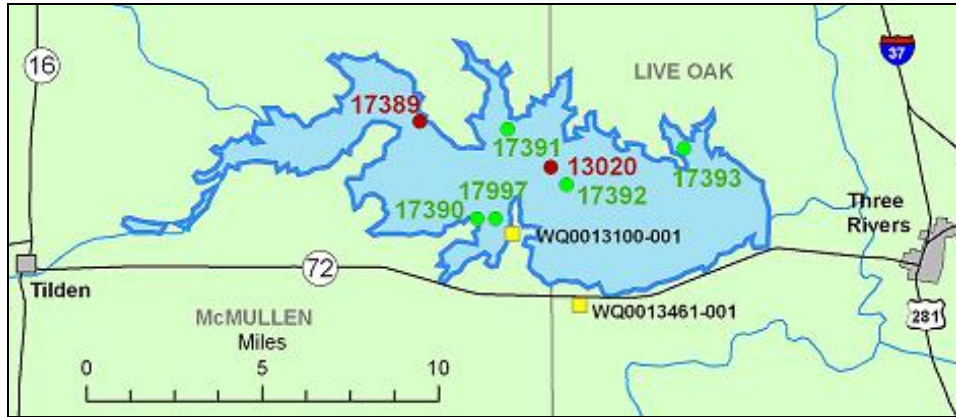
WQ0011144-001 – Medina County WCID 002: 80,000 gpd.

## Stream Flow Gauges





## 2116 – Choke Canyon Reservoir



26,000 acres: from Choke Canyon Dam in Live Oak County to a point 4.2 km (2.6 miles) downstream of SH 16 on the Frio River Arm in McMullen County and to a point 100 m (110 yards) upstream of the confluence of Mustang Branch on the San Miguel Creek Arm in McMullen County, up to the normal pool elevation of 220.5 feet (impounds Frio River).

### Use Assessments

Aquatic Life : Fish Consumption : General : Public Water Supply : Recreation

- AU\_1 – 5120 acres near dam
- AU\_2 – small north arm of lake near dam and Willow Hollow Tank
- AU\_3 – 5120 acres in middle of lake
- AU\_4 – large north arm near mid lake and Jacob Oil Field
- AU\_5 – southern arm near mid lake and Rec. Rd. 7 west of Calliham
- AU\_6 – western end of lake up to RR 99 bridge
- AU\_7 – remainder of lake

### 2007 Monitoring

**AU\_3: 13020 – Mid-lake on Live Oak/McMullen County Line.**

Parameter	Frequency	Agency
Metals in Water	2	NRA
Conventional	4	
Bacteria	4	
Field	4	

**AU\_6: 17389 – Approximately 0.5 km Southeast of RR 66 Southern Most Bridge Crossing the Frio River Arm**

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

### Impairments

AU	Impairment	#Samples	#Exceedences	Criteria Value
6	DO 24 Hr Average	10	3	5

The impairment for TDS was removed as a result of the 2006 Assessment.

The impairment for bacteria (AU\_1, AU2, AU\_4, AU\_5 and AU\_6) based on the geometric mean of fecal coliform is carried forward from the 2004 Assessment.

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
6	DO Grab Screening Level	20	6	5

### Concerns: Near Non-Attainment

AU	Concern	#Samples	#Exceedences	Criteria Value
6	DO 24 Hr Minimum	10	2	3

### Active Wastewater Permits

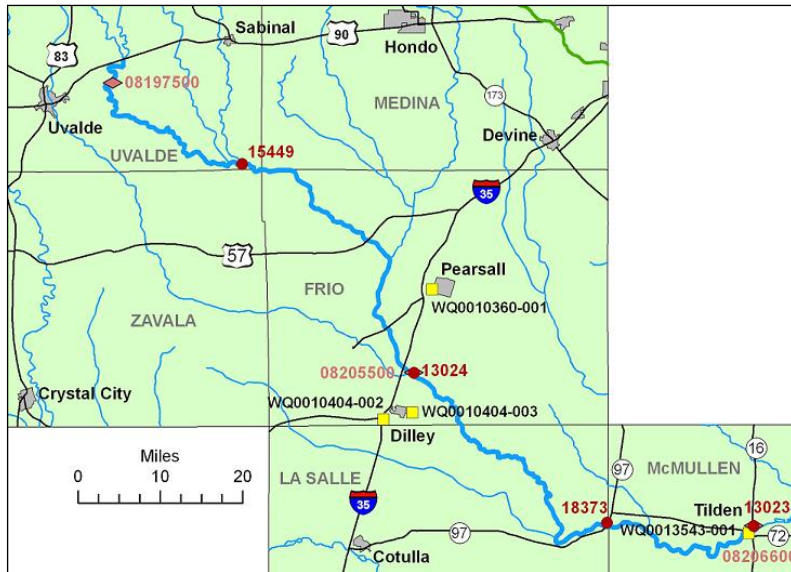
**WQ0013100-001 – TPWD – Choke Canyon SP, Calliham Unit WWTP:** 13,000 gpd via evaporation.

**WQ0013461-001 – US Department of Justice – Federal Correctional Institution at Three Rivers:** 300,000 gpd via irrigation of 82 acres of landscaping around the institute.



Station 17389 – July 2006

## 2117 – Frio River Above Choke Canyon Reservoir



158 miles:  
from a point  
4.2 km (2.6  
miles)  
downstream  
of SH 16 in  
McMullen  
County to a  
point 100 m  
(110 yards)  
upstream of  
US 90 in  
Uvalde  
County.

### Use Assessments

Aquatic Life : Fish Consumption : General : Public Water Supply : Recreation

AU\_1 – lower 25 miles

AU\_2 – from 1.5 miles downstream of SH 97 to 23.5 miles upstream of SH 97 crossing

AU\_3 – 33 miles surrounding SH 85

AU\_4 – 40 miles surrounding US 57

AU\_5 – upper 35 miles (Not assessed)

### 2007 Monitoring

AU\_1: 13023 – At SH 16 in Tilden

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

AU\_2: 18373 – Immediately Upstream of SH 97 North of Fowlerton

Parameter	Frequency	Agency
24hr DO	4	NRA
Conventional	4	
Bacteria	4	
Field	4	

AU\_3: 13024 – At US 35 North of Dilley

Parameter	Frequency	Agency
24hr DO	4	TCEQ Region 13
Conventional	4	
Bacteria	4	
Field	4	

AU\_4: 15449 – At FM 187 8 Mi. South of Sabinal

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 13
Bacteria	4	
Field	4	

### Impairments

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	DO 24 Hr Minimum*	33	0	3
2	DO 24 Hr Minimum*	5	0	3
3	DO 24 Hr Minimum*	14	0	3
4	DO 24 Hr Minimum*	7	0	3

\*Carried forward from 2004 Assessment

### Concerns: Near Non-Attainment

AU	Concern	#Samples	Mean	Criteria Value
2	E. coli (Geomean)	5	189.0	126

### Active Wastewater Permits

WQ0010360-001 – City of Pearsall

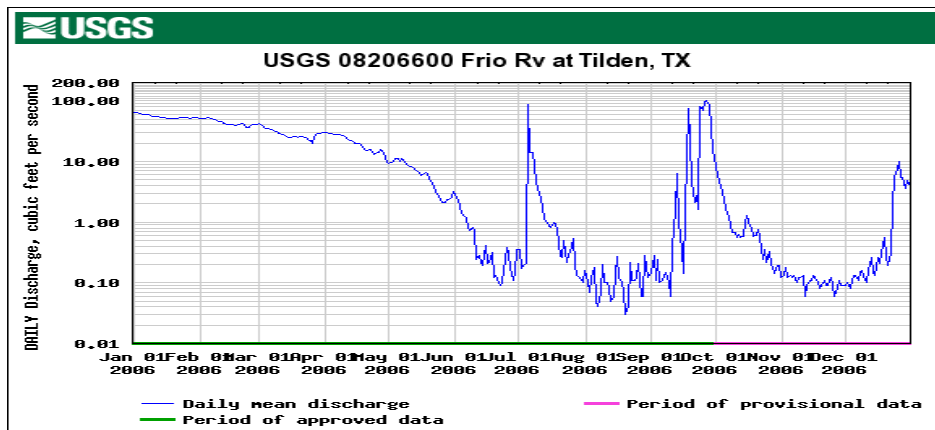
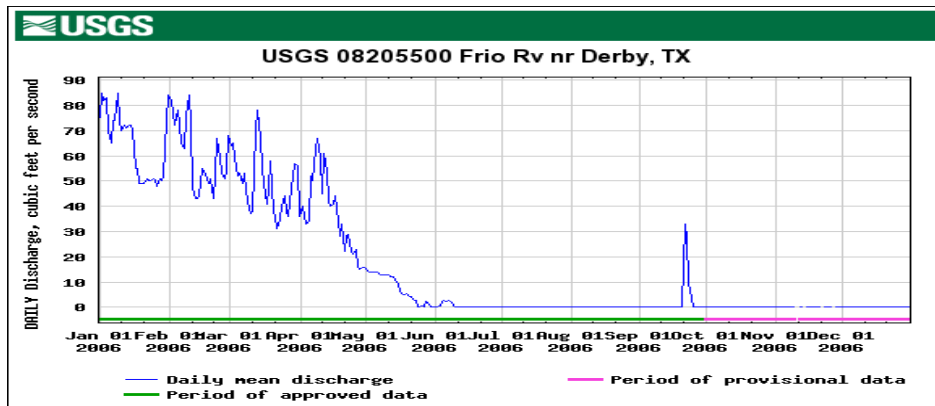
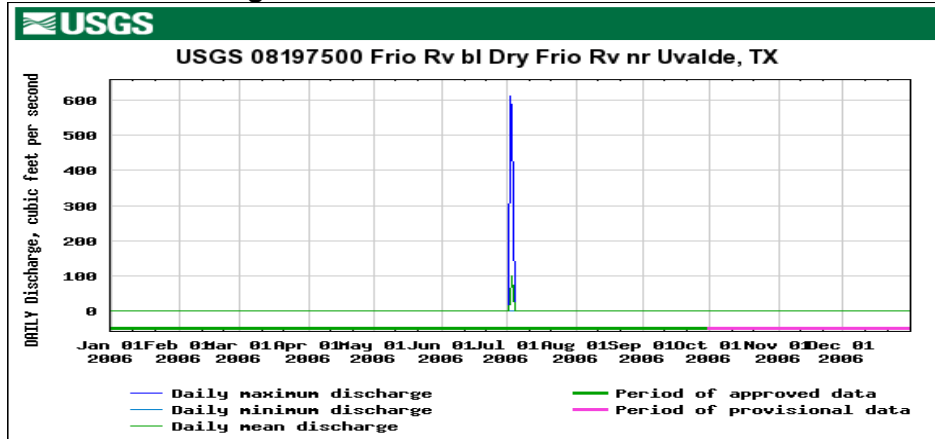
WQ0010404-002 – City of Dilley: 300,000 gpd: unnamed tributary of Cibolo Creek to Cibolo Creek to the Frio River.

WQ0010404-003 – City of Dilley

WQ0010404-004 – City of Dilley: 15,000 gpd: drainage ditch to unnamed tributary of Martin Branch Creek to Martin Branch Creek to the Frio River. (Proposed – not plotted on map.)

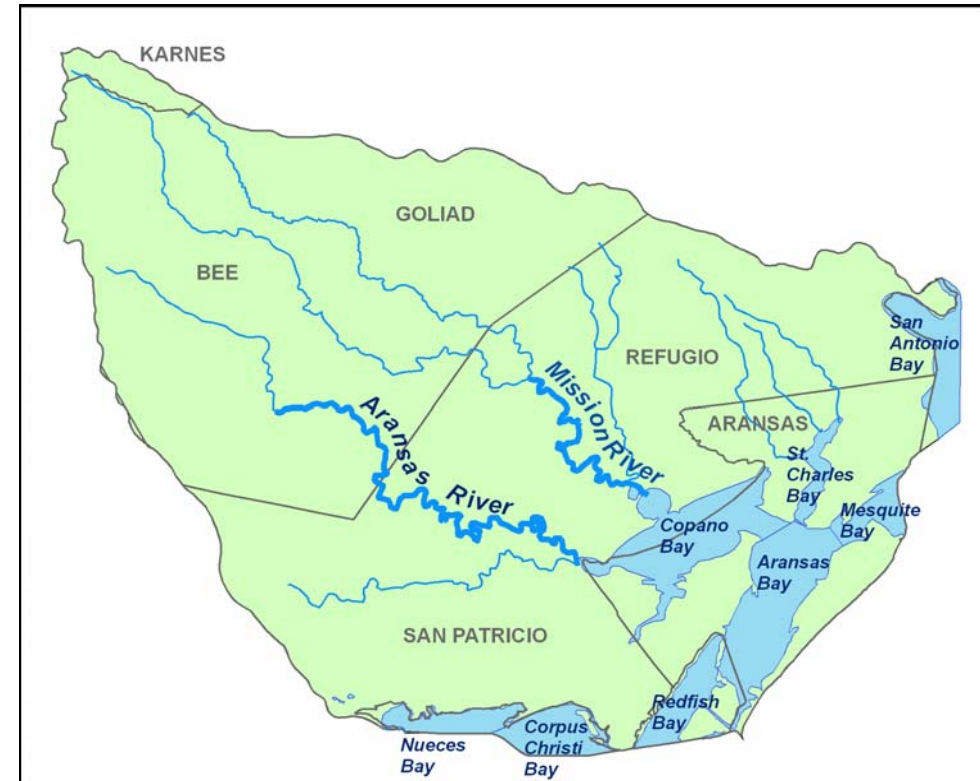
WQ0013543-001 – McMullen County WCID No. 1 – Tilden WWTP

## Stream Flow Gauges



## San Antonio – Nueces Coastal Basin

The San Antonio – Nueces Coastal Basin covers approximately 3,100 square miles, covering all or part of 7 counties. The basin is bordered by the San Antonio River Basin to the north, the Lavaca-Guadalupe Coastal Basin to the northeast, bays, estuaries, and the Gulf of Mexico to the east, the Nueces-Rio Grande Coastal Basin to the south, and the Nueces River Basin to the northwest. Being a coastal area, the basin is naturally host to several state-operated recreational areas. These include Goose Island SP near Rockport, Copano Bay State Fishing Pier along State Highway 35 north of Fulton, Fulton Mansion SHP in Fulton, and the Aransas National Wildlife Refuge in Aransas County.



There are five stream segments in the basin. Segment 2004A, Aransas Creek was added for the 2006 Assessment. Water quality monitoring for FY 2007 includes four sites with one site on every segment except 2004A. All of the segments will be discussed in detail in the following sections.



### Mission River

The Mission River originates in Refugio County and terminates in Mission Bay in Refugio County and is divided into two classified stream segments. Water quality monitoring for FY 2007 includes two sites with one site on each segment.

### Aransas River

The Aransas River originates in Bee County and terminates in Copano Bay in Aransas County. It is divided into two classified stream segments. Water quality monitoring for FY 2007 includes two sites with one site on each segment.

### Event-based Monitoring in the Copano Watershed

A TMDL is currently underway for the tidal segments of the Mission and Aransas Rivers and Copano Bay, which are on the 303(d) for bacteria for contact recreation and oyster

waters, respectively. Initial TMDL work included the development of a bacteria loading model using existing data from SWQM stations. All existing SWQM stations are located in the lower portion of the watershed. All but one are on the classified stream segments.

In order to help better define the bacteria loading from the upper portion of the watershed, NRA is being funded by TSSWCB to conduct event-based sampling throughout the basin. A total of 14 sites have been selected throughout the watershed, 9 of which are new sites on unclassified streams.

Sampling will take place during two dry/low flow events to be conducted during July and September, and up to four wet events in each of the three years of the project. Each sampling event will be for three consecutive days. An attempt will be made to collect samples at the 16 WWTP outfalls in the watershed.

**Table 3. Assessment Summary for the San Antonio – Nueces Coastal Basin**

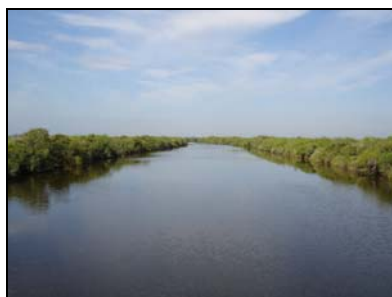
Segment	Description	Assessment Unit	Concerns	Impairments
2001	Mission River Tidal	Entire segment		Bacteria
2003	Aransas River Tidal	Entire segment	Nitrate Orthophosphorus	Bacteria
2004	Aransas River Above Tidal	Upper 18 miles	Depressed DO Nitrate Orthophosphorus Total Phosphorus	
2004A	Aransas Creek	Entire segment	Depressed DO (Grab) Depressed DO (Grab minimum)*	Bacteria**

\*Near non-attainment

\*\*New listing

**Table 4. FY 2007 Monitoring Stations for the San Antonio – Nueces Coastal Basin**

Segment	Station ID	Station Description
2001	12943	Mission River Tidal at FM 2678 Bridge between Refugio and Bayside
2002	12944	Mission River Above Tidal at US 77-upstream from bridge at Refugio
2003	12947	Aransas River Tidal at boat ramp on FM 629 south of Bonnie View
2004	12952	Aransas River Above Tidal at County Road East of Skidmore

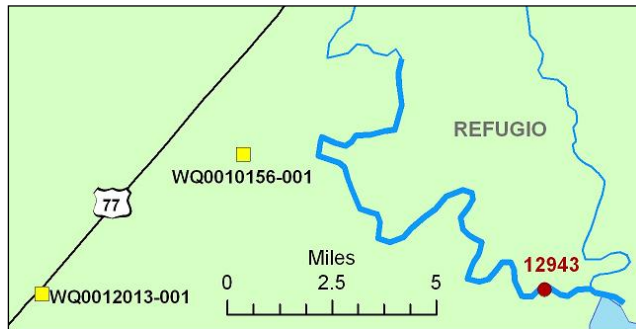


Station 12943 – October 2006



Station 12944 – November 2006

## 2001 – Mission River Tidal



19 miles: from the confluence with Mission Bay in Refugio County to a point 7.4 km (4.6 miles) downstream of US 77 in Refugio County.

### Use Assessments

Aquatic Life : General :  
Recreation  
AU\_1 – entire segment

## 2007 Monitoring

### 12943 – FM 2678 Bridge between Refugio and Bayside

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

## Impairments

AU	Impairment	#Samples	Mean	Criteria Value
1	Enterococcus (Geomean)	20	98.0	35

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	Enterococcus (Single Sample)	20	9	89

## Concerns

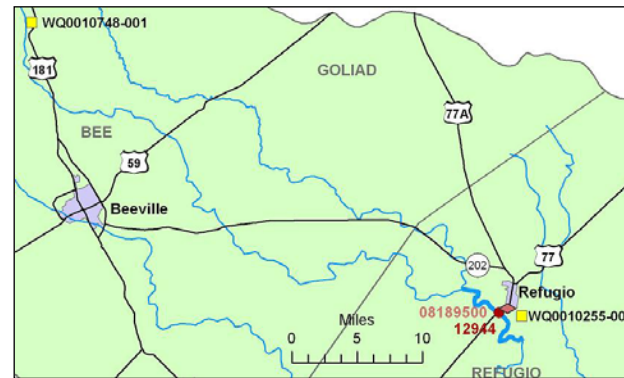
There are no concerns in this segment.

## Active Wastewater Permits

**WQ0010156-001 – Town of Woodsboro:** 250,000 gpd: a ditch to Willow Creek to Sous Creek to Mission River Tidal.

**WQ0012013-001 – Texas Department of Transportation (TxDOT): - Refugio County Rest Area:** 3,200 gpd via evaporation in a 0.086 acre pond and irrigation of 1.5 acres of highway right-of-way land.

## 2002 – Mission River Above Tidal



9 miles: from a point 7.4 km (4.6 miles) downstream of US 77 in Refugio County to the confluence of Blanco Creek and Medio Creek in Refugio County.

### Use Assessments

Aquatic Life : General :  
Contact Recreation  
AU\_1 – entire segment

## 2007 Monitoring

### 12944 – US 77-upstream from bridge at Refugio

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

## Impairments and Concerns

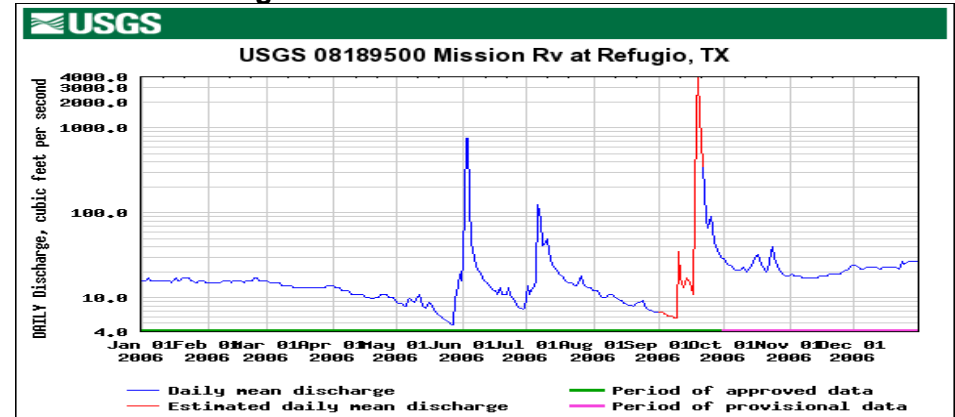
There are no impairments or concerns in this segment.

## Active Wastewater Permits

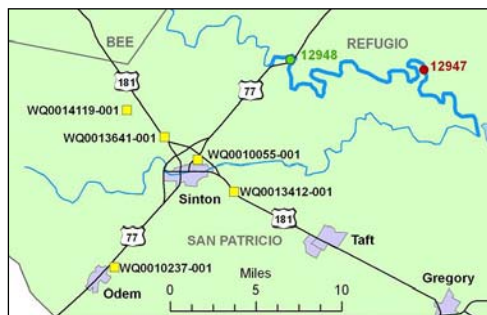
**WQ0010255-001 – Town of Refugio**

**WQ0010748-001 – Pettus MUD:** 105,000 gpd: Medio Creek to Mission River Above Tidal.

## Stream Flow Gauges



## 2003 – Aransas River Tidal



6 miles: from the confluence with Copano Bay in Aransas/Refugio County to a point 1.6 km (1.0 mile) upstream of US 77 in Refugio/San Patricio County.

### Use Assessments

Aquatic Life : Contact Recreation :

General

AU\_1 – entire segment

### 2007 Monitoring

12947 – At boat ramp on FM 629 south of Bonnie View

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

### Impairments

AU	Impairment	#Samples	Mean	Criteria Value
1	Enterococcus (Geomean)	15	182.0	35

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	Enterococcus (Single Sample)	15	9	89

### Concerns

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	Nitrate	20	6	1.1
	Orthophosphorus	11	4	0.46

### Active Wastewater Permits

**WQ0010055-001 – City of Sinton:** 15,000 gpd: San Patricio County Drainage District ditch to an unnamed tributary of Chiltipin Creek to Chiltipin Creek to Aransas River Tidal.

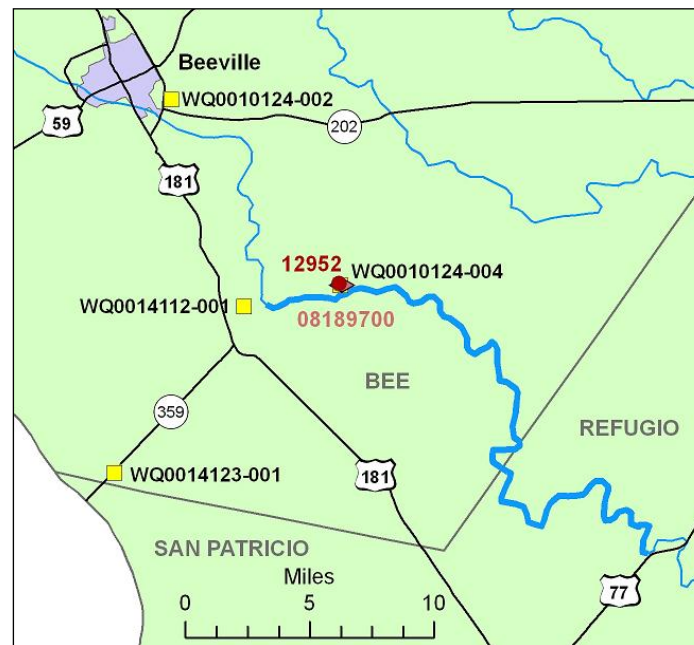
**WQ0010237-001 – City of Odem:** 273,000 gpd.

**WQ0013412-001 – TxDOT:** 380 gpd: Oliver Drainage Ditch to an unnamed tributary to Chiltipin Creek to Aransas River Tidal.

**WQ0013641-001 – City of Sinton Rob and Bessie Welder Park:** 15,000 gpd: San Patricio County Drainage District ditch to an unnamed tributary of Chiltipin Creek to Chiltipin Creek to Aransas River Tidal.

**WQ0014119-001 – St. Paul WSC:** 50,000 gpd: unnamed tributary to Chiltipin Creek to the Aransas River Tidal.

## 2004 – Aransas River Above Tidal



35 miles: from a point 1.6 km (1.0 mile) upstream of US 77 in Refugio/San Patricio County to the confluence of Poesta Creek and Aransas Creek in Bee County.

### Use Assessments

Aquatic Life : General : Contact Recreation

AU\_1 – lower 17 miles (Not assessed)  
AU\_2 – upper 18 miles

### 2007 Monitoring

AU\_2 – Upper 18 miles

12952 – At County Road East of Skidmore

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

### Impairments

There are no impairments on this segment.

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	DO Grab Screen Level	10	2	5
	Nitrate	10	5	1.95
	Orthophosphorus	8	8	0.37
	Total Phosphorus	10	6	0.69

## Active Wastewater Permits

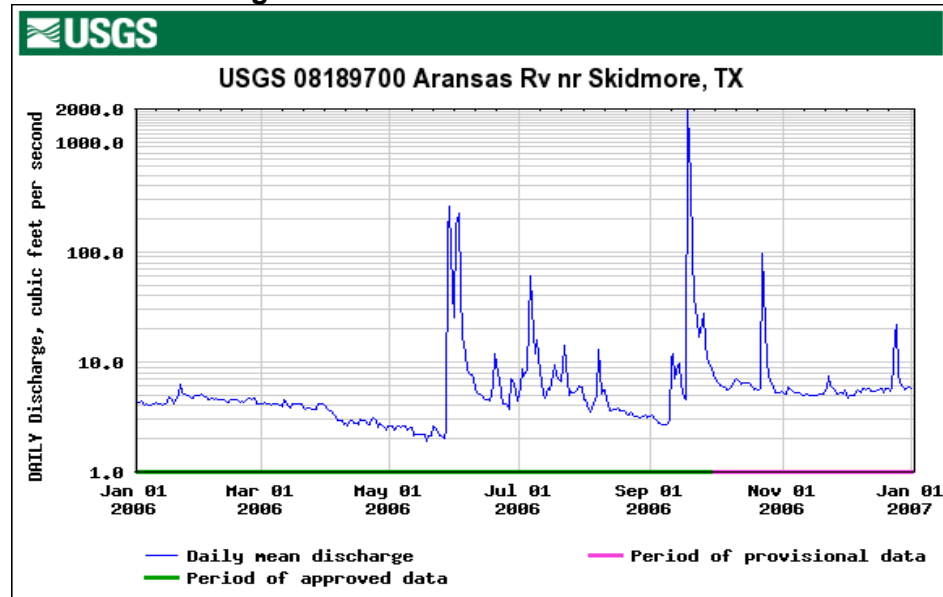
**WQ0010124-002 – City of Beeville:** 3,000,000 gpd with provisions for irrigation of the grass and landscaping of the plant site: to Poesta Creek to the Aransas River Above Tidal.

**WQ0010124-004 – City of Beeville, Chase Field:** 2,500,000 gpd.

**WQ0014112-001 – Skidmore WSC:** 131,000 gpd.

**WQ0014123-001 – Tynan WSC:** 45,000 gpd: Papalote Creek to the Aransas River Above Tidal.

## Stream Flow Gauges



## 2004A – Aransas Creek



20 miles: from the confluence with the Aransas River to the headwaters of the stream about 10 km upstream of US 59.

This segment was designated during the 2006 Assessment. There are no current monitoring stations, stream flow gauges, or WWTP outfalls on this segment.

## Use Assessments

Aquatic Life : General : Recreation  
AU\_1 – entire segment

## Impairments

AU	Impairment	#Samples	Mean	Criteria Value
1	E. coli	10	248	126
	Fecal coliform Geomean	10	311	200

## Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	DO Grab Screening Level	10	2	3

## Concerns: Near Non-Attainment

AU	Concern	#Samples	#Exceedences	Criteria Value
1	DO Grab Minimum	10	2	2
	Fecal coliform Single Sample	10	4	400

## Active Wastewater Permits

There are no active wastewater permits that discharge into this segment.



## Nueces – Rio Grande Coastal Basin

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 Mexico to the east, and the Rio Grande River Basin to the south and southwest. 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 SP, Port Isabelle Light House SHP in Port Isabel, and the Padre Island National Seashore.



There are ten stream segments and one reservoir segment in the basin. Segments 2202B Unnamed Drainage Ditch Tributary (B) to S. Arroyo Colorado, 2202C Unnamed Drainage Ditch Tributary (C) to S. Arroyo Colorado, 2204A Unnamed Drainage Ditch Tributary (A) to Petronila Creek, and 2204B Unnamed Tributary (B) to Petronila Creek 2204B were added for the 2006 Assessment. Water quality monitoring for FY 2007 includes 12 sites with at least one site on every segment except the reservoir segment and the newly added segments. All of the segments will be discussed in detail in the following sections.

### Arroyo Colorado

The Arroyo Colorado is an ancient distributary channel of the Rio Grande, extending 90 miles from Mission, Texas to the Laguna Madre. The Arroyo Colorado WPP is being developed in an effort to reduce loadings of nutrients, biochemical oxygen demand, and suspended solids flowing into the Arroyo Colorado. A major component of the WPP is an effort to reduce the amount of domestic and municipal wastewater that enters the Arroyo Colorado. The plan includes measures for institutional controls (i.e. changes in permits), wastewater infrastructure improvements that are designed to mitigate nonpoint sources of pollution and to improve current wastewater treatment levels, and enhanced biological treatment projects such as reuse via irrigation, polishing ponds, and constructed wetland cells.

The WPP encompasses the entire Arroyo Colorado watershed and all potential pollutants, not just the identified concerns and impairments. Implementation of the WPP began in 2006. The cities of San Juan, San Benito, Mercedes, and La Feria are in varying stages of initiating projects to construct wetland treatment systems for wastewater treatment plant effluents and storm water runoff. These wetlands will provide benefits to water quality in the Arroyo Colorado, habitats for wildlife, and recreational/ educational resources for area residents and guests. The wetlands are being constructed by local governments with technical and financial assistance from the TCEQ and USEPA.

More information is available at

<http://www.tceq.state.tx.us/implementation/water/tmdl/arroyo.html>.

### Petronila Creek

Petronila Creek originates in Nueces County and terminates in Alazan Bay, an arm of Baffin Bay, in Kleberg County. It is divided into two classified stream segments. Water quality monitoring for FY 2007 includes three sites with at least one site on each segment.

### Oso Creek

Oso Creek originates in Nueces County and terminates in Oso Bay in Nueces County. There is 1 sampling site on this segment.

### San Fernando Creek

San Fernando Creek originates in Jim Wells County and terminates in Cayo Del Grullo, an arm of Baffin Bay in Kleberg County. There is 1 sampling site on this segment.

**Table 5. Assessment Summary for the Nueces – Rio Grande Coastal Basin**

Segment	Description	Assessment Unit	Concerns	Impairments
2201	Arroyo Colorado Tidal	Lower 9 miles	Chlorophyll a Nitrate	
		2 miles upstream too 2 miles downstream of Marker 22	Nitrate	
		3 miles upstream to 2 miles downstream of Marker 27	Ammonia Nitrate Orthophosphorus	Bacteria**
		1 mile upstream to 3 miles downstream of Camp Perry	Nitrate Orthophosphorus Chlorophyll a Ammonia Depressed DO (Grab)	Bacteria** Depressed DO (Grab minimum)***
		Upper 4 miles	Orthophosphorus Ammonia Total Phosphorus Nitrate Depressed DO (Grab) Chlorophyll a	Bacteria** Depressed DO (24 hr average & 24 hr minimum)
2202	Arroyo Colorado Above Tidal	Lower 4 miles	Total phosphorus Chlorophyll a Nitrate Orthophosphorus Ammonia	Bacteria Toxins in small mouth buffalo****
		11 miles upstream to 4 miles downstream of US 77	Total phosphorus Orthophosphorus Ammonia Chlorophyll a Nitrate	Bacteria Toxins in small mouth buffalo****
		14 miles upstream to 11 miles downstream of FM 1015	Ammonia Chlorophyll a Nitrate Orthophosphorus Total phosphorus	Bacteria Toxins in small mouth buffalo****
		Upper 19 miles	Orthophosphorus Total phosphorus Nitrate Chlorophyll a Ammonia	Bacteria Toxins in small mouth buffalo****
2202A	Donna Reservoir	Entire segment		PCBs in fish tissue****
2202B	Unnamed Drainage Ditch Tributary to S. Arroyo Colorado	Entire segment	Ammonia Chlorophyll a Bacteria*	
2202C	Unnamed Drainage Ditch Tributary to S. Arroyo Colorado	Entire segment	Bacteria* Ammonia	

2203	Petronila Creek Tidal	Entire segment	Chlorophyll a	
2204	Petronila Creek Above Tidal	Lower 25 miles	Chlorophyll a Orthophosphorus	Chloride TDS Sulfate
		Upper 19 miles		Chloride Sulfate TDS
2485A	Oso Creek	Entire segment	Nitrate Total phosphorus Chlorophyll a	Bacteria
2492A	San Fernando Creek	Entire segment	Nitrate Total phosphorus	Bacteria**

\*Near non-attainment

\*\*New listing

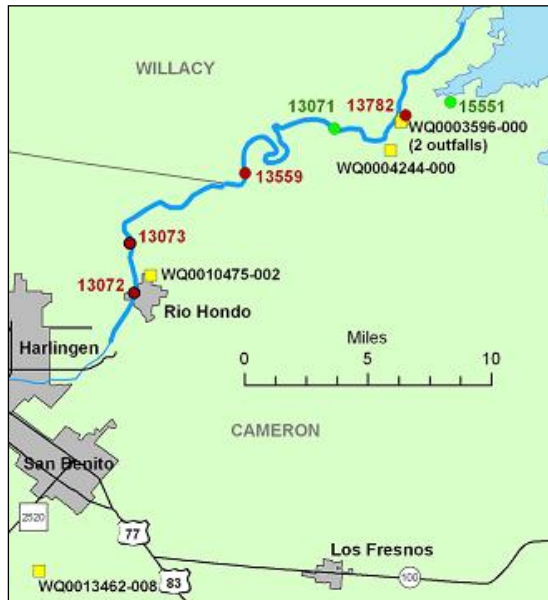
\*\*\*Carried forward from 2004 Assessment

\*\*\*\*Category 4a – TMDL completed and approved by EPA

**Table 6. FY 2007 Monitoring Stations for the Nueces – Rio Grande Coastal Basin**

Segment	Station ID	Station Description
2201	13072	Arroyo Colorado Tidal FM 106 Bridge at Rio Hondo
	13073	Arroyo Colorado Tidal At Camp Perry North of Rio Hondo
	13559	Arroyo Colorado Tidal At Marker 27 (Mile 15) 0.5 Mile North of the Point Where Channel Becomes Boundary Between Willacy And Cameron Counties
	13782	Arroyo Colorado Tidal Near CM 16 at Arroyo City, KM 10.9
2202	13074	Arroyo Colorado Above Tidal At Low Water Bridge at Port Harlingen
	13081	Arroyo Colorado Above Tidal Main Floodway In Llano Grande At Fm 1015 South Of Weslaco
	13084	Arroyo Colorado Above Tidal At US 281 South Of Pharr
2203	13090	Petronila Creek Tidal 1.2 2 Km Upstream of the Confluence With Tunas Creek
2204	13094	Petronila Creek Above Tidal At FM 892 Southeast of Driscoll
	13096	Petronila Creek at FM 665 East of Driscoll
2485A	13028	At SH 286 South of Corpus Christi
2492A	13033	At US 77 Bypass in Kingsville

## 2201 – Arroyo Colorado Tidal



26 miles: from the confluence with Laguna Madre in Cameron/Willacy County to a point 100 m (110 yards) downstream of Cemetery Road south of Port Harlingen in Cameron County.

### Use Assessments

Aquatic Life : Contact Recreation : General

AU\_1 – lower 9 miles  
 AU\_2 – 2 miles upstream to 2 miles downstream of Marker 22  
 AU\_3 – 3 miles upstream to 2 miles downstream of Marker 27  
 AU\_4 – 1 mile upstream to 3 miles downstream of Camp Perry  
 AU\_5 – upper 4 miles

### 2007 Monitoring

#### AU\_1: 13782 – Near CM 16 at Arroyo City, KM 10.9

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

#### AU\_3: 13559 – At Marker 27 (Mile 15) 0.5 Mile North of the Point Where Channel Becomes Boundary Between Willacy And Cameron Counties

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

#### AU\_4: 13073 – At Camp Perry North of Rio Hondo

Parameter	Frequency	Agency
24hr DO	2	NRA
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

#### AU\_5: 13072 – FM 106 Bridge at Rio Hondo

Parameter	Frequency	Agency
24hr DO	2	NRA
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

### Impairments

AU	Impairment	#Samples	#Exceedences	Criteria Value
4	DO Grab Minimum*	39	2	3
5	DO 24 Hr Average	12	3	4
	DO 24 Hr Minimum	12	4	3

\*Carried forward from 2004 Assessment

AU	Impairment	#Samples	Mean	Criteria Value
3	Enterococcus Geomean	13	42	35
4	Enterococcus Geomean	13	43	35
5	Enterococcus Geomean	10	55	35
	Fecal coliform Geomean	12	231	200

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Chlorophyll a	20	9	21
	Nitrate	18	10	1.1
2	Nitrate	20	15	1.1
3	Ammonia	19	8	0.46
	Nitrate	17	15	1.1
	Orthophosphorus	16	5	0.46
4	DO Grab Screening Level	39	7	4
	Ammonia	40	18	0.46
	Chlorophyll a	40	14	21
	Nitrate	38	34	1.1
	Orthophosphorus	37	15	0.46
5	DO Grab Screening Level	61	12	4
	Ammonia	40	25	0.46
	Chlorophyll a	40	11	21
	Nitrate	38	38	1.1
	Orthophosphorus	37	22	0.46
	Total Phosphorus	40	12	0.66



## Active Wastewater Permits

**WQ0003596-000 – Taiwan Shrimp Village Association and Arroyo Aquaculture Association:** 100,000,000 gpd via Outfalls 001 and 002.

**WQ0004244-000 – Southern Star Inc.:** 60,000,000 gpd via Outfall 001.

**WQ0004792-000 – Military Highway WSC:** 1,440,000 gpd. (Not plotted on map.)

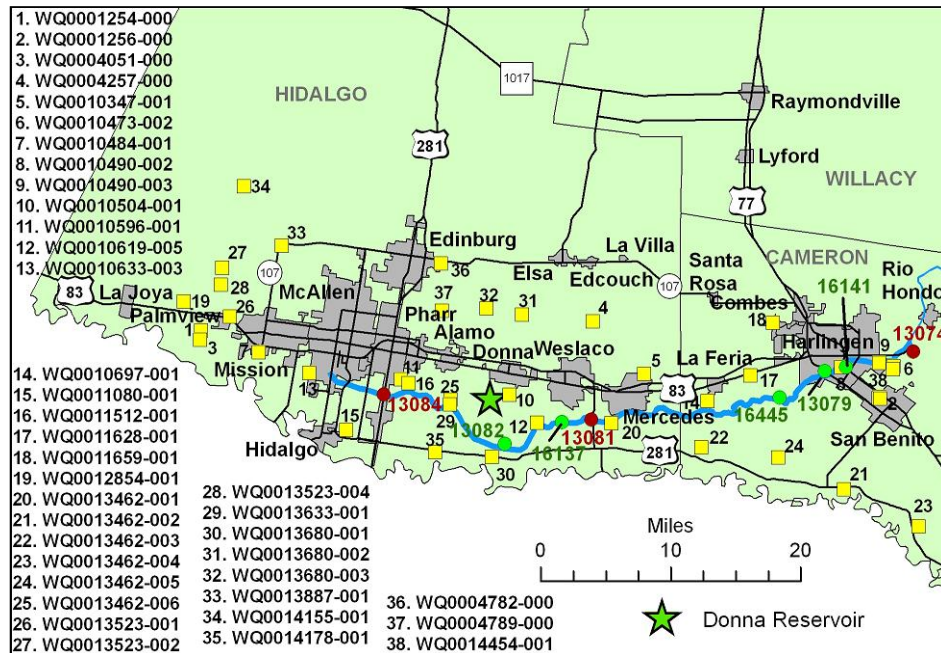
**WQ0010475-002 – City of Rio Hondo:** 400,000 gpd.

**WQ0010697-002 – City of La Feria:** 1,250,000 gpd: drainage ditch to another drainage ditch to the Arroyo Colorado Tidal. (Not plotted on map.)

**WQ0011348-002 – River Bend Resort:** 1150,000 gpd via surface irrigation of 42.8 acres of golf course. (Not plotted on map.)

**WQ0013462-008 – Military Highway WSC Lago:** 510,000 gpd: drainage ditch to Resaca Del Rancho Viejo to the Arroyo Colorado Tidal.

## 2202 – Arroyo Colorado Above Tidal



63 miles: from a point 100 m (110 yards) downstream of Cemetery Road south of Port Harlingen in Cameron County to FM 2062 in Hidalgo County.

## Use Assessments

Aquatic Life : General : Fish Consumption : Recreation

AU\_1 – lower 4 miles

AU\_2 – 11 miles upstream to 4 miles downstream of US 77

AU\_3 – 14 miles upstream to 11 miles downstream of FM 1015

AU\_4 – upper 19 miles

## 2007 Monitoring

### AU\_1: 13074 – At Low Water Bridge at Port Harlingen

Parameter	Frequency	Agency
24hr DO	4	NRA
Metals in Sediment	2	TCEQ Region 15
Organics in Sediment	2	
Conventional	4	
Bacteria	4	
Field	4	

### AU\_3: 13081 – Main Floodway In Llano Grande At Fm 1015 South Of Weslaco

Parameter	Frequency	Agency
24hr DO	4	NRA
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

### AU\_4: 13084 – At US 281 South Of Pharr

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Flow	4	
Field	4	

## Impairments

AU	Impairment / TMDL Approved
ALL	Chlordane, DDD, DDE DDT, Dieldrin, Endrin, Heptachlor, Heptachlor epoxide, HCB, Lindane, Toxaphene

AU	Impairment	#Samples	Mean	Criteria Value
1	Fecal coliform Geomean	26	557.0	200
2	Fecal coliform Geomean	45	951.0	200
3	Fecal coliform Geomean	43	2069.0	200
4	Fecal coliform Geomean	25	1007.0	200

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	Fecal coliform Single Sample	26	11	400
2	Fecal coliform Single Sample	45	31	400
3	Fecal coliform Single Sample	43	37	400
4	Fecal coliform Single Sample	25	20	400

## Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Ammonia	41	21	0.33
	Chlorophyll a	42	34	14.1
	Nitrate	39	38	1.95
	Orthophosphorus	39	32	0.37
	Total Phosphorus	42	35	0.69
2	Ammonia	97	25	0.33
	Chlorophyll a	62	36	14.1
	Nitrate	105	80	1.95
	Orthophosphorus	105	57	0.37
	Total Phosphorus	105	53	0.69
3	Ammonia	60	43	0.33
	Chlorophyll a	61	49	14.1
	Nitrate	61	61	1.95
	Orthophosphorus	61	59	0.37
	Total Phosphorus	60	54	0.69
4	Ammonia	36	34	0.33
	Chlorophyll a	38	15	14.1
	Nitrate	38	38	1.95
	Orthophosphorus	38	36	0.37
	Total Phosphorus	37	31	0.69

### Active Wastewater Permits

**WQ0001254-000 – CPL Bate Facility:** 2,000,000 gpd: Hidalgo County Drainage Ditch to the Arroyo Colorado Above Tidal.

**WQ0001256-000 – CPL La Palma Power Station:** 1,120,000 gpd: Cameron County Drainage Ditch to the Arroyo Colorado Above Tidal.

**WQ0004051-000 – Frontera Generation Ltd.:** 1,240,000 gpd: Hidalgo County Drainage Ditch to the Main Floodway to Arroyo Colorado Above Tidal.

**WQ0004257-000 – Watermill Express:** 1,000 gpd via a subsurface drainfield with an area of approximately 7,000 square feet.

**WQ0004754-000 – Military Highway WSC Progreso Water Treatment Plant:** 2,300,000 gpd: Progreso Main Canal to Llano Grande Lake - part of the Arroyo Colorado Above Tidal. (Not plotted on map.)

**WQ0004782-000 – North Alamo:** 2,000,000 gpd.

**WQ0004789-000 – North Alamo:** 2,000,000 gpd.

**WQ0010347-001 – City of Mercedes:** 2,300,000 gpd: unnamed drainage ditch to Arroyo Anacuitas to Arroyo Colorado Above Tidal.

**WQ0010473-002 – City of San Benito:** 2,160,000 gpd.

**WQ0010484-001 – City of Mission:** 9,000,000 gpd.

**WQ0010490-002 – Harlingen Water Works Facility No. 1:** 3,100,000 gpd.

**WQ0010490-003 – Harlingen Water Works Facility No. 2:** 12,200,000 gpd.

**WQ0010504-001 – City of Donna:** 2,700,000 gpd: unnamed drainage ditch to Llano Grande Lake - part of the Arroyo Colorado Above Tidal.

**WQ0010596-001 – City of Pharr.:** 5,000,000 gpd: Hidalgo County Drainage No. 1 Ditch to the Main Floodway in the Arroyo Colorado Above Tidal.

**WQ0010619-005 – City of Weslaco South Plant:** 2,000,000 gpd: unnamed drainage ditch to the South Donna Drain to Arroyo Colorado Above Tidal.

**WQ0010633-003 – City of McAllen Facility No. 2:** 10,000,000 gpd: unnamed drainage ditch to Arroyo Colorado Above Tidal.

**WQ0010697-001 – City of La Feria:** 500,000 gpd: drainage ditch to Arroyo Colorado Above Tidal.

**WQ0010972-002 – Palm Valley Estates:** 280,000 gpd via irrigation on 139.5 acres of golf course land. (Not plotted on map.)

**WQ0011080-001 – City of Hidalgo:** 280,000 gpd: Hidalgo County Drainage Ditch along HCID No. 2 Canal to Arroyo Colorado Above Tidal.

**WQ0011512-001 – City of San Juan:** 4,000,000 gpd: unnamed drainage ditch to the Main Floodway - part of the Arroyo Colorado Above Tidal.

**WQ0011628-001 – Winter Garden Park Association:** 11,000 gpd: Reba Bass Lake, a closed lake in the drainage area of the Arroyo Colorado Above Tidal.

**WQ0011659-001 – Harlingen Consolidated ISD Wilson Elementary.:** 6,000 gpd.

**WQ00112854-001 – Hidalgo County MUD #1:** 500,000 gpd.

**WQ0013462-001 – Military Highway WSC Progreso:** 400,000 gpd: unnamed drainage ditch to an International Boundary and Water Commission canal to the Arroyo Colorado Above Tidal.

**WQ0013462-002 – Military Highway WSC La Paloma:** 210,000 gpd via flood irrigation of 59 acres of non public access grassland.

**WQ0013462-003 – Military Highway WSC Santa Maria:** 230,000 gpd via flood irrigation of 59 acres of land.

**WQ0013462-004 – Military Highway WSC San Pedro:** 160,000 gpd via flood irrigation of 56 acres of non public access grassland.

**WQ0013462-005 – Military Highway WSC Los Indios:** 135,000 gpd via flood irrigation of 49 acres of non public access grassland.

**WQ0013462-006 – Military Highway WSC South Alamo:** 515,000 gpd.

**WQ0013523-001 – La Joya ISD La Joya Elementary:** 20,000 gpd via a subsurface pressure system with a minimum area of 1.36 acres.

**WQ0013523-002 – La Joya ISD Chapa Elementary:** 15,000 gpd via a subsurface pressure system with a minimum area of 0.96 acres.

**WQ0013523-003 – La Joya ISD Kika Dela Garza Elementary:** 15,000 gpd via a subsurface pressure system with a minimum area of 40,000 square feet. (Not plotted on map.)

**WQ0013523-004 – La Joya ISD 11<sup>th</sup> and 12<sup>th</sup> Elementary:** 15,000 gpd via a subsurface pressure system with a minimum area of 1.44 acres.

**WQ0013523-010 – La Joya ISD:** 20,000 gpd via a subsurface low pressure dosed drainfields with a minimum area of 63,000 square feet. (Proposed, not plotted on map.)

**WQ0013523-011 – La Joya ISD:** 12,000 gpd via a 8 pressure dosed fields. (Proposed, not plotted on map.)

**WQ0013633-001 – City of Alamo:** 2,000,000 gpd: Hidalgo County Drainage Ditch #2 to the Arroyo Colorado Above Tidal.

**WQ0013680-001 – Donna ISD Runn Elementary:** 17,000 gpd: 3-inch force main into a drainage ditch to Donna Irrigation District Drainage Ditch to the Arroyo Colorado Above Tidal.

**WQ0013680-002 – Donna ISD Munoz Elementary:** 2,500 gpd via subsurface drainfields with a minimum area of 47,600 square feet.

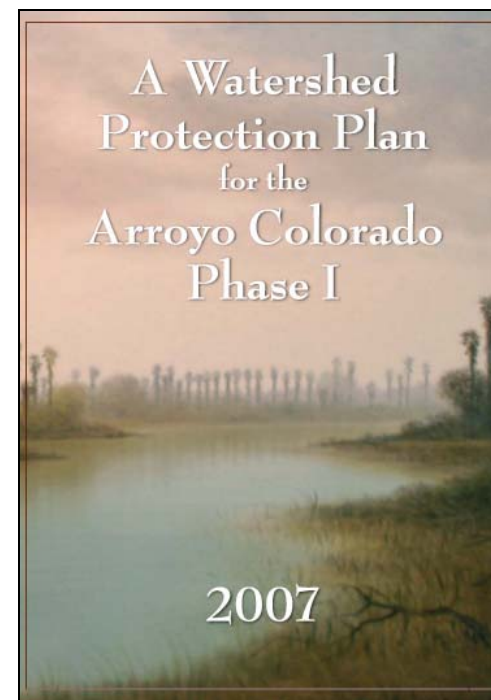
**WQ0013680-003 – Donna ISD Garza Elementary:** 12,500 gpd via subsurface drainfields with a minimum area of 71,400 square feet.

**WQ0013887-001 – Mission ISD Mission Elementary:** 3,000 gpd via subsurface drainfields.

**WQ0014155-001 – US Department of Agriculture Moore Field WWTP:** 3,300 gpd via subsurface drainfields.

**WQ0014178-001 – US Fish and Wildlife Service Santa Ana National Wildlife Refuge:** 1,500 gpd via evaporation of 1.7 acres.

**WQ0014454-001 – City of San Benito:** 3,750,000 gpd.



[http://www.arroyocolorado.org/documents/ACWPP\\_final\\_LR\\_200701101.pdf](http://www.arroyocolorado.org/documents/ACWPP_final_LR_200701101.pdf)

### **2202A – Donna Reservoir**

333 acres: off-channel irrigation reservoir pumped from Rio Grande near the City of Donna in Hidalgo County.

### **Use Assessments**

Fish Consumption : Public Water Supply

AU\_1 – entire segment

### **2007 Monitoring**

No CRP or SQWM monitoring is conducted in Donna Reservoir.

### **Impairments**

AU	Impairment / TMDL Approved
1	PCBs

### **Concerns**

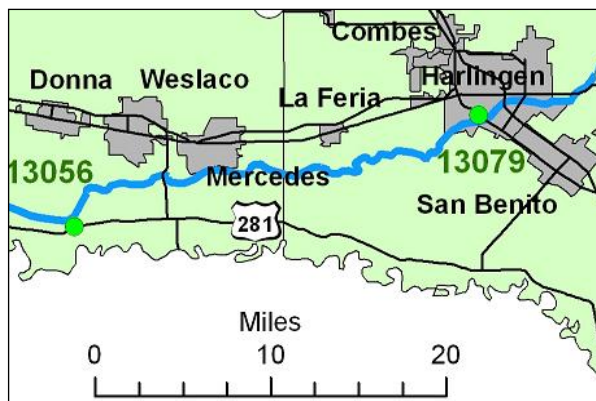
There are no concerns in this segment.

### **Active Wastewater Permits**

There are no active wastewater permits that discharge into this segment.

## 2202B – Unnamed Drainage Ditch Tributary to S. Arroyo

Colorado



0.8 miles

### Use Assessments

Aquatic Life : General :  
Recreation  
AU\_1 – entire segment

### 2007 Monitoring

No CRP or SQWM  
monitoring is conducted on  
this segment.

### Impairments

There are no impairments in this segment.

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Ammonia	19	12	0.33
	Chlorophyll a	19	11	14.1

### Concerns: Near Non-Attainment

AU	Concern	#Samples	Mean	Criteria Value
1	Fecal coliform Geomean	6	988.0	200

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Fecal coliform Single Sample	6	4	400

### Active Wastewater Permits

There are no active wastewater permits that discharge into this segment.

## 2202C – Unnamed Drainage Ditch Tributary to S. Arroyo

Colorado

1.1 miles

### 2007 Monitoring

No CRP or SQWM monitoring is conducted on Donna Reservoir.

### Use Assessments

Aquatic Life : General : Recreation  
AU\_1 – entire segment

### Impairments

There are no impairments in this segment.

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Ammonia	19	14	0.33

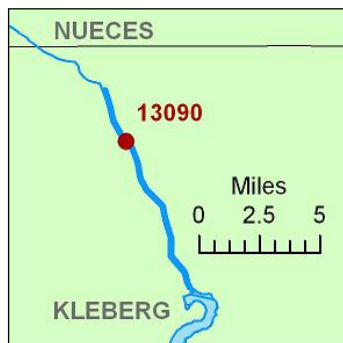
### Concerns: Near Non-Attainment

AU	Concern	#Samples	Mean	Criteria Value
1	Fecal coliform Geomean	6	295.0	200

### Active Wastewater Permits

There are no active wastewater permits that discharge into this segment.

## 2203 – Petronila Creek Tidal



14 miles: from the confluence of Chiltipin Creek in Kleberg County to a point 1 km (0.6 miles) upstream of private road crossing near Laureles Ranch in Kleberg County.

### Use Assessments

Aquatic Life : General : Recreation  
AU\_1 – entire segment

### 2007 Monitoring

#### 13090 – 1.2 2 Km Upstream of the Confluence With Tunas Creek

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### Impairments

There are no impairments in this segment.

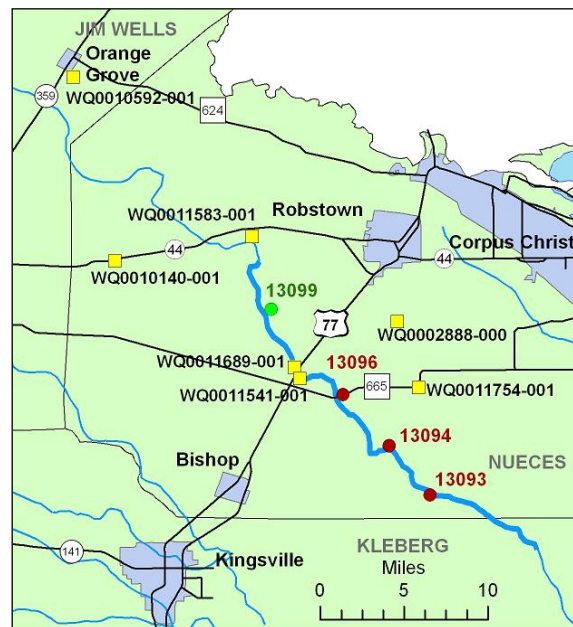
### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Chlorophyll a	10	5	21

### Active Wastewater Permits

There are no active wastewater permits that discharge in this segment.

## 2204 – Petronila Creek Above Tidal



44 miles: from a point 1 km (0.6 miles) upstream of private road crossing near Laureles Ranch in Kleberg County to the confluence of Agua Dulce and Banquete Creeks in Nueces County.

### Use Assessments

Aquatic Life : Fish Consumption  
: General : Recreation  
AU\_1 – lower 25 miles  
AU\_2 – upper 19 miles

### 2007 Monitoring

#### AU\_1: Lower 25 Miles

##### 13094 – At FM 892 Southeast of Driscoll

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Flow	4	
Field	4	

##### 13096 – At FM 665 East of Driscoll

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Flow	4	
Field	4	

### Continuous Monitoring

#### 13093 - At FM 70 East of Bishop

### Use Assessments

Aquatic Life : Contact Recreation : General : Fish Consumption



## Impairments

AU	Impairment	#Samples	Mean	Criteria Value
1	Chloride	20	5696.0	1500
	Sulfate	20	987.0	500
	TDS	20	12,604.0	4000
2	Chloride	20	5696.0	1500
	Sulfate	20	987.0	500
	TDS	20	12,604.0	4000

TMDLs have been completed and adopted by TCEQ on January 10, 2007 and approved by EPS on March 14, 2007. Based on the analysis of the load allocation scenario, a TMDL allocation plan to meet the respective water quality standard goals requires:

- 100% reduction of loading from abandoned brine pits, and;
- 88% reduction of loading from the produced water.
- Overall, the loading from nonpoint sources of chloride and TDS must be reduced by 88% and the loading of sulfate must be reduced by 78% to meet the goal.

More information can be found at [http://www.tceq.org/implementation/water/tmdl/32-colorado\\_petronila.html](http://www.tceq.org/implementation/water/tmdl/32-colorado_petronila.html).

Several implementation activities have already been initiated during the later phase of the TMDL project to achieve pollutant reductions.

- 1) The EPA has awarded a nonpoint source grant through the TCEQ to the RRC for the investigation of the nature and extent of known salinity contamination thought to be contributing to water quality problems in Petronila Creek, the development of remediation and/or abatement alternatives or BMPs, and the implementation of the BMPs.
- 2) The CBCOG, Nueces County, and Texas Watch will coordinate activities targeted at reducing illegal dumping in the watershed, possibly provide alternative collection sites, and develop education outreach and media exposure.
- 3) The TCEQ Continuous Water Quality Network and NRA have deployed a continuous monitor to measure specific conductivity hourly at water quality station 13093, Petronila Creek at FM 70. A link to continuous water quality data will be provided to the RRC to assist in enforcing oil and gas well compliance in the watershed.

Preparation of the implementation plan (I-Plan) for Petronila Creek began upon commission adoption of the TMDL. The I-Plan will detail any activities such as mitigation measures, permit actions, best management practices, and additional sampling and monitoring determined to be necessary to restore water quality. Additional sampling at appropriate locations and frequencies will allow tracking and evaluation of progress toward the targeted and primary endpoints. These steps will provide reasonable assurances that the regulatory and voluntary activities necessary to achieve the pollutant reductions will be implemented.

## Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Chlorophyll a	20	7	14.1
	Orthophosphorus	20	5	0.37

### Active Wastewater Permits

**WQ0002888-000 – US Ecology Texas:** storm water discharge at an intermittent and flow variable rate via four outfalls: a Nueces County Drainage Ditch to Petronila Creek Above Tidal.

**WQ0010140-001 – City of Agua Dulce:** 160,000 gpd: drainage ditch to Agua Dulce Creek to Petronila Creek Above Tidal.

**WQ0010592-001 – City of Orange Grove:** 200,000 gpd: Leon Creek to Quinta Creek to Agua Dulce Creek to Petronila Creek Above Tidal.

**WQ0011541-001 – City of Driscoll:** 100,000 gpd.

**WQ0011583-001 – Nueces County WCID No. 5:** 100,000 gpd: Banquete Creek to Petronila Creek Above Tidal.

**WQ0011689-001 – Coastal Bend Youth City:** 15,000 gpd: unnamed ditch to Petronila Creek Above Tidal.

**WQ0011754-001 – Bishop Consolidated Independent School District (ISD):** 8,000 gpd: unnamed ditch to Petronila Creek Above Tidal.



Continuous Water Quality Monitoring Station on Petronila Creek Above Tidal

## 2204A – Unnamed Drainage Ditch Tributary (A) to Petronila Creek



3.9 miles: from the confluence with Petronila Creek to a point 3.9 miles upstream at US 77.

This segment was designated during the 2006 Assessment. There are no routine monitoring stations, stream flow gauges, or WWTP outfalls on this segment.

### Use Assessments

Aquatic Life

AU\_1 – entire segment

### Impairments and Concerns

There are no impairments or concerns in this segment.

## 2204B – Unnamed Drainage Ditch Tributary (B) to Petronila Creek

9 miles: from the confluence with Petronila Creek at FM 70 to the crossing at FM 665.

This segment was designated during the 2006 Assessment. There are no routine monitoring stations, stream flow gauges, or WWTP outfalls on this segment.

### Use Assessments

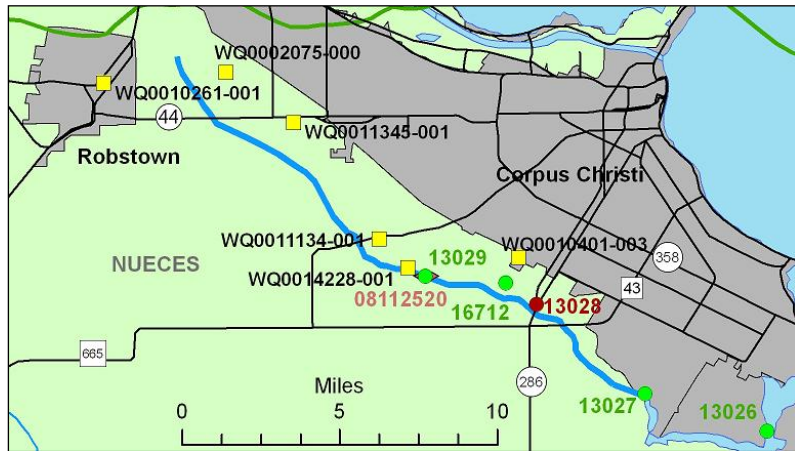
Aquatic Life

AU\_1 – entire segment

### Impairments and Concerns

There are no impairments or concerns in this segment.

## 2485A – Oso Creek



29.5 miles: from the confluence with Oso Bay in southern Corpus Christi to a point 3 miles upstream of SH 44, west of Corpus Christi in Nueces County.

### Use Assessments

Aquatic Life : General : Recreation  
AU\_1: entire segment

### 2007 Monitoring

13028 – At SH 286 South of Corpus Christi

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

### Impairments

AU	Impairmen	#Samples	Mean	Criteria Value
1	Enterococcus Geomean	35	216.0	35
	Fecal coliform Geomean	31	422.0	200

AU	Impairmen	#Samples	#Exceedences	Criteria Value
1	Enterococcus Single Sample	35	22	89
	Fecal coliform Single Sample	31	15	400

The Oso Bay / Oso Creek TMDL has conducted studies to determine the source of the bacteria. Initial reports indicate that most of the loading is coming from the agricultural land, but the source of the bacteria on that land has yet to be determined. In general, the wastewater treatment plants do not appear to be a significant source.

The TMDL will be completed and work on the I-Plan has begun. One consideration is to investigate reclassifying the upper reaches of the creek and the area of the bay near the Hans and Pat Suter Park from primary contact recreation (where there the possibility to

ingest water, such as swimming) to secondary contact recreation (such as kayaking) to better reflect actual activities, or lack of activities.

The CBCOG, Nueces County, and Texas Watch will coordinate activities targeted at reducing illegal dumping in the watershed and promote public awareness concerning bacteria sources with the development of education and outreach materials.

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Chlorophyll a	31	16	21
	Nitrate	17	13	1.1
	Total Phosphorus	35	34	0.66

### Active Wastewater Permits

WQ0002075-000 – Equistar Chemicals LP

WQ0010261-001 – City of Robstown: 3,000,000 gpd: unnamed ditch to Oso Creek.

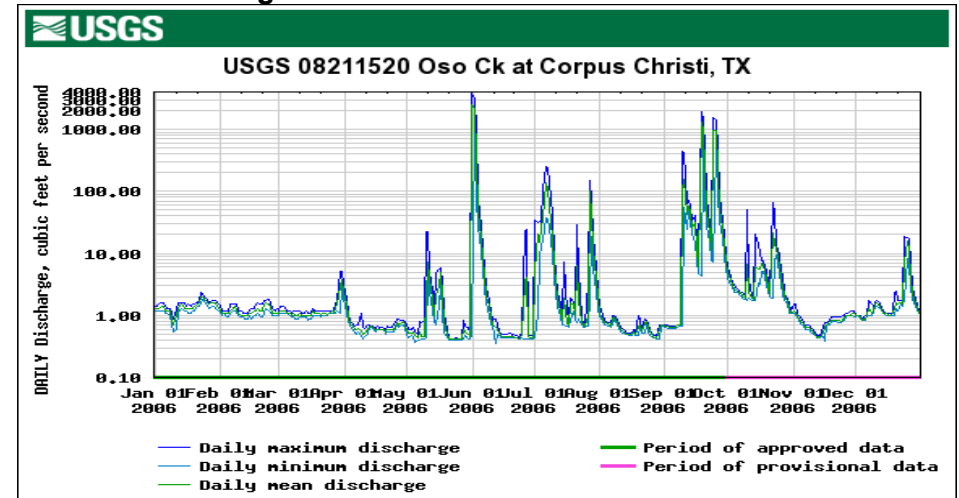
WQ0010401-003 – City of Corpus Christi – Greenwood Plant

WQ0011134-001 – Corpus Christi Peoples Baptist Church: 20,000 gpd.

WQ0011345-001 – Texas A&M University System Agricultural Research and Extension Center: 1,500 gpd.

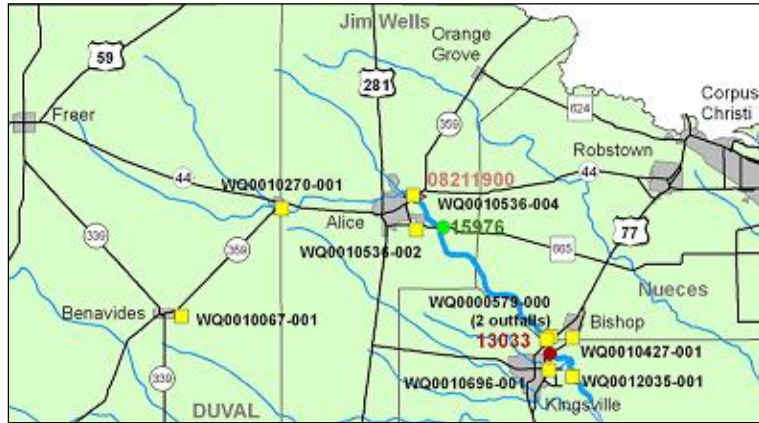
WQ0014228-001 – Tennessee Pipeline Construction (Cudahy Field): 60,000 gpd.

### Stream Flow Gauges





## 2492A – San Fernando Creek



45.6 miles:  
from the  
confluence  
with the Cayo  
del Grullo arm  
of Baffin Bay  
to just east of  
the Nueces  
and Jim Wells  
county line.

### Use Assessments

Aquatic Life : General : Recreation  
AU\_1 – entire segment

### 2007 Monitoring

13033 – At US 77 Bypass Bridge at Kingsville

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Flow	4	
Field	4	

### Impairments

AU	Impairmen	#Samples	Mean	Criteria Value
1	Enterococcus Geomean	12	150.0	35

AU	Impairmen	#Samples	#Exceedences	Criteria Value
1	Enterococcus Single Sample	12	8	89

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Nitrate	20	19	1.1
	Total Phosphorus	19	18	0.66

### Active Wastewater Permits

WQ0000579-000 – Ticona Polymers, Inc.: 3,500,000 gpd

WQ0004819-000 – SNBL USA Ltd.: 35,000 gpd via evaporation. (Not plotted on map.)

WQ0010067-001 – Duval County Conservation and Reclamation District: 250,000 gpd: Santa Gertrudis Creek to San Fernando Creek.

WQ0010270-001 – San Diego MUD: 750,000 gpd: San Diego Creek to San Fernando Creek.

WQ0010427-001 – City of Bishop: 320,000 gpd: Carreta Creek to San Fernando Creek.

WQ0010536-002 – City of Alice: 2,600,000 gpd: Lattas Creek to San Fernando Creek.

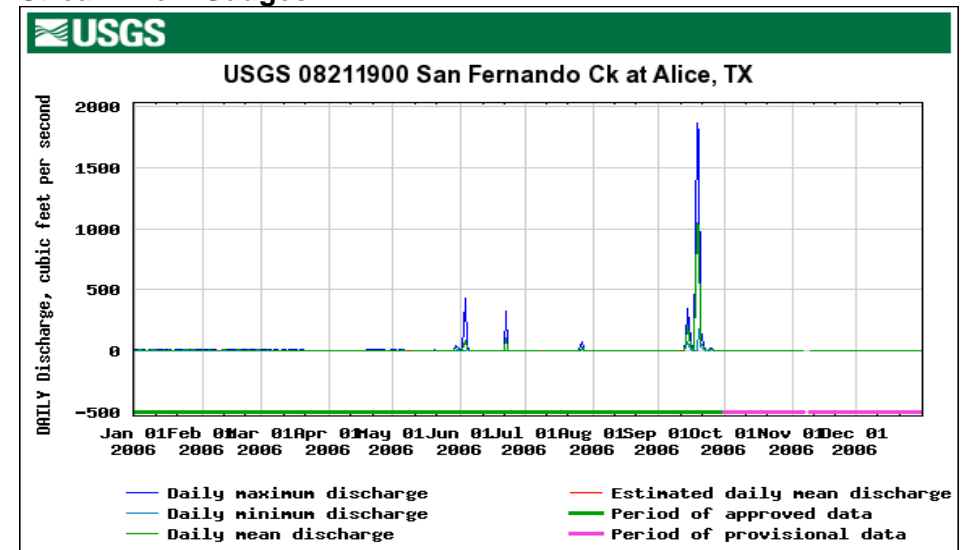
WQ0010536-004 – City of Alice: 2,020,000 gpd. Also authorizes the disposal of treated domestic wastewater via irrigation of a total of 164 acres which include the municipal golf course, softball fields, and park acreage.

WQ0010696-001 – City of Kingsville – Plant 1: 3,000,000 gpd: Tranquitas Creek to San Fernando Creek.

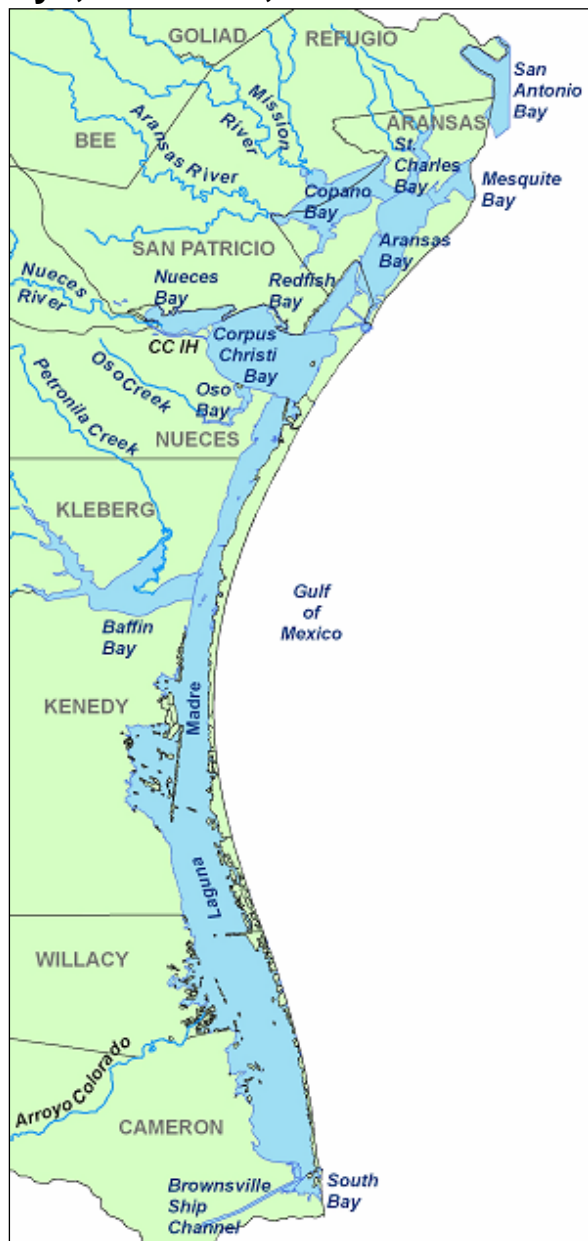
WQ0010696-004 – City of Kingsville (Not plotted on Map)

WQ0012035-001 – US Department of the Navy (Kingsville Naval Air Station (NAS)): 400,000 gpd.

### Stream Flow Gauges



## Bays, Estuaries, and Gulf of Mexico



There are 16 bay segments and the Gulf of Mexico segment in the basin. Water quality monitoring for FY 2007 includes 49 sites with at least one site on every segment. All of the segments will be discussed in detail in the following sections.

**Table 7. Assessment Summary for Bays, Estuaries, and Gulf of Mexico**

Segment	Description	Assessment Unit	Concerns	Impairments
2462	San Antonio Bay / Hynes Bay / Guadalupe Bay	Entire segment	Nitrate Total phosphorus	
2472	Copano Bay / Port Bay / Mission Bay	Entire segment		Bacteria in oyster waters
2482	Nueces Bay	Entire segment		Zinc in oyster tissue****
2483	Redfish Bay	Entire segment		Bacteria in oyster waters**
2484	Corpus Christi Inner Harbor	Entire segment	Ammonia	
2485	Oso Bay	Upper Bay (Holly Road to County Rd 24)	Chlorophyll a	Depressed DO Bacteria in oyster waters**
		Middle Bay (SH 358 to Holly Road)	Chlorophyll a Depressed DO (Grab)	Depressed DO (24 hr average & 24 hr minimum) Bacteria Bacteria in oyster waters**
		Lower portion of bay, (Ocean Drive to SH 358)	Bacteria* Chlorophyll a	Depressed DO Bacteria in oyster waters**
2491	Laguna Madre	Upper portion of bay north of Arroyo Colorado confluence		Depressed DO Bacteria in oyster waters**
		Area adjacent to Arroyo Colorado confluence	Chlorophyll a	Depressed DO Bacteria in oyster waters**
2492	Baffin Bay	Entire segment	Chlorophyll a	
2494A	Port Isabel Fishing Harbor	Entire segment	Bacteria* Nitrate	Depressed DO **
2501	Gulf of Mexico	Port Aransas area		Mercury in king mackerel > 43 inches
		Area between Port Aransas and Port Mansfield		Mercury in king mackerel > 43 inches

\*Near non-attainment

\*\*New listing

\*\*\*Carried forward from 2004 Assessment

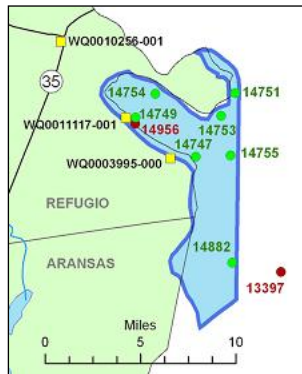
\*\*\*\*Category 4a – TMDL completed and approved by EPA



**Table 8. FY 2007 Monitoring Stations for Bays, Estuaries, and Gulf of Mexico**

Segment	Station ID	Station Description
2462	13397	San Antonio Bay Intracoastal Canal at Buoy C-17
	14956	Hynes Bay At Austwell at Texas Parks And Wildlife Public Boat Ramp
2463	13400	Mesquite Bay South of Intracoastal Waterway Marker 13
2471	13402	Aransas Bay Intersection of Intracoastal Canal and Lydia Ann Channel South of Rockport
	16232	Aransas Bay At Broadway and the Inlet Canal to Canoe Lake in Rockport
	16492	Aransas Bay In Lydia Ann Channel Directly West of Aransas Light House
2472	12945	Copano Bay At FM 136 Bridge South of Bayside
	13404	Copano Bay West Side of Fishing Pier, Alongside SH 35
	13405	Copano Bay At FM 881 West of Rockport
	14783	Copano Bay 1 Mile East of Bayside
	17724	Copano Bay Approx. 3.5 Miles West of Copano Bay Fishing Pier Boat Ramp at South End of Copano Bay Causeway (SH 35)
2473	13406	St. Charles Bay Northeast of Goose Island State Park
2481	13407	Corpus Christi Bay At Corpus Christi Channel Marker 62
	13409	Corpus Christi Bay La Quinta Channel Marker 16
	13410	Corpus Christi Bay Near Corpus Christi Ship Channel Marker 86
	13411	Corpus Christi Bay ½ Mile off Doddridge Road
	14355	Corpus Christi Bay Near Shamrock Point
	17791	Corpus Christi Bay Approx. 3.1 Miles Southwest of Shamrock Point on Shamrock Island
2482	13420	Nueces Bay US 181 Bridge at Causeway (North Side)
	13421	Nueces Bay US 181 Bridge At Causeway (South Side)
	13422	Nueces Bay ½ Mile From South Shore at East Overhead Power Line
	13423	Nueces Bay 1 Mile From North Shore at East Overhead Power Line
	13424	Nueces Bay ½ Mile From North Shore at West Overhead Powerline at the 11th Pair Of Pylons From the North Shore
	13425	Nueces Bay Near Whites Point
2483	13426	Redfish Bay SH 361 at 3rd Bridge Between Aransas Pass and Port Aransas
2483A	18848	Conn Brown Harbor Mid Harbor 50 m Northeast of the Intersection of Huff St. and East Maddox Ave. in Aransas Pass
2484	13430	Corpus Christi Inner Harbor US 181 Bridge At Causeway (South Side)
	13432	Corpus Christi Inner Harbor Near Navigation Blvd. Draw Bridge
	13436	Corpus Christi Inner Harbor Mid- Channel, Adjacent to the Saber Refining Co Barge Dock
	13439	Corpus Christi Inner Harbor In Viola Turning Basin
2485	13440	Oso Bay At Padre Island Drive (SH 358)
2491	13443	Laguna Madre South of the Intersection of GIWW and Padre Island Causeway
	13444	Laguna Madre At Intersection of GIWW at Baffin Bay Marker
	13445	Laguna Madre At GIWW Near Bird Island
	13446	Laguna Madre GIWW at Marker 129 East of Port Isabel
	13447	Intersection of GIWW and Arroyo Colorado
	13448	Laguna Madre Intersection of GIWW and Port Mansfield Channel
	13449	Laguna Madre Channel Marker C-225A North of Port Mansfield
	14870	Laguna Madre 200 yds. Off Laguna Vista Shoreline
2492	13450	Baffin Bay At Channel Marker 14
	13452	Baffin Bay At Channel Marker 36
2493	13459	South Bay Near Ship Channel Marker 1
	14865	South Bay Middle of Bay
2494	13460	Brownsville Ship Channel Near Ship Channel Marker 35 (Black Buoy)
	14871	Brownsville Ship Channel At East End of Turning Basin
	14875	Brownsville Ship Channel At Entrance to San Martin Lake
2494A	13285	Port Isabel Fishing Harbor At Hwy 100 Bridge
2501	13468	Gulf of Mexico At Port Aransas Near End of South Jetty Near Marker R-7
	13470	Gulf of Mexico At Port Isabel, Just Beyond Jetties at Bell Buoy

## 2462 – San Antonio Bay / Hynes Bay / Guadalupe Bay



119.5 square miles. (Only the portion of the bay within the San Antonio – Nueces Coastal Basin is shown.)

### Use Assessments

Aquatic Life : Fish Consumption : General : Oyster Waters : Recreation  
AU\_1 – entire segment

### 2007 Monitoring

#### 13397 – Intracoastal Canal at Buoy C-17

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

#### 14956 – At Austwell at Texas Parks And Wildlife Public Boat Ramp

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

### Impairments

Guadalupe Bay is listed under the DSHS Shellfishing Restrictions.

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Nitrate	32	9	0.17
	Total Phosphorus	33	9	0.21

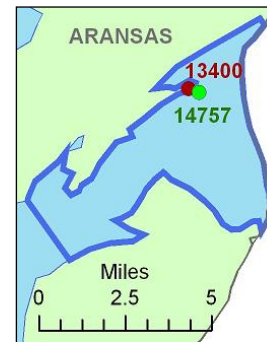
### Active Wastewater Permits

WQ0003995-000 – Austwell Aqua Farm, Inc: 3,700,000 gpd of aquaculture pond effluent.

WQ0010256-001 – Refugio WCID No. 1

WQ0011117-001 – City of Austwell

## 2463 – Mesquite Bay



12.6 square miles. (Only the portion of the bay within the San Antonio – Nueces Coastal Basin is shown.)

### Use Assessments

Aquatic Life : General : Oyster Waters : Recreation  
AU\_1 – entire segment

### 2007 Monitoring

#### 13400 – South of Intracoastal Waterway Marker 13

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### Impairments and Concerns

There are no impairments or concerns in this segment.

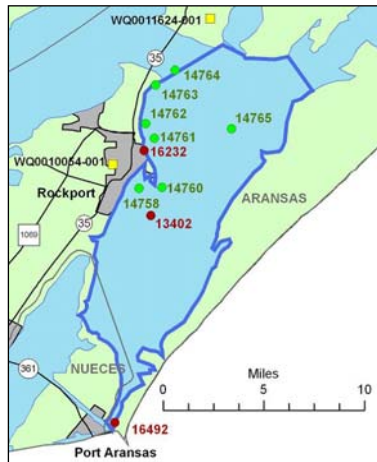
### Active Wastewater Permits

There are no active wastewater permits in this segment.



Whooping Cranes

## 2471 – Aransas Bay



87.8 square miles.

### Use Assessments

Aquatic Life : Fish Consumption : General : Oyster Waters : Recreation  
AU\_1 – entire segment

### 2007 Monitoring

13402 – Intersection of Intracoastal Canal and Lydia Ann Channel South of Rockport

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### 16232 – At Broadway and the Inlet Canal to Canoe Lake in Rockport

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### 16492 – In Lydia Ann Channel Directly West of Aransas Light House

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### Impairments and Concerns

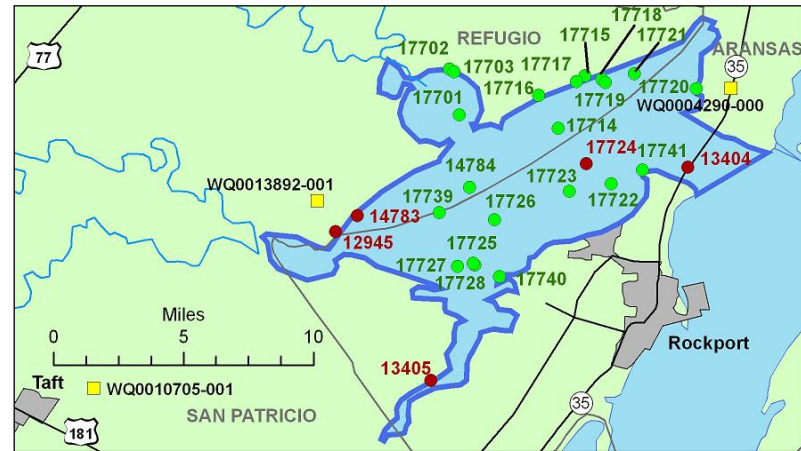
There are no impairments or concerns in this segment.

### Active Wastewater Permits

**WQ0010054-001 – City of Rockport:** 2,500,000 gpd: Tulle Ditch to Tulle Lake to an unnamed ditch to Little Bay to Aransas Bay. Also authorizes the disposal of treated domestic wastewater via irrigation of 200 acres.

**WQ0011624-001 – Aransas County MUD #1:** 263,000 gpd.

## 2472 – Copano Bay / Port Bay / Mission Bay



65.2 square miles.

### Use Assessments

Aquatic Life : General : Oyster Waters : Recreation  
AU\_1 – entire segment

### 2007 Monitoring

12945 – At FM 136 Bridge South of Bayside

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

13404 – West Side of Fishing Pier, Alongside SH 35

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

13405 – At FM 188 West of Rockport

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

14783 – 1 Mile East of Bayside

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	



**17724 – Approx. 3.5 Miles West of Copano Bay Fishing Pier Boat Ramp at South End of Copano Bay Causeway (SH 35)**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### Impairments

Mission Bay, Aransas River arm, Port Bay, and eastern shoreline are listed under the DSHS Shellfishing Restrictions.

A TMDL is currently underway to address bacteria in oyster-harvesting waters in Copano Bay. The tidal segments of the Aransas and Mission Rivers are included in the study. Initial studies indicate that livestock may have the greatest impact on bacteria concentrations in Copano Bay. The study also determined the load reductions necessary to meet water quality standards. Recommendations include:

- More monitoring data should be collected along the Aransas and Mission tidal segments
- More monitoring data should be collected at WWTPs in the watershed
- Fecal coliform loadings should be converted into enterococci loadings
- More monitoring of enterococci should be implemented on the tidal segments

More information is available at

<http://www.tceq.state.tx.us/implementation/water/tmdl/42-copano.html>.

In support of the TMDL, NRA has contracted with TSSWCB to conduct event-based monitoring in the Copano Watershed, as described on Page 36 of this report.

### Concerns

There are no concerns in this segment.

### Active Wastewater Permits

**WQ0004290-000 – Holiday Beach WSC:** 120,000 gpd: Taft Drainage Ditch to Mud Flats to Copano Bay.

**WQ0004788-000 – Sherwin Alumina Inc.** Sludge on 3149.6 acres. Not plotted on map.

**WQ0010705-001 – City of Taft:** 900,000 gpd: four inch pipe to a tidal ditch to Copano Bay.

**WQ0011228-001 – Aransas County Airport:** 3,600 gpd via evaporation. Not plotted on map.

**WQ0013892-001 – Town of Bayside:** 30,000 gpd (Replaced WQ0003487-000)

## 2473 – St. Charles Bay

13.1 square miles.

### Use Assessments

Aquatic Life : Contact Recreation : General : Fish  
Consumption : Oyster Waters  
AU\_1 – entire segment

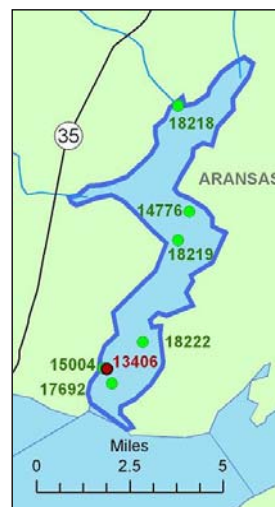
### 2007 Monitoring

#### 13406 – Northeast of Goose Island State Park

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

### Impairments and Concerns

There are no impairments or concerns in this segment.



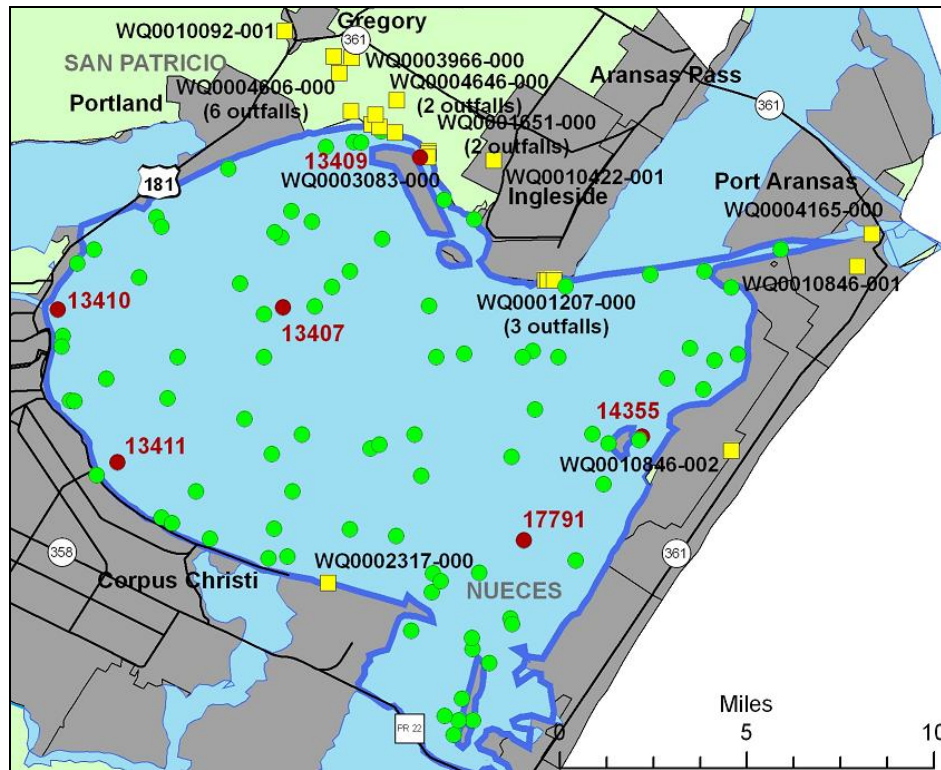
### Active Wastewater Permits

There are no active wastewater permits in this segment.



**Brown Pelican**

## 2481 – Corpus Christi Bay



123.1 square miles.

### Use Assessments

Aquatic Life : Fish Consumption : General : Oyster Waters: Recreation :

AU\_1 – entire segment

### 2007 Monitoring

13407 – At Corpus Christi Channel Marker 62

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### La Quinta Channel Near Channel Marker 16

13409 – La Quinta Channel Marker 16

Parameter	Frequency	Agency
Metals in Water	2	TCEQ Region 14
Metals in Sediment	2	
Organics in Sediment	2	
Conventional	4	
Bacteria	4	
Field	4	

### Corpus Christi Channel Near Channel Marker 86

13410 – Near Corpus Christi Ship Channel Marker 86

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### Off Doddridge Road

13411 – ½ Mile off Doddridge Road

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### Near Shamrock Cove

14355 – Near Shamrock Point

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### Remainder of Bay

17791 – Approx. 3.1 Miles Southwest of Shamrock Point on Shamrock Island

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### Impairments and Concerns

There are no impairments or concerns in this segment.



## Active Wastewater Permits

**WQ0001207-000 – Koch Pipeline Company, LP:** storm water runoff associated with industrial activity via Outfalls 001, 002, 003, and 004: roadside ditch to Corpus Christi Bay.

**WQ0001651-000 – E. I. Du Pont De Nemours & Co.:** 4,610,000 gpd via Outfall 001: pipe with a submerged outlet into a barge slip on La Quinta Channel to Corpus Christi Bay; and storm water runoff on an intermittent and flow variable basis via Outfall 002.

**WQ0002317-000 – US Department of the Navy Corpus Christi NAS:** 1,500,000 gpd.

**WQ0003083-000 – Occidental Chemical Corporation:** 2,240,000 gpd: submerged pipeline in La Quinta Channel.

**WQ0003966-000 – Reynolds Metal Company:** 1,000 metric tons per year on 190 acres of closed bauxite tailing beds.

**WQ0004165-000 – Texas A&M University System:** 10,000 gpd via Outfall 001; 30,000 gpd via Outfall 002. (Not plotted on map).

**WQ0004606-000 – Reynolds Metals Co.**

**WQ0004646-000 – Sherwin Alumina LP:** stormwater, intermittent and flow variable, 2 outfalls

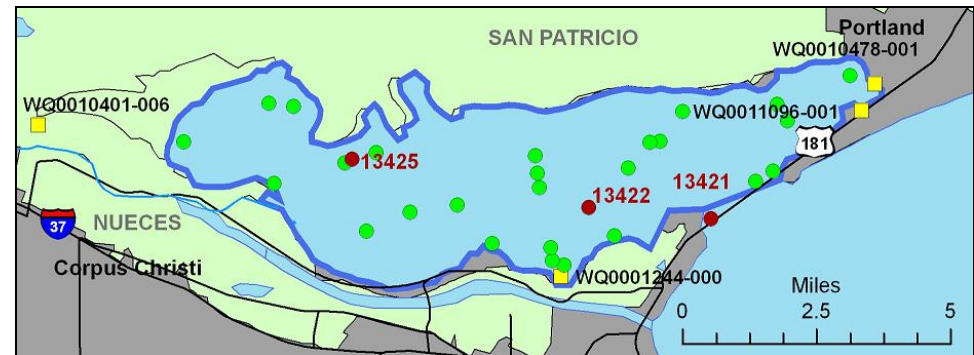
**WQ0010092-001 – City of Gregory:** 320,000 gpd: drainage ditch to Green Lake to Corpus Christi Bay.

**WQ0010422-001 – City of Ingleside**

**WQ0010846-001 – Nueces Co. WCID No. 4 Mustang Island North Plant:** 1,880,000 gpd: mud flat to Corpus Christi Bay.

**WQ0010846-002 – Nueces Co. WCID No. 4 Mustang Island South Plant:** 1,200,000 gpd: through 350 feet of diffuser pipe to a mud flats to Shamrock Cove to Corpus Christi Bay.

## 2482 – Nueces Bay



28.9 square miles.

## Use Assessments

Aquatic Life : Fish Consumption : General : Oyster Waters : Recreation  
AU\_1 – entire segment

## 2007 Monitoring

### 13421 – US 181 Bridge At Causeway (South Side)

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### 13422 – ½ Mile From South Shore at East Overhead Power Line

Parameter	Frequency	Agency
Metals in Water	2	TCEQ Region 14
Conventional	4	
Bacteria	4	
Field	4	

### 13425 – Near Whites Point

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

## Impairments

The entire bay is listed under the DSHS Shellfishing Restrictions.

A TMDL for zinc in oyster tissue has been completed. It was adopted by TCEQ on November 1, 2006 and approved by EPA on December 15, 2006.

Based on data presented in this TMDL, ambient zinc concentrations in Nueces Bay are well below criteria established to protect the designated oyster use. In addition, zinc concentrations in the water column in the Corpus Christi Inn Harbor (CCIH) do not represent a significant source of zinc which could result in exceedence of the 29 ug/L criteria necessary to achieve the target health-based assessment comparison (HAC) value. Discharges from the Nueces Bay Power Station should not contribute to an impairment as long as ambient zinc levels in the CCIH are maintained below this established criteria.

More information on the TMDL is available at

<http://www.tceq.org/implementation/water/tmdl/21-nuecesbay.html>.

## Concerns

There are no concerns in this segment.

## Active Wastewater Permits

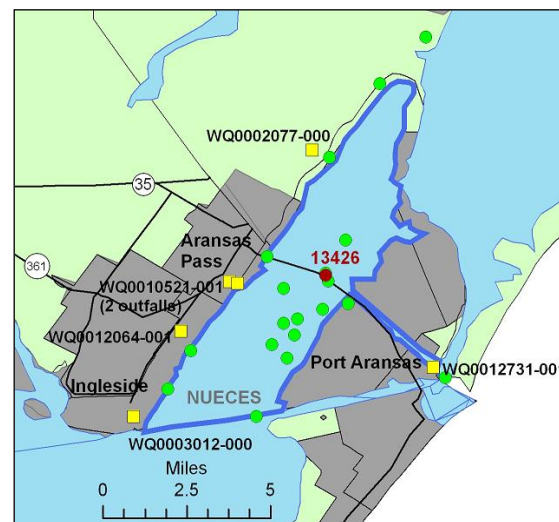
**WQ0001244-000 – Nueces Bay WLE LP:** 500,000,000 gpd (once through cooling water and previously monitored effluent.)

**WQ0010401-006 – City of Corpus Christi (Allison Plant):** 5,000,000 gpd via Outfalls 001 (Nueces River Tidal) and 002.

**WQ0010478-001 – City of Portland WWTP:** 2,500,000 gpd: drainage ditch to Nueces Bay.

**WQ0011096-001 – Sublight Enterprises, Inc. (Portland Inn):** 9,000 gpd

## 2483 – Redfish Bay



28.8 square miles:

## Use Assessments

Aquatic Life : Fish Consumption :

General : Oyster Waters :

Recreation

AU\_1 – entire segment

## 2007 Monitoring

**13426 – SH 361 at 3rd Bridge Between Aransas Pass and Port Aransas**

Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

## Impairments

The entire bay is listed under the DSHS Shellfishing Restrictions.

## Concerns

There are no concerns in this segment.

## Active Wastewater Permits

**WQ0002077-000 – Degussa Engineered Carbons:** intermittent and flow variable.

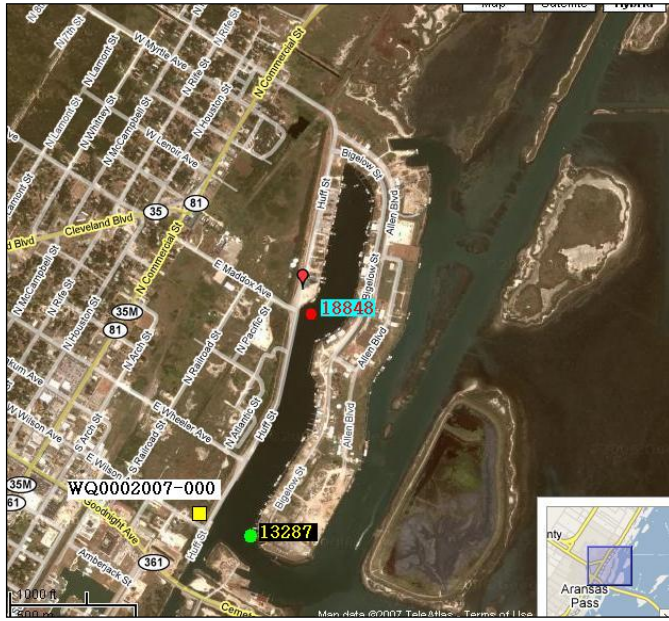
**WQ0003012-000 – Aker Gulf Marine:** 4,000 gpd

**WQ0010521-001 – City of Aransas Pass**

**WQ0012064-001 –Gulf Marine Fabricators:** 12,000 gpd: via pipe to a drainage ditch to Redfish Bay.

**WQ0012731-001 – Martin Operating Partnership, LP:** 3,800 gpd

## 2483A – Conn Brown Harbor



0.07 square miles:  
from the confluence  
with the Aransas  
Channel southeast of  
Aransas Pass in San  
Patricio County to a  
point 1 mile  
northeast in Aransas  
County.

**Use Assessments**  
Aquatic Life :  
General : Recreation  
AU\_1 – entire  
segment

### 2007 Monitoring

18848 – Mid Harbor 50 m NE of the Intersection of Huff St. and East Maddox Ave.  
in Aransas Pass

Parameter	Frequency	Agency
Metals in Water	2	NRA
Conventional	4	
Bacteria	4	
Field	4	

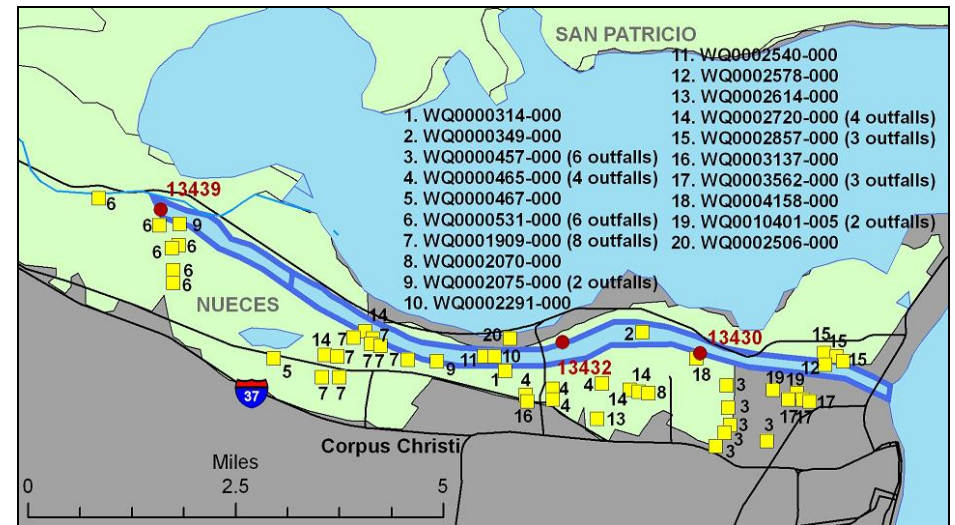
### Impairments and Concerns

There are no impairments or concerns in this segment.

### Active Wastewater Permits

WQ0002007-000 – Liberty Seafood: 1,000,000 gpd

## 2484 – Corpus Christi Inner Harbor



0.7 square miles.

### Use Assessments

Aquatic Life : Contact Recreation : General : Fish Consumption  
AU\_1 – entire segment

### 2007 Monitoring

13430 – US 181 Bridge At Causeway (South Side)

Parameter	Frequency	Agency
Metals in Water	2 (Zinc)	TCEQ Region 14
Metals in Sediment	2	
Organics in Sediment	2	
Conventional	4	
Bacteria	4	
Field	4	

13432 – Near Navigation Blvd. Draw Bridge

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

**13439 – In Viola Turning Basin**

Parameter	Frequency	Agency
Metals in Water	2 (Zinc)	TCEQ Region 14
Organics in Water	2 (Zinc)	
Conventional	4	
Bacteria	4	
Field	4	

**Impairments**

There are no impairments in this segment.

**Concerns**

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Ammonia	76	26	0.1

**Active Wastewater Permits**

**WQ0000314-000 – Encycle / Texas, Inc.:** 750,000 gpd via Outfall 001.

**WQ0000349-000 – Elementis Chromium LP:** 20,000,000 gpd.

**WQ0000457-000 – Flint Hills Resources LP:** 2,160,000 gpd. via Outfall 001.

**WQ0000465-000 – Coastal Refining and Marketing**

**WQ0000467-000 – Citgo Refining and Chemicals.:** 3,500,000 gpd via Outfall 001; 1,600,000 gpd via Outfall 2; intermittent stormwater runoff via Outfalls 003, 004, 005, 006, and 007.

**WQ0000531-000 – Flint Hills Resources LP:** 145,000 gpd via irrigation on Unit 1 & 2; stormwater discharge from construction activities, add waste streams via Outfalls 004, 011, and 012: Outfall 001 - ditch to tidal bayou to Tule Lake Turning Basin; Outfalls 002, 004, 007, 009 and 012 - ditch to Tule Lake Channel; Outfall 003 - ditch to the Viola Turning Basin; Outfall 006 - docks in Viola Turning Basin; Outfall 011 - Corpus Christi Inner Harbor.

**WQ0001909-000 – Valero Refining:** Company-Texas: 2,390,000 gpd via Outfall 003; 50,000 gpd via Outfall 005; 3,300,000 gpd via Outfall 007.

**WQ0002070-000 – Williams Terminals Holdings:** 350,000 gpd: plant to drainage Ditch to Inner Harbor.

**WQ0002075-000 – Equistar Chemicals LP:** 2,000,000 gpd via Outfall 001..

**WQ0002291-000 – Applied Industrial Materials**

**WQ0002506-000 – Star Fire Port Services:** stormwater on intermittent and flow variable basis and via evaporation.

**WQ0002540-000 – Coastal Refining and Marketing:** stormwater on intermittent and flow variable basis.

**WQ0002578-000 – Koch Pipeline Company LP**

**WQ0002614-000 – Citgo Refining and Chemicals:** stormwater on intermittent and flow variable rate via Outfalls 001, 002, and 003: unnamed ditch to Inner Harbor.

**WQ0002720-000 – Trifinery Petroleum Services:** 120,000 gpd via Outfall 001: Valero Storm Water Culvert to underground pipe to Inner Harbor; stormwater on intermittent and flow variable basis via Outfall 002: unnamed ditch to Tule Lake to Inner Harbor.

**WQ0002857-000 – Shamrock Logistics Operations Diamond Shamrock Refining**

**WQ0003137-000 – Markwest Company:** 288,000 gpd plus 100,000 gpd via irrigation on 23.6 acres of pasture land.

**WQ0003562-000 – Citgo Refining and Chemicals:** stormwater on intermittent and flow variable rate via Outfalls 001, 002, and 003: unnamed ditch to Inner Harbor.

**WQ0004158-000 – Corpus Christi Cogeneration:** 11,000,000 gpd.

**WQ0010401-005 – City of Corpus Christi Broadway Plant:** 10,000,000 gpd.



**Corpus Christi Inner Harbor**  
Photo Courtesy of the Port of Corpus Christi



## 2485 – Oso Bay

7.2 square miles.

### Use Assessments

Aquatic Life : General : Fish Consumption :  
Oyster Waters

AU\_1 – Upper Bay (Holly Rd to County Hwy 24)

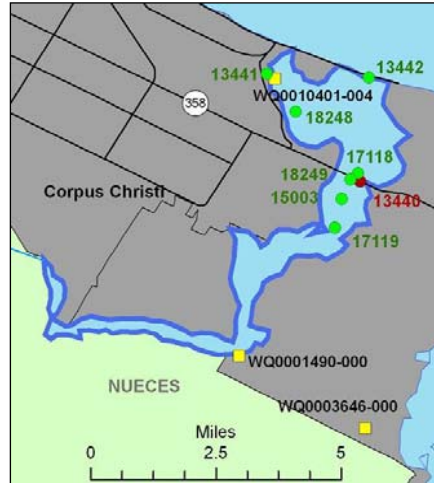
AU\_2 – Middle Bay (SH 358 to Holly Rd)

AU\_3 – Lower portion of bay (Ocean Drive to SH 358)

### 2007 Monitoring

AU\_2: (SH 358 to Holly Rd)

13440 – At Padre Island Drive (SH 358)



Parameter	Frequency	Agency
Conventional	4	NRA
Bacteria	4	
Field	4	

### Impairments

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	DO 24 Hr Average	28	12	5
	DO 24 Hr Minimum	28	14	4
2	DO 24 Hr Average	29	13	5
	DO 24 Hr Minimum	29	22	4
	Enterococcus Single Sample	37	14	89
3	DO 24 Hr Average	50	8	5
	DO 24 Hr Minimum	50	24	4

AU	Impairment	#Samples	Mean	Criteria Value
2	Enterococcus Geomean	37	59	35

All AUs have an impairment for low DO for aquatic life use and for bacteria for oyster waters use. A TMDL to address low DO is underway in Oso Bay and the Laguna Madre, Segment 2491 – down to the Arroyo Colorado. 24-hour DO monitoring was conducted for this TMDL. The sampling has been completed and a draft report has been prepared that is currently being reviewed by TCEQ. It reports that the minimum 24-hour values are not met consistently enough to warrant removal from the 303d list in either segments. There are some on-going discussions with the Water Quality Standards group about re-evaluating the standards to determine if the current standard is achievable given the unique conditions of the Laguna Madre (high salinities, warm temperatures and shallow nature of the water body) and its influence on Oso Bay.

The Oso Bay / Oso Creek TMDL conducted studies to determine the source of the bacteria. Initial reports indicate that most of the loading is coming from the agricultural land, but the source of the bacteria on that land has yet to be determined. In general, the wastewater treatment plants do not appear to be a significant source. More information on the TMDL is available at

<http://www.tceq.org/implementation/water/tmdl/24-osobayoxygen.html>.

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Chlorophyll a	11	4	11.64
2	DO Grab Screening Level	52	9	5
	Chlorophyll a	41	15	11.64
3	Chlorophyll a	34	18	11.64

### Concerns – Near Non-Attainment

AU	Concern	#Samples	#Exceedences	Criteria Value
3	Enterococcus Single Sample	17	5	89

### Active Wastewater Permits

WQ0001490-000 – AEP Texas Central Barney M. Davis Plant: 540,000,000 gpd

WQ0003646-000 – Texas A&M University System La Coss Facility Corpus Christi

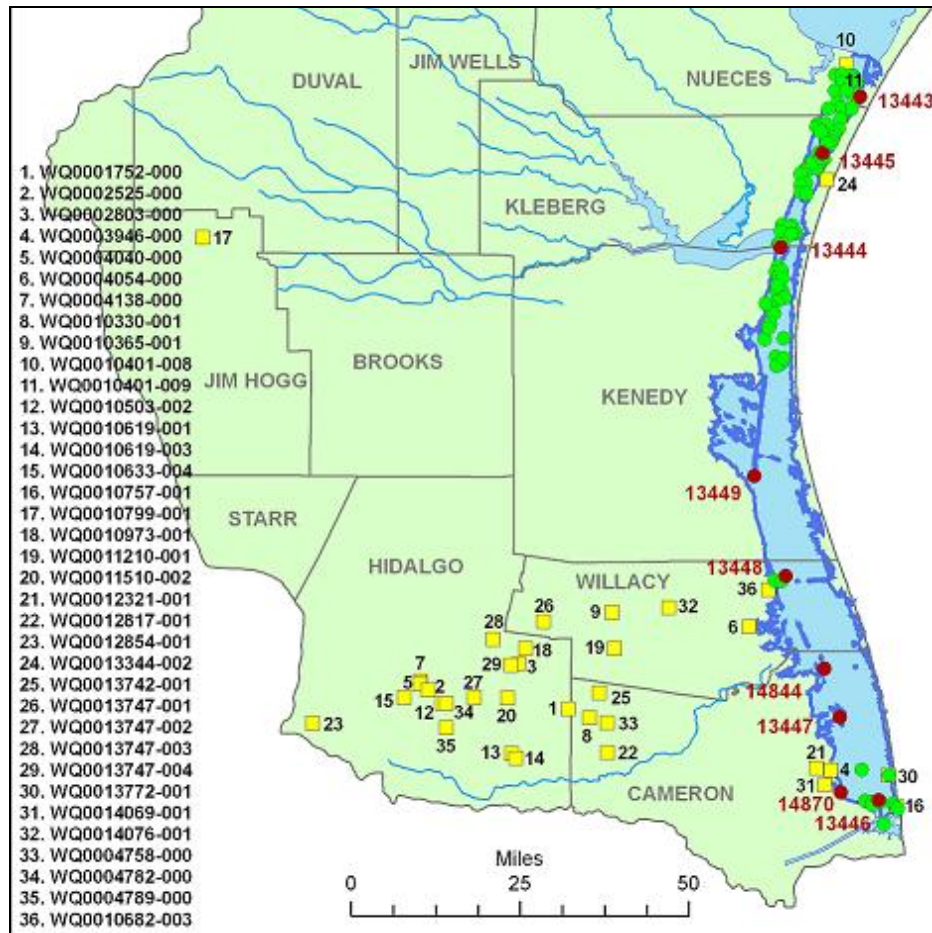
WQ0010401-004 – City of Corpus Christi Oso Facility: 16,200,000 gpd



Oso Bay



## 2491 – Laguna Madre



347.4 square miles

### Use Assessments

Aquatic Life : Fish Consumption : General : Oyster Waters: Recreation

AU\_1 – Upper portion of bay north of the Arroyo Colorado confluence

AU\_2 – Area adjacent to the Arroyo Colorado confluence

AU\_3 – Lower portion of bay south of the Arroyo Colorado confluence

### 2007 Monitoring

**AU\_1: Upper Portion of Bay North of the Arroyo Colorado Confluence**  
**13443 – South of the Intersection of GIWW and Padre Island Causeway**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

**13444 – At Intersection of GIWW at Baffin Bay Marker**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

**13445 – At GIWW Near Bird Island**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

**13448 – Intersection of GIWW and Port Mansfield Channel**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

**13449 – Channel Marker C-225A North of Port Mansfield**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

**AU\_2: Area adjacent to the Arroyo Colorado**

**13447 – Intersection of GIWW and Arroyo Colorado**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

**AU\_3: Lower Portion of Bay South of the Arroyo Colorado Confluence**

**13446 – GIWW at Marker 129 East of Port Isabel**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

**14844 – At ICWW Marker 49**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Field	4	

**14870 – 200 yds. Off Laguna Vista Shoreline**

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

**Impairments**

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	DO 24 Hr Minimum	63	13	4
2	DO 24 Hr Minimum	16	6	4

AU\_1 and AU\_2 are listed under the DSHS Shellfishing Restrictions.

**Concerns**

AU	Concern	#Samples	#Exceedences	Criteria Value
2	Chlorophyll a	31	10	11.6

**Active Wastewater Permits**

**WQ0001752-000 – Rio Grande Valley Sugar Growers:** 289,000 gpd: Valley Acres Drainage Canal to North Floodway Pilot Channel to Laguna Madre.

**WQ0002525-000 – Azteca Milling:** 300,000 gpd via irrigation.

**WQ0002803-000 – Value Frozen Foods:** 537,000 gpd via evaporation and irrigation.

**WQ0003946-000 – Harlingen Shrimp Farms, LTD:** 8,000,000 gpd: tidal ditch to Laguna Madre.

**WQ0004040-000 – Calpine Construction Finance:** Hidalgo County Drainage District Ditch No. 1 (North Main Drain) to Santa Cruz Canal to the Donna Drain to North Floodway Pilot Channel to Laguna Madre.

**WQ0004054-000 – Loma Alta Trust (Loma Alta Aquaculture):** 8,200,000 gpd: Hidalgo County Drainage Ditch to Laguna Madre.

**WQ0004138-000 – Calpine Hidalgo Energy Center:** 920,000 gpd: Hidalgo County drainage District Ditch to Santa Cruz Canal to Donna Drain to North Floodway Pilot Channel to Laguna Madre.

**WQ0004758-000 – North Alamo WSC (La Sara):** 2,000,000 gpd: elevated drainage ditch to North Floodway to Laguna Madre.

**WQ0004782-000 – North Alamo WSC:** 2,000,000 gpd.

**WQ0004789-000 – North Alamo WSC:** 2,000,000 gpd.

**WQ0010330-001 – City of Santa Rosa:** 681,000 gpd: unnamed drainage ditch to North Floodway to Laguna Madre.

**WQ0010365-001 – City of Raymondville:** 1,500,000 gpd: ditch to Delta Irrigation Ditch to Laguna Madre.

**WQ0010401-008 – City of Corpus Christi Laguna Madre:** 3,000,000 gp: pipeline to Laguna Madre.

**WQ0010401-009 – City of Corpus Christi Whitecap**

**WQ0010503-002 – City of Edinburg:** 5,900,000 gpd: San Juan holding pond to drainage ditch to North Floodway to the Laguna Madre.

**WQ0010619-001 – City of Weslaco:** 250,000 gpd: ditch to North Floodway System to Laguna Madre

**WQ0010619-003 – City of Weslaco:** 3,000,000 gpd: drainage ditch to North Floodway to Laguna Madre.

**WQ0010633-004 – City of McAllen**

**WQ0010682-003 – Willacy Co. Navigation District:** 221,000 gpd: ditch within Four Mile Slough to Laguna Madre.

**WQ0010757-001 – Laguna Madre Water District Isla Blanca Plant:** 2,600,000 gpd via irrigation.

**WQ0010799-001 – Jim Hogg County WCID No. 2 (Hebbronville Plant):** 796,000 gpd: Noriacitas Creek to Palo Blanco Creek to undefined drainage paths to the Laguna Madre.

**WQ0010973-001 – County of Hidalgo Delta Lake Park:** 5,000 gpd: Hidalgo and Willacy WCID Ditch No. 1 to Laguna Madre.

**WQ0011210-001 – City of Lyford:** 270,000 gpd: drainage ditch to North Floodway to Laguna Madre.

**WQ0011510-002 – City of Elsa:** 800,000 gpd: ditch to HCCID Ditch 10F to North Floodway to Laguna Madre.

**WQ0012321-001 – U.S. Department of Homeland Security Immigration and Customs Enforcement:** 160,000 gpd: ditch to Cameron County WCID No. 11 Drainage Ditch to Laguna Madre.

**WQ0012817-001 – Fig Tree R.V. Resort, L.C.**

**WQ0012854-001 – Hidalgo County MUD:** 500,000 gpd.

**WQ0013344-002 – US Department of the Interior:** 25,000 gpd: intermittent wetland to Laguna Madre.

**WQ0013742-001 – Sebastian MUD:** 250,000 gpd: North Floodway to Laguna Madre.

**WQ0013747-001 – North Alamo WSC:** 100,000 gpd: series of ditches and drains to Laguna Madre.

**WQ0013747-002 – North Alamo WSC:** 510,000 gpd via surface irrigation.

**WQ0013747-003 – North Alamo WSC:** 122,000 gpd via surface irrigation.

**WQ0013747-004 – North Alamo WSC:** 300,000 gpd: Delta Irrigation District Drain Ditch to series of drainage ditches to the Laguna Madre,

**WQ0013772-001 – Laguna Madre Water District Andy Bowie Park Plant:** 1,500,000 gpd: wetland area contiguous with and part of Laguna Madre.

**WQ0014069-001 – Laguna Madre Water District Laguna WWTP:** 650,000 gpd: City of Port Isabel Reservoir to the Laguna Madre.

**WQ0014076-001 – City of San Perlita:** 100,000 gpd via evaporation/ percolation.

**WQ0014698-001 – TxDOT:** 13,000 gpd. (Not plotted on map.)

**WQ0013781-001 –City of La Villa:** 400,000 gpd.



**On the Water in Laguna Madre**  
Photo courtesy of Center for Coastal Studies, TAMUCC

## 2492 – Baffin Bay



49.8 square miles.

## Use Assessments

Aquatic Life : Fish Consumption : General : Oyster Waters: Recreation  
AU\_1 – entire segment

## 2007 Monitoring

### 13450 – At Channel Marker 14

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

### 13452 – At Channel Marker 36

Parameter	Frequency	Agency
Metals in Water	2	TCEQ Region 14
Conventional	4	
Bacteria	4	
Field	4	

## Impairments

There are no impairments in this segment.

## Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Chlorophyll a	91	44	11.6

### Active Wastewater Permits

**WQ0004589-000 – Coil Tubing Services, LLC:** 1,000 gpd .

**WQ0004761-000 – El Paso Merchant Energy-Petroleum Company:** 7,200 gpd via evaporation. (Not plotted on map).

**WQ0010067-002 – Duval County Conservation and Reclamation District:** 40,000 gpd: Macho Creek to Los Olmos Creek to Baffin Bay.

**WQ0010084-001 – Utility Board of Falfurias:** 460,000 gpd via surface irrigation.

**WQ0010253-001 – City of Premont:** 430,000 gpd via surface irrigation.

**WQ0011515-001 – Riviera ISD:** 16,000 gpd via surface irrigation.

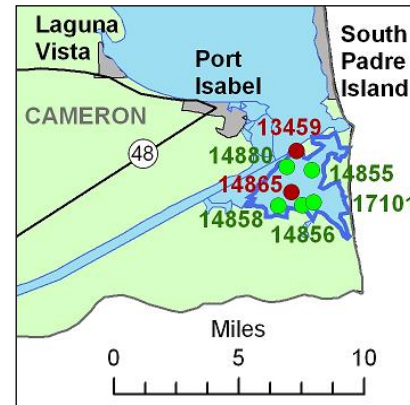
**WQ0013361-001 – Sarita Sewer Service and WSC:** 44,000 gpd via evaporation.

**WQ0013374-001 – Kleberg County Kaufer Hubert Memorial Park:** 33,000 gpd: Kaufer Lake to Hubert Lake to unnamed ditch to Cayo Del Grullo.

**WQ0013374-002 – Riviera WCID:** 60,000 gpd: drainage ditch to Salado Creek to Los Olmos Creek, to Baffin Bay.

**WQ0013374-003 – County of Kleberg Ricardo WWTP:** 48,500 gpd: drainage ditch to Jaboncillos Creek to Baffin Bay.

## 2493 – South Bay



7.8 square miles.

### Use Assessments

Aquatic Life : General : Oyster Waters: Recreation

AU\_1 – entire segment

### 2007 Monitoring

#### 13459 – Near Near Ship Channel Marker 17

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

#### 14865 – Middle of Bay

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

### Impairments and Concerns

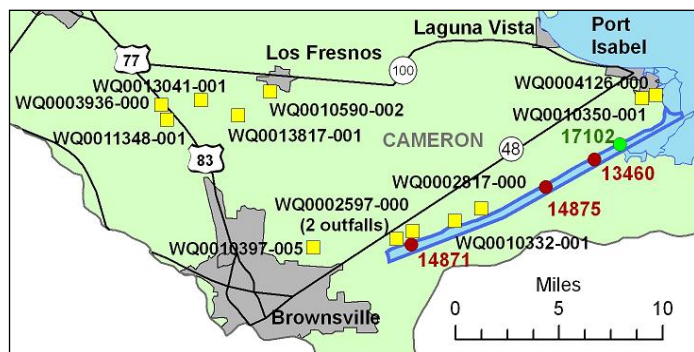
There are no impairments or concerns on this segment.

### Active Wastewater Permits

There are no active wastewater permits in this segment.



## 2494 – Brownsville Ship Channel



1.5 square miles.

### Use Assessments

Aquatic Life : Fish  
Consumption :  
General : Recreation

AU\_1 – entire  
segment

### 2007 Monitoring

#### 13460 – Near Ship Channel Marker 35 (Black Buoy)

Parameter	Frequency	Agency
Metals in Water	2	TCEQ Region 15
Metals in Sediment	2	
Conventional	4	
Bacteria	4	
Field	4	

#### 14871 – At East End of Turning Basin

Parameter	Frequency	Agency
24hr DO	2	TCEQ Region 15
Conventional	4	
Bacteria	4	
Field	4	

#### 14875 – At Entrance to San Martin

Parameter	Frequency	Agency
Metals in Water	2	TCEQ Region 15
Metals in Sediment	2	
Conventional	4	
Bacteria	4	
Field	4	

### Impairments and Concerns

There are no impairments or concerns on this segment.

### Active Wastewater Permits

**WQ0002597-000 – Brownsville Navigation District:** 100,000 gpd via evaporation.

**WQ0002817-000 – Brownsville Navigation District Fishing Harbor**

**WQ0003936-000 – Valley MUD No. 2**

**WQ0004126-000 – Texas Pack:** 150,000 gpd via irrigation.

**WQ0004466-000 – Lone Star Hatchery, Inc.:** 500,000 gpd: pipeline to Port Isabel Turning Basin to Port Isabel Channel to Brownsville Ship Channel. (Not plotted on map.)

**WQ0010332-001 – Brownsville Navigation District Northside Plant:** 98,000 gpd: drainage ditch to Brownsville Ship Channel.

**WQ0010350-001 – Laguna Madre Water District Port Isabel Plant:** 1,100,000 gpd: tidal mud flat to Vadia Ancha to Brownsville Ship Channel.

**WQ0010397-005 – Brownsville Public Utilities N. Robindale Plant:** 10,000,000 gpd: Cameron County Drainage Ditch No.1 to San Martin Lake to the Brownsville Ship Channel.

**WQ0010590-002 – City of Los Fresnos:** 1,000,000 gpd: unnamed ditch to Los Fresnos West Ditch of Cameron County Drainage Ditch District (CCDD) No.1 to Main Ditch No. 2 of CCDD No. 1 to San Martin Lake to Brownsville Ship Channel.

**WQ0011348-001 – Valley MUD No. 2:** 400,000 gpd.

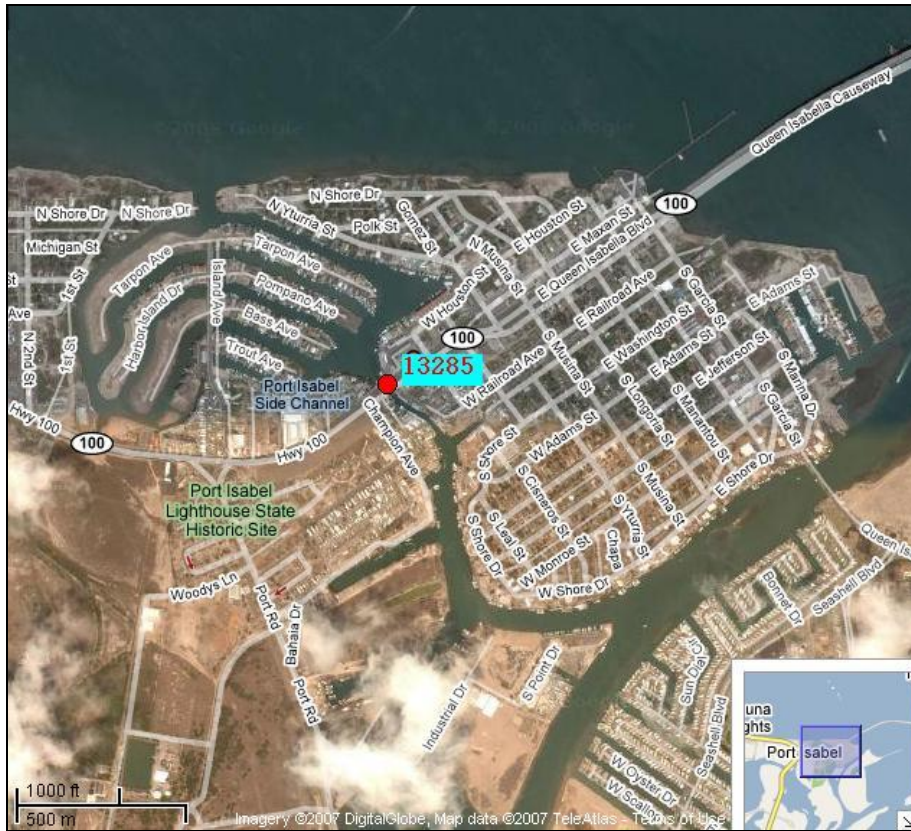
**WQ0013041-001 – John Frias (St. Francis of Assisi)**

**WQ0013817-001 – Olmito WSC (Olmito Plant):** 750,000 gpd: pipeline to CCDD No. 1 Main Ditch No. 2 to San Martin Lake to Brownsville Ship Channel.

**WQ0014355-001 – Brownsville Navigation District:** 100,000 gpd: unnamed ditch to CCDD No. 1 Main Ditch No. 2 to San Martin Lake to Brownsville Ship Channel. (Not plotted on map.)



## 2494A – Port Isabel Fishing Harbor



0.2 square miles.

### Use Assessments

Aquatic Life : General : Recreation

AU\_1 – entire segment

### 2006 Monitoring

13285 – At Hwy 100 Bridge

Parameter	Frequency	Agency
Metals in Water	2	TCEQ Region 15
Metals in Sediment	2	
Conventional	4	
Bacteria	4	
Field	4	

### Impairments

AU	Impairment	#Samples	#Exceedences	Criteria Value
1	DO Grab Minimum*	25	0	3

\*Carried forward from 2004 Assessment

### Concerns

AU	Concern	#Samples	#Exceedences	Criteria Value
1	Nitrate	14	9	0.17

### Concerns – Near Non-Attainment

AU	Concern	#Samples	Mean	Criteria Value
1	Enterococcus Geomean	9	56	35

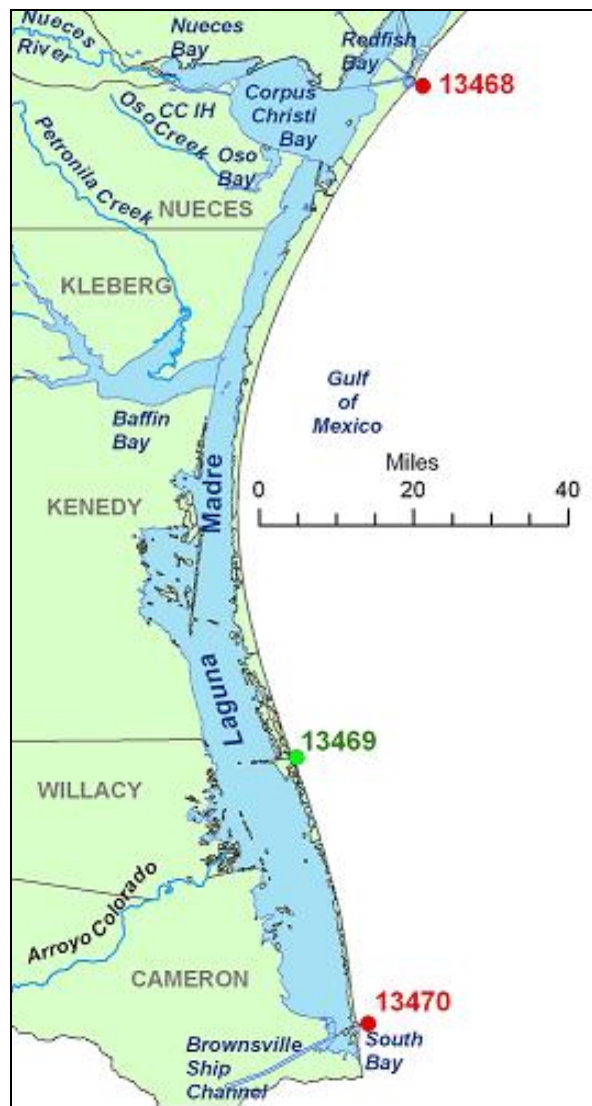
### Active Wastewater Permits

There are no active wastewater permits in this segment.



Photo Courtesy of Valerie D. Bates

## 2501 – Gulf of Mexico



### Use Assessments

Aquatic Life : Fish Consumption : General : Recreation

AU\_5 – area between Freeport and Port Aransas

AU\_6 – Port Aransas area

AU\_7 – area between Port Aransas and Port Mansfield

AU\_8 – Port Mansfield area

AU\_9 – area between Port Mansfield and Port Isabel

AU\_10 – Port Isabel area

### 2006 Monitoring

#### AU\_6: Port Aransas Area

13468 – At Port Aransas Near End of South Jetty Near Marker R-7

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 14
Bacteria	4	
Field	4	

#### AU\_10: Port Isabel Area

13470 – At Port Isabel, Just Beyond Jetties at Bell Buoy

Parameter	Frequency	Agency
Conventional	4	TCEQ Region 15
Bacteria	4	
Field	4	

### Impairments

Based on data from DSHS, all areas are listed as having an impairment for mercury in King Mackerel > 43 inches long. The source of the mercury is attributed to atmospheric deposition.

### Concerns

There are no concerns AU\_5 through AU\_10.

### Active Wastewater Permits

There are no active wastewater permits in this segment.

## STAKEHOLDER PARTICIPATION

CRP depends on public involvement and input from stakeholders to assist in understanding the needs of the basins and the areas of concern. The NRA steering committee serves as the focus for public input and assists with:

- Creation of specific achievable water quality objectives and basin priorities
- Review and development of work plans and allocation of resources
- Development and review of major reports
- Establishing monitoring priorities and developing monitoring plans
- Improving awareness of water quality, water resource, and pollutant source issues
- Increasing opportunities for citizens to identify pressing issues, concerns, and contributing ideas to the CRP process
- Expanding the public's role in water quality management issues

The steering committee includes stakeholder volunteers from across NRA's area of responsibility, representing:

- Private citizens
- Fee-payers (identified in Texas Water Code TWC 26.0135(h))
- Political subdivisions (including local, regional, and state officials)
- State Soil and Water Conservation Board
- Other appropriate state agencies including: TPWD, Texas Water Development Board, TGLO, DSHS, Texas Department of Agriculture, Texas Railroad Commission, and TxDOT.
- Other entities interested in water quality matters including: TCEQ regional staff, business and industry, agriculture, environmental and other public interest groups.

NRA encourages stakeholder participation to provide suggestions for additional monitoring, special studies, outreach opportunities, and to be a voice for local concerns. For more information about stakeholder participation, the steering committee process, or how to become a steering committee member, visit our Public Involvement web page at <http://www.nueces-ra.org/CP/CRP/public.php>, or contact NRA using the contact information at the end of this report.

## PUBLIC OUTREACH

NRA participated in numerous CRP supported activities to help educate students and adults on pollution sources, the importance of keeping our waters clean, and what they can do to help protect our rivers, lakes, and bays.

### Leadership Guidance and Support for Teachers

In 2006, NRA visited 29 schools and made 151 presentations to 2,844 students on NPS pollution and watersheds using the Nueces Basin watershed model. The model was created for NRA through a TSSWCB contract. The City of Corpus Christi paid for the construction of a second model. It will be used by the Texas State Aquarium outreach and education staff to educate approximately 3,000 coastal basin students each year. NRA also provided support and guidance to teachers with the incorporation of watershed education into their existing curriculums. At the request of community leaders, NRA presented the watershed model and other NPS pollution information to 788 members of the public at eight community events.

### Earth Day Bay Day

NRA participates at the Earth Day Bay Day Celebration held each year in April. In past years, NRA has demonstrated the use of monitoring equipment to educate the public about environmental operations at NRA; created posters to show sampling stations locations and parameters information; demonstrated how to check on water quality in the basin using the tools found on our website; and demonstrated the watershed model.

### Water World

For the past few years, NRA has participated in a community outreach function called Water World sponsored by the City of Corpus Christi. Located inside the Corpus Christi Museum of Science and History, Water World is a one day event that offers the public a chance to talk with agencies and other entities that are associated with water related issues. NRA informs the public about the role NRA plays in water planning, monitoring, and education. Various tools of the trade are exhibited and demonstrated to show how data are collected and how to access the data from a personal computer. In 2006, NRA demonstrated the Nueces Basin watershed model.



## Headwaters Stewardship Project

NRA has also been involved in a Headwaters Stewardship Project, funded by EPA through TSSWCB, which focuses on the rivers of the Upper Nueces Basin. Though not funded by CRP, the activities related to this project compliment CRP outreach.



As part of the project, NRA hosts an annual conference on land stewardship and water resources. Conference supporters included: local Soil and Water Conservation Districts, local Groundwater Districts, Rio Grande Nueces RC&D, Texas Cooperative Extension, Natural Resource Conservation Service and the Texas Wildlife Association.

Another component of the Headwaters Stewardship Project is the "Up To You" river litter prevention campaign. With support of local businesses and TSSWCB, NRA continues to cultivate personal responsibility for keeping rivers clean and conserving water with this campaign. Approximately 30,000 litter bags and 100 posters were distributed by local businesses and advocacy groups along the recreational reaches of the

Nueces Basin headwater streams and in schools in support of the NPS pollution lesson.

## Aquatic Education Program

The Aquatic Education Program at the Center for Coastal Studies at TAMUCC is designed to teach people the importance our riparian corridors, fresh water inflow, and the health of our bays and estuaries. The Wetland on Wheels is a trailer that has been made into a model of a waterway: (<http://tamusystem.tamu.edu/systemwide/05/09/features/wetlands.html>). The model starts in a



estuaries, and ocean habitat). The trailer is used at a variety of events, such as Bayfest, Hummingbird Festival, and Sea Fair and at area schools. Mini lectures are given on environmental issues and the importance of these waterways for humans and animals alike. NRA personnel help with these presentations, allowing for more events to be attended.

The Wetland Explorer (<http://wetlanded.org/boat.htm>) is a 36 foot shallow water vessel that is able to transport people in the shallow bays and estuaries of the Gulf Coast. A typical outing includes lectures that teach the importance of watersheds and fresh water flow into the bays. It also provides a hands-on experience of the habitat and groups are able to see some of the animals up close. An education and research station is currently under construction on Talley Island between Estes Cove and Aransas Bay. Tours of the island show the diversity of habitats including mangroves, tidal flats, sea grass beds, and vegetated zones that are homes to many types of fish, birds, and mammals.

stream/river habitat and shows the water flowing into the bays and estuaries, and finally ends in the Gulf of Mexico. Taxidermy mounts included that are representative of the wildlife in the variety of habitats found beside waterways. Also included are three video monitors that show films of these diverse habitats and animals living in these areas (riparian corridors, marshes, open bays and

## Website

The NRA CRP main web page is located at <http://www.nueces-ra.org/CP/CRP>. This page contains links to information about CRP in general, and to specific information with respect to NRA's role in CRP including:

### **303(d) List** -- [www.nueces-ra.org/CP/CRP/303d.php](http://www.nueces-ra.org/CP/CRP/303d.php)

**Summary:** This lists the 2004 Final 303(d) List of Impaired Water Bodies for the Nueces - Rio Grande Coastal Basin, Nueces River Basin, and the San Antonio - Nueces Coastal Basin

### **Water Quality Database** -- <http://www.nueces-ra.org/CP/CRP/SWQM/index.php>

**Summary:** Sampling data may be retrieved on this page by: Station ID, date range, county, basin or segment.

### **Meeting Notices** -- <http://www.nueces-ra.org/ALL/calendar.php>

**Summary:** Shows upcoming events/meetings and their details for CRP and other environmental related activities.

### **Monitoring Schedules** -- <http://cms.lcra.org>

**Summary:** Coordinated Monitoring Schedules for all Texas CRP and SWQM monitoring schedules. A mapping function has been incorporated in this site.

### **Quality Assurance Project Plans** -- <http://www.nueces-ra.org/CP/CRP/>

**Summary:** The Quality Assurance Project is used to delineate organization policy, structure and procedures which will be used to verify and validate the water quality data collected under the Texas Clean River Act (Senate Bill 818). This will ensure proper practices and collections to maintain quality assured data.

### **Steering Committee Information** -- [http://www.nueces-ra.org/CP/CRP/steering\\_committee/](http://www.nueces-ra.org/CP/CRP/steering_committee/)

**Summary:** This page hosts links to the Summaries and Presentations of Annual Meetings, a list of the members, and a Steering Committee Input web form.

### **Public Outreach** -- <http://www.nueces-ra.org/CP/CRP/public.php>

**Summary:** Shows many important resource links to internal and external sites that help aid in resource protection, and public education.

### **Reports** -- <http://www.nueces-ra.org/CP/CRP>

**Summary:** Includes current and historical reports such as the Basin Highlights Reports and Basin Summary report.

The CRP water quality database maintained by NRA contains water quality information about all the SWQM stations within the basins and any available sampling data. The database is updated monthly with any new data in the TCEQ database. The user is able to request information for any SWQM station based on the SWQM number directly or

from a list of stations based on those sampled (1) within a given date range, (2) within a specific county, (3) within a specific basin, or (4) on a specific segment. The station page contains location information and options for sampling data, either by sampling date or by parameter code.



## CONTACT INFORMATION

Please contact us for more information on CRP, other activities of NRA, or to obtain additional copies of this report.

### General Office

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## APPENDICES

### Appendix 1. Sampling Parameters

Monitoring Type	Parameters
Conventional	Total Suspended Solids Volatile Suspended Solids Total Dissolved Solids Alkalinity Sulfate Chloride Chlorophyll-a Pheophytin Ammonia Nitrate+Nitrite Total Organic Carbon Total Phosphorus Turbidity Orthophosphate Hardness <sup>1</sup>
Bacteria	E. coli <sup>1</sup> Enterococcus <sup>2</sup>
Metals in Water (All Dissolved)	Aluminum Arsenic Chromium Copper Lead Manganese Nickel Selenium Silver Zinc

Monitoring Type	Parameters
Field	pH Dissolved Oxygen Conductivity Salinity <sup>2</sup> Temperature Secchi Depth Days since last rainfall Flow <sup>3</sup> Flow measurement method <sup>3</sup> Flow severity <sup>3</sup> Air temperature Wind direction Wind intensity Present Weather Water Color Water Odor Water Surface Turbidity Tide Stage <sup>2</sup> Rainfall 1 day prior Rainfall 7 days prior Maximum pool width <sup>4</sup> Maximum pool depth <sup>4</sup> Pool length <sup>4</sup> % Pool coverage <sup>4</sup> Total depth
<sup>1</sup> Measured only at fresh water stations <sup>2</sup> Measured only at marine and tidal stations <sup>3</sup> Measured only at non-tidal stream stations <sup>4</sup> Measured only at perennial pools	

## Appendix 2. Sampling Parameter Descriptions

(Please refer to <http://www.nueces-ra.org/CP/CRP/sparameters.doc> for more information about these parameters.)

**Alkalinity** – measures the buffering capacity of water which helps a solution resist changes in pH caused by the addition of an acid or base thereby maintaining an appropriate pH range for aquatic habitat

**Bacteria** – measures the amount of pathogens (E. coli in fresh water, Enterococci in marine water) present in the water

**Biochemical Oxygen Demand** – the measure of the amount of oxygen that is consumed in the biological processes that break down organic matter in water and is used to determine the relative oxygen requirements of wastewaters, effluents, and polluted waters

**Chlorides** – measures the ionize, water soluble form of chlorine present in the water

**Chlorophyll-a** – the photosynthetic pigment found in all green plants, algae, and cyanobacteria, the concentration is used to estimate phytoplankton biomass in surface water

**Conductivity** - is the measure of electrical current carrying capacity of water and is used to measure the amount of dissolved solids and salts in the water

**Dissolved Oxygen** - the amount of oxygen available to aquatic organisms and is the single most important indicator of a water body's ability to support desirable aquatic life

**Hardness** - measures divalent ions, salts such as calcium and magnesium, in association with carbonates

**Metals** – (Aluminum, Arsenic, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Silver and Zinc) - certain metals, like Mercury, have been found to bioaccumulate in the tissues of fish making them unsafe to eat - metals may be found in water and sediment

**Nitrogen (Ammonia, Nitrate, Nitrite)** – measures the nutrient levels in the water related to the decomposition of organic material

**Orthophosphate** - measures the amount of dissolved phosphorus which is immediately available to plants or algae

**pH** – measures the acidity of the water which affects the solubility, and therefore the toxicity, of chemicals and metals

**Pheophytin** – a degradation product of chlorophyll-a that is used to determine a more accurate measure of chlorophyll-a

**Salinity** - monitored at tidal streams, bays and estuaries only, and derived from conductivity and water temperature

**Secchi Depth** - measures the clarity or transparency of water

**Sulfate** – measures the amount of water soluble sulfur present in the water

**Total Dissolved Solids** – measures the amount of minerals, salts, metals, cations or anions dissolved in the water

**Total Organic Carbon** – measures the amount of carbon covalently bound in organic compounds in a water sample which affects biogeochemical processes, nutrient cycling, biological availability, chemical transport and interactions

**Total Phosphorus** – measures all chemical forms of phosphorus

**Total Suspended Solids** – measures the amount of all particles suspended in water which will not pass through a filter

**Turbidity** - measures the clarity or cloudiness of water

**Volatile Suspended Solids** – measures the amount of solids lost on ignition (heating to 500° C) which gives an approximation of the amount of organic matter present in the solid fraction of wastewater, activated sludge and industrial wastes

**Water temperature** – affects the metabolic rates of aquatic organisms and plants

### Appendix 3. Additional Assessment Stations

#### 2003 – Aransas River Tidal

AU\_1: 12948 – At US 77 bridge between Woodsboro and Sinton

#### 2004A – Aransas Creek

AU\_1: 17592 – At US 181 north of Skidmore

#### 2101 – Nueces River Tidal

AU\_1: 12961 – Bridge on US 77 below Dam and Salt Water Barrier  
 17645 – 2.11 Miles (3.36 km) Upstream of Confluence with Nueces Bay  
 17646 – 0.85 Miles (1.35 km) Downstream of Union Pacific and Southern Pacific Railroad Trestle (Bridge 13)  
 17647 – 0.44 Miles (706 m) Downstream of Easternmost MOPAC Railroad Crossing

#### 2103 – Nueces River Below Lake Corpus Christi

AU\_2: 17386 – Approximately 4.0 Miles Southeast of Intersection of FM 3162 and FM 534, approximately 0.2 Miles off Western Shore  
 AU\_3: 17385 – Approximately 1.0 Miles East of FM 534 Bridge near Ramireno Creek  
 AU\_4: 17384 – Approximately 0.2 Miles off Western Shore Directly West of Hideaway Hill  
 AU\_5: 17383 – At FM 534 Bridge near Upper End of Nueces River Arm

#### 2104 – Nueces River Above Frio River

AU\_2: 17897 – Approximately 13.9 km Downstream of SH 16 on Smith Lease  
 AU\_3: 12974 – At FM 624

#### 2106 – Nueces River / Lower Frio River

AU\_2: 17437 – Approximately 1.0 miles downstream of SH 72 in Three Rivers near Diamond Shamrock outfall  
 : 18357 – 292 meters downstream of Choke Canyon Reservoir dam release associated with USGS gages 08206890 and 0826910

#### 2107 – Atascosa River

AU\_2: 17899 – 500 meters southwest of intersection of Leal Rd. and MOPAC railroad  
 AU\_3: 17436 – At East Hunt Street in Pleasanton  
 17898 – 150 meters downstream of Hunt Road  
 17900 – At IH 37  
 AU\_4: 17142 – At FM 2504 near Anchorage 6.4 miles southeast of Poteet

#### 2108 – San Miguel Creek

AU\_2: 12984 – At SH 97 12 miles south of Charlotte

#### 2109 – Leona River

AU\_3 12988 – 4.7 miles southeast of Uvalde downstream from Cooke's Slough  
 12989 – At Hoags Dam (upstream side)  
 12992 – Leona River at US 90 West in Uvalde

#### 2112 – Upper Nueces River

AU\_2: 12997 – US 83 bridge south of Uvalde  
 12998 – 8.8 miles southwest of Uvalde at McDaniel Ranch  
 17438 – At Marisole Ranch approximately 2.5 miles upstream of RR 481 southwest of Uvalde  
 AU\_3: 12999 – 1 mile northeast of Laguna and 0.5 miles downstream from Sycamore Creek

#### 2113 – Upper Frio River

AU\_2: 13007 – At Magers Crossing  
 17892 – At Apache Bluffs 450 meters upstream of FM 1120

#### 2116 – Choke Canyon Reservoir

AU\_2: 17393 – Mid-arm in the northeast arm west of the intersection of US 281 and IH 37 USGS Site BC  
 AU\_3: 17392 – Mid-lake approximately 1 mile east of the point at Choke Canyon State Park  
 AU\_4: 17391 – Approximately 2.0 km southwest of SR Road 8 termination at shore, mouth of Opossum Creek Arm  
 AU\_5: 17390 – Approximately 0.5 km west of Choke Canyon State Park and 4 km north of SH 72 crossing the Salt Creek Arm  
 17997 – Salt Creek Arm mid-channel, 675 meters upstream of arm mouth

#### 2201 – Arroyo Colorado Tidal

AU\_1: 15551 – 1.45 km downstream from Marker 18 and 8.1 km upstream from Gulf Intracoastal Waterway (GIWW)  
 AU\_2 13071 – At mile 10 (Marker 22)

#### 2202 – Arroyo Colorado Above Tidal

AU\_2: 13079 – at US 77 in SW Harlingen  
 16141 – 75m downstream from Commerce Street in Harlingen  
 16445 – at low water crossing at Dilworth Road, east of La Feria  
 AU\_3: 13082 – At FM 493 south of Donna  
 16137 – At FM 88 south of Weslaco

#### 2202B – Unnamed Drainage Ditch Tributary to S. Arroyo Colorado

AU\_1: 13079 – Unnamed drainage ditch SW Rangerville Rd. KM, 59.9 South Arroyo Colorado



**2202C – Unnamed Drainage Ditch Tributary to S. Arroyo Colorado**

AU\_1: 13056 – Unnamed ditch at Gate 12, KM 102.2 South Arroyo Colorado (See map for Segment 2202B.)

**2204 – Petronila Creek Above Tidal**

AU\_2: 13099 – At FM 2826 north of Driscoll

**2204A – Unnamed Drainage Ditch Tributary (A) to Petronila Creek**

AU\_1: 13032 – Unnamed drainage ditch tributary to Petronila Creek at Beatty Rd., enters Petronila Creek 2 miles downstream of FM 665

**2204B – Unnamed Drainage Ditch Tributary (B) to Petronila Creek**

AU\_1: 13030 – Unnamed tributary to Petronila Creek at FM 70 near Stanolind-Luby Camp Refinery (See map for Segment 2204A.)

**2462 – San Antonio Bay / Hynes Bay / Guadalupe Bay**

AU\_1: 14747 – 100 yards east of McDowell Point  
 14749 – 400 yards east of Austwell  
 14751 – 800 yards southeast of Marsh Point  
 14753 – 200 yards south of Grassy Point  
 14754 – 1¼ miles north of Austwell  
 14755 – 1 mile east of McDowell Point  
 14882 – ½ mile east of Webb Point

**2463 – Mesquite Bay**

AU\_1: 14757 – 1 mile west of third chain islands in Mesquite Bay Channel

**2471 – Aransas Bay**

AU\_1: 14758 – 3/4 mile east of Rockport  
 14760 – At shellfish Marker 2  
 14761 – 1 mile southeast of Fulton  
 14762 – ¾ mile northeast of Fulton  
 14763 – ½ northeast of Aransas County Airport  
 14764 – 1 mile southeast of SH 35 bridge  
 14765 – At Dead Man Island

**2472 – Copano Bay / Port Bay / Mission Bay**

AU\_1: 14784 – At end of Shell Bank Reef  
 17701 – 2.1 miles ESE of Intersection of FM 136 and FM 2678 SE of Refugio  
 17702 – 2.7 miles east of the Intersection of FM 136 and FM 2678 SE of Refugio  
 17703 – 3.3 miles east of the Intersection of FM 136 and FM 2678 SE of Refugio  
 17714 – 4.4 miles WNW of Copano Bay Fishing Pier Boat Ramp at south end of Copano Bay Causeway (SH35)  
 17715 – 5.2 miles NNW of Copano Bay Fishing Pier Boat Ramp at south end of Copano Bay Causeway (SH35)

17716 – 5.8 miles NW of Copano Bay Fishing Pier Boat Ramp at south end of Copano Bay Causeway (SH35)  
 17717 – 5 miles NW of Copano Bay Fishing Pier Boat Ramp at south end of Copano Bay Causeway (SH35)  
 17718 – 4.48 miles NW of Copano Bay Fishing Pier Boat Ramp at south end of Copano Bay Causeway (SH35)  
 17719 – 4.32 miles NW of Copano Bay Fishing Pier Boat Ramp at south end of Copano Bay Causeway (SH35)  
 17720 – 3.1 miles north of Copano Bay Fishing Pier Boat Ramp at south end of Copano Bay Causeway (SH35)  
 17721 – 4.1 miles NW of Copano Bay Fishing Pier Boat Ramp at south end of Copano Bay Causeway (SH35)  
 17722 – 1.2 miles SW of western most tip of Redfish Point  
 17723 – 4.1 miles WSW of Copano Bay Fishing Pier Boat Ramp at south end of Copano Bay Causeway (SH35)  
 17725 – 0.5 miles NW of Rattlesnake Point Island  
 17726 – 5.5 miles east of TPWD boat ramp on northern side of FM 136 bridge crossing at Aransas River  
 17727 – 1 mile WNW of western tip of Rattlesnake Point Island  
 17728 – 0.7 miles NW of Rattlesnake Point Island  
 17739 – 3.5 miles ENE of TPWD boat ramp on northern side of FM 136 bridge crossing at Aransas River  
 17740 – 0.3 miles SE of Rattlesnake Point Island  
 17741 – 0.3 miles SE of western most tip of Redfish Point

**2473 – St. Charles Bay**

AU\_1: 14776 – ½ mile east of Big Sharp Point  
 15004 – 0.6 miles NE of Hail Point  
 17692 – 0.5 miles NE of Hail Point on Lamar Peninsula  
 18218 – From St. Charles Marina steer 016 degrees for 12.075 km, CBB247  
 18219 – From St. Charles Marina steer 031 degrees for 6.722 km, CBB248  
 18222 – From St. Charles Marina steer 058 degrees for 2.538 km, CBB251

**2481 – Corpus Christi Bay**

These stations are plotted on the map, but not labeled.

AU\_1: 14469 – SE end of Shamrock Island in Shamrock Cove  
 14818 – 500 yards from the mouth of Oso Bay  
 14819 – 300 yards offshore from storm sewer outfall  
 14820 – 200 yards off Cole Park Fishing Pier  
 14821 – At mouth of the Corpus Christi Boat Basin  
 14822 – East of Rincon Point  
 14823 – At Indian Reef  
 14824 – West end of Portland  
 14825 – 100 yards west of Point Mustang  
 14826 – 400 yards from mouth of Sinclair Cut  
 14827 – 600 yards west of La Quinta Channel Turning Basin  
 14828 – At middle of Long Reef  
 14829 – At intersection of Corpus and Ingleside Channels

- 14830 – At Port Ingleside  
14955 – At seawall at Doddridge Road  
14979 – At mouth of Jewell Fulton Harbor  
16849 – 1 mile NE of ICWW CM 15, 3 miles north of PR 22 in Corpus Christi  
16850 – At CM 15, 2 miles north of PR 22 in Corpus Christi  
16851 – 700 yards east of ICWW CM 27, 1.75 miles north of PR 22 in Corpus Christi  
16852 – At ICWW CM 27, 1.5 miles north of PR 22 in Corpus Christi  
16853 – 100 m north of Mustang Island spoil bank peninsula  
16854 – In Corpus Christi Ship Channel at Mustang Island Mooring Channel, 3.25 km west of SH 361  
17099 – Near mouth of Laguna Madre, 4.3 miles NW of PR 22 (JFK Causeway)  
17747 – North end of La Quinta Channel by Sherwin Alumina Docks, 3.8 miles NW of TPWD boat ramp in Ingleside  
17748 – 4.5 miles NW of TPWD boat ramp in Ingleside  
17749 – At middle of Long Reef, 2.3 miles west of TPWD boat ramp in Ingleside On The Bay  
17750 – 4.6 miles east of TPWD boat ramp on Rincon Point at south end of Nueces Bay Causeway (SH 181)  
17751 – 5.1 miles east of TPWD boat ramp on Rincon Point, 4.4 miles east of Indian Point south of SH 181  
17752 – 5.4 miles east of TPWD boat ramp on Rincon Point, immediately east of Long Reef south of SH 181  
17753 – In La Quinta Channel between Donnel and Welder Pints, 1.5 miles NW of TPWD boat ramp in Ingleside  
17754 – Immediately west of La Quinta, 4.0 miles NW of TPWD boat ramp in Ingleside  
17755 – 0.6 miles SSE of Rincon Point South end Nueces Bay Causeway (SH 181)  
17756 – 1.6 miles ESE of TPWD boat ramp, SE of Rincon Point and south of SH 181  
17757 – NNE Marker 68 4.0 miles ESE of TPWD boat ramp on Rincon Point off south end of SH 181  
17758 – West of Marker 61 from Corpus Christi Marina entrance steer 83 degrees for 7.76 km CBB351  
17759 – West of Marker 56 4.5 miles WSW of TPWD boat ramp at Ingleside On The Bay  
17760 – NE of Marker 56 3.9 miles WSW of TPWD boat ramp at Ingleside On The Bay  
17761 – East Flats 0.7 miles SE of western tip of Point of Mustang  
17762 – 0.3 miles NNE of Yacht Basin ramp in Corpus Christi Marina Harbor  
17763 – Immediately east of Alto Vista Reef 3.7 miles SSE of TPWD boat ramp on Rincon Point sought end SH 181  
17764 – 2.5 miles ESE of Yacht Basin ramp in Corpus Christi Marina Harbor  
17765 – 3.1 miles south of TPWD boat ramp at Ingleside On The Bay  
17766 – Immediately east of ICWW 1.8 miles SW of intersection Corpus Christi Ship Channel  
17767 – 2.9 miles SW of western tip of Point of Mustang  
17768 – 0.5 miles east of ICWW and 1.8 miles south of intersection of ICWW and Corpus Christi Channel  
17769 – 1.9 miles south of Point of Mustang and 0.75 miles west of Mustang Island  
17770 – 2.3 miles SSE of Point of Mustang and 0.5 miles west of Mustang Island  
17771 – 0.5 miles west of Shamrock Island  
17772 – 0.7 miles east of intersection Cole St. and Ocean Dr. 1.2 miles SSE Yacht Basin boat ramp  
17773 – 3.8 miles NNW of mouth of Oso Bay  
17774 – 3.6 miles NNE of mouth of Oso Bay  
17775 – 5 miles NE of mouth of Oso Bay  
17776 – 0.4 miles east of ICWW and 3.4 miles SSW of the intersection of Corpus Christi Channel  
17777 – 3.1 miles north of the mouth of Oso Bay  
17778 – 4.4 miles NNW of Dimmit Island and 3.9 miles NE of mouth of Oso Bay  
17779 – 4.1 miles NNE of mouth of Oso Bay  
17780 – 2.9 miles south of Shamrock Point on Shamrock Island  
17781 – 4.9 miles SE of Yacht Basin ramp in Corpus Christi Marina Harbor  
17782 – 2.2 miles north of mouth of Oso Bay  
17783 – 4.4 miles ENE of mouth of Oso Bay  
17784 – South of ICWW Marker 77 2.4 miles west of Shamrock Point on Shamrock Island  
17785 – SW of Shamrock Cove 0.8 miles south of Shamrock Point on Shamrock Island  
17786 – St Oso Fishing Pier 1.5 miles NW of mouth of Oso Bay  
17787 – 0.6 miles ENE of mouth of Oso Bay  
17788 – 3.2 miles NE of entrance to Oso Bay and due north of Naval Air Station Corpus Christi  
17789 – 1 mile north of entrance to Oso Bay  
17790 – 5.2 miles SSE of Yacht Basin boat ramp located in Corpus Christi Marina Harbor  
17792 – 3.9 miles east of entrance to Oso Bay and north of Dimmit Island  
17793 – 4 miles ESE of entrance to Oso Bay and north of Dimmit Island  
17794 – 4.2 miles east of entrance to Oso Bay and north of Dimmit Island  
18061 – Near Laguna Madre entrance. From fixed ICWW navigation Marker 9 steer 196 degrees for 1.272 km  
18062 – Near Laguna Madre entrance. From fixed ICWW navigation Marker 9 steer 207 degrees for 0.845 km  
18063 – In Boathole area east of Naval Air Station Corpus Christi. From Dimmit Point steer 248 degrees for 0.839 km  
18064 – North of JFK Causeway. From fixed ICWW navigation Marker 33 steer 351 degrees for 1.389 km  
18065 – North of JFK Causeway. From fixed ICWW navigation Marker 33 steer 014 degrees for 0.581 km  
18237 – From Indian Point Pier steer 327 degrees for 9.207 km, CBB266  
18239 – From Marker 56 steer 018 degrees for 1.562 km, CBB268  
18240 – From Marker 20 steer 243 degrees for 1.206 km

18241 – From Marker 73 steer 172 degrees for 1.971 km  
 18242 – From Marker 61 steer 200 degrees for 2.09 km  
 18243 – From ICWW Marker 71 steer 020 degrees for 0.063 km, CBB272  
 18244 – From Marker 20 steer 161 degrees for 4.448 km, CBB273  
 18245 – From Marker 76 steer 096 degrees for 3.83 km, CBB274  
 18246 – From Oso Bridge Public Boat Ramp steer 065 degrees for 3.765 km, CBB275  
 18247 – From ICWW Marker 1 at entrance to Laguna Madre steer 295 degrees for 0.566 km, CBB276  
 18279 – From CC Ship Channel Marker 43 steer 192 degrees for 2.046 km

## 2482 – Nueces Bay

These stations are plotted on the map, but not labeled.

AU\_1: 13420 – US 181 bridge at Causeway (North side)  
 13423 – 1 mile from north shore at east overhead power line  
 13424 – 1/2 mile from north shore at west overhead power line at the 11<sup>th</sup> pair of pylons from the north shore  
 14831 – North of Indian Point  
 14832 – 1 mile west of Portland  
 14833 – South side of bay at Central Power and Light's discharge  
 14834 – South side of bay off Avery Point  
 14835 – North of grain silos  
 17729 – 1.6 miles NW of TPWD boat ramp at Rincon Point on south end of Nueces Bay Causeway (SH 181)  
 17730 – 1.4 miles NE of TPWD boat ramp located on Rincon Point on south end of Nueces Bay Causeway (SH 181)  
 17731 – 2.4 miles NE of TPWD boat ramp on Rincon Point on south end of Nueces Bay Causeway (SH 181)  
 17732 – 2.2 miles north of TPWD boat ramp on Rincon Point on south end of Nueces Bay Causeway (SH 181)  
 17733 – 2.7 miles WNW of TPWD boat ramp on Rincon Point on south end of Nueces Bay Causeway (SH 181)  
 17734 – 4 miles west of TPWD boat ramp on Rincon Point on south end of Nueces Bay Causeway (SH 181)  
 17736 – 3 miles NW of TPWD boat ramp at Rincon Point on south end of Nueces Bay Causeway (SH 181)  
 17737 – 1.1 miles NW of end of paved road at tip of White's Point in San Patricio County  
 17738 – 1 mile ESE of end of paved road at tip of White's Point in San Patricio County  
 17813 – 1.8 miles NNW of TPWD boat ramp located on Rincon Point on south end of Nueces Bay Causeway (SH 181)  
 17815 – 1.3 miles SW of end of paved road at tip of White's Point in San Patricio County  
 17817 – 0.6 miles SE of end of paved road at tip of White's Point in San Patricio County  
 18234 – From White Point steer 340 degrees for 1.007 km, CBB263

18235 – From mouth of Allison Diversion Channel steer 082 degrees for 0.081 km, CBB264  
 18238 – From 4<sup>th</sup> pylon from SE power line steer 266 degrees for 0.285 km, CBB267  
 18276 – From South Nueces Causeway TPWD boat ramp steer 273 degrees for 7.618 km  
 18278 – From South Nueces Causeway TPWD boat ramp steer 262 degrees for 2.178 km, CBB308  
 18365 – Near south shore just south of E-W powerlines between pylons 10-11 1.08 km west and 362 m north of northernmost point of Burleson Rd.

## 2483 – Red Fish Bay

These stations are plotted on the map, but not labeled.

AU\_1: 14801 – At the ICWW at Aransas Pass  
 14803 – 1 mile NE of Ransom Island  
 14805 – 1/2 mile east of Ransom Island  
 14806 – 1 ¼ mile south of Ransom Island  
 14808 – In the ICWW ¼ mile NE of Port Ingleside  
 14810 – In the ICWW 2.5 miles NE of Port Ingleside  
 14812 – In the Aransas Channel at Hog Island  
 14813 – At the intersection of Corpus Christi and Aransas Channels  
 14815 – In the ICWW 2 miles SW of Rockport  
 14816 – In the ICWW 3.5 miles SW of Rockport  
 14817 – 3 miles NE of Aransas Pass  
 16855 – At ICWW at SH 261 in Aransas Pass  
 17693 – North side of Hog Island, 1.3 miles NNE of Fin and Feather Marina Boat Ramp off SH 361  
 17694 – At small island SE of Stedman Island 0.2 miles SE of Fin and Feather Marina Boat Ramp off SH 361  
 17695 – At NW tip of Harbor Island 1 mile SE of Fin and Feather Marina Boat Ramp south of SH 361  
 17696 – 0.4 miles SE of Ransom Island 2.5 miles SSW of Fin and Feather Marina Boat Ramp  
 17697 – SW of Stedman Island 1.4 miles SSW of Fin and Feather Marina Boat Ramp off SH 361  
 17698 – South of Stedman Island 1 mile south of Fin and Feather Marina Boat Ramp south of SH 361  
 17699 – SSW of Stedman Island 1.9 miles SSW of Fin and Feather Marina Boat Ramp south of SH 361

## 2483A – Conn Brown Harbor

AU\_1: 13287 – 180 m east of Huff St. at E. Wilson Ave. at end of Harbor Shrimp Co. pier at 524 Bigelow St. in Aransas Pass, Tx.

## 2485 – Oso Bay

- AU\_2: 15003 – 0.5 miles SE of SH 358 (South Padre Island Drive)  
17119 – 100 m NE of Holly Rd. a RR bridge in Corpus Christi  
18249 – From Oso Bridge public boat ramp steer 184 degrees for 3.475 km
- AU\_3: 13441 – Opposite Oso WWTP discharge, 500 feet east of Ennis Joslin Rd.  
13442 – At Ocean Drive  
17118 – NE of Padre Island Drive (SH 358) 100 m from NE corner of Bridge in Corpus Christi  
18248 – From Oso Bridge public boat ramp steer 235 degrees for 2.267 km

## 2485A – Oso Creek

- AU\_1: 13026 – At Yorktown bridge in Corpus Christi  
13027 – At FM 2444 south of Corpus Christi  
13029 – At FM 763 SW of Corpus Christi  
16712 – At Elliot Landfill west of SH 286

## 2491 – Laguna Madre

These stations are plotted on the map, but not labeled.

- AU\_1: 14843 – At Port Mansfield CM 40  
17117 – ¼ mile NW of ICWW CM 264 in the turning channel between the ICWW and the Pt. Mansfield Channel  
17121 – 0.7 km SE of the end of Yorktown Road 1.3 km NW of Pita Island in Corpus Christi  
18066 – South of JFK Causeway, from fixed ICWW Navigation Marker 41 steer 335 degrees for 2.501 km  
18067 – South of JFK Causeway, from fixed ICWW Navigation Marker 41 steer 325 degrees for 2.708 km  
18068 – South of JFK Causeway, from fixed ICWW Navigation Marker 41 steer 306 degrees for 4.163 km  
18069 – South of JFK Causeway, from fixed ICWW Navigation Marker 41 steer 341 degrees for 1.027 km  
18070 – South of JFK Causeway, from fixed ICWW Navigation Marker 41 steer 283 degrees for 1.021 km  
18071 – South of JFK Causeway, from fixed ICWW Navigation Marker 41 steer 282 degrees for 3.482 km  
18072 – Near Padre Isles, from fixed ICWW Navigation Marker 49 steer 157 degrees for 0.469 km  
18073 – West of Padre Isles Canal Subdivision, from fixed ICWW Navigation Marker 49 steer 239 degrees for 0.782 km  
18074 – NNE of Pita Island, from fixed ICWW Navigation Marker 49 steer 273 degrees for 4.168 km  
18075 – South of Pita Island, from fixed ICWW Navigation Marker 73 steer 333 degrees for 2.736 km  
18076 – SSE of Pita Island, from fixed ICWW Navigation Marker 73 steer 343 degrees for 1.468 km  
18078 – Near Marker 79, from fixed ICWW Navigation Marker 81 steer 036 degrees for 0.607 km

- 18079 – North of Marker 81, from fixed ICWW Navigation Marker 81 steer 035 degrees for 0.275 km  
18080 – South of Pure Oil Channel, from fixed ICWW Navigation Marker 97 steer 307 degrees for 3.834 km  
18081 – North of Pure Oil Channel, from fixed ICWW Navigation Marker 89 steer 291 degrees for 2.269 km  
18082 – North of North Bird Island, from fixed ICWW Navigation Marker 89 steer 121 degrees for 0.8 km  
18083 – West of North Bird Island, from fixed ICWW Navigation Marker 97 steer 071 degrees for 0.538 km  
18084 – South of Pure Oil Channel, from fixed ICWW Navigation Marker 97 steer 287 degrees for 2.045 km  
18085 – Night Hawk Bay, from fixed ICWW Navigation Marker 97 steer 164 degrees for 0.882 km  
18086 – West of Marker 105, from fixed ICWW Navigation Marker 105 steer 100 degrees for 0.75 km  
18087 – West of Marker 105, from fixed ICWW Navigation Marker 105 steer 257 degrees for 0.526 km  
18088 – Night Hawk Bay, from fixed ICWW Navigation Marker 105 steer 154 degrees for 0.753 km  
18089 – West of ICWW and Bird Island Basin, from fixed ICWW Navigation Marker 121 steer 341 degrees for 0.924 km  
18090 – At entrance to Bird Island Basin, from fixed ICWW Navigation Marker 121 steer 033 degrees for 0.655 km  
18091 – South of Bird Island Basin, from fixed ICWW Navigation Marker 121 steer 131 degrees for 1.049 km  
18092 – West of Marker 129, from fixed ICWW Navigation Marker 129 steer 307 degrees for 0.732 km  
18093 – SE of Marker 129, from fixed ICWW Navigation Marker 129 steer 145 degrees for 0.885 km  
18094 – Near Marker 133, from fixed ICWW Navigation Marker 129 steer 209 degrees for 0.954 km  
18095 – SE of Marker 129, from fixed ICWW Navigation Marker 129 steer 176 degrees for 1.404 km  
18096 – NW of Marker 145, from fixed ICWW Navigation Marker 145 steer 337 degrees for 1.928 km  
18097 – NW of Marker 145, from fixed ICWW Navigation Marker 145 steer 329 degrees for 1.981 km  
18098 – NW of Marker 145, from fixed ICWW Navigation Marker 145 steer 327 degrees for 1.474 km  
18099 – West of Marker 145, from fixed ICWW Navigation Marker 145 steer 284 degrees for 2.093 km  
18100 – NNE of Marker 153, from fixed ICWW Navigation Marker 153 steer 056 degrees for 3.387 km  
18101 – At Marker 154, north of Baffin Bay  
18102 – NW of Marker 161, from fixed ICWW Navigation Marker 161 steer 345 degrees for 1.383 km  
18103 – SW of Marker 161, from fixed ICWW Navigation Marker 161 steer 223 degrees for 0.436 km

18104 – ESE of Marker 161, from fixed ICWW Navigation Marker 161 steer 126 degrees for 1.115 km  
 18160 – West of Marker 201, from fixed ICWW Navigation Marker 201 steer 274 degrees for 0.95 km  
 18161 – West of Marker 207, from fixed ICWW Navigation Marker 201 steer 093 degrees for 1.117 km  
 18162 – ESE of Marker 201, from fixed ICWW Navigation Marker 201 steer 124 degrees for 0.691 km  
 18163 – WSW of Marker 207, from fixed ICWW Navigation Marker 207 steer 243 degrees for 0.756 km  
 18164 – East of Marker 207, from fixed ICWW Navigation Marker 207 steer 101 degrees for 2.591 km  
 18165 – ESE of Marker 207, from fixed ICWW Navigation Marker 207 steer 110 degrees for 1.924 km  
 18166 – ESE of Marker 207, from fixed ICWW Navigation Marker 117 steer 110 degrees for 1.672 km  
 18167 – From fixed Baffin Bay Marker 2 steer 338 degrees for 0.671 km  
 18168 – From fixed Baffin Bay Marker 2 steer 114 degrees for 0.131 km  
 18169 – South of Baffin Bay in Yarborough area, from fixed ICWW Navigation Marker 21 steer 126 degrees for 0.386 km  
 18170 – South of Baffin Bay in Yarborough area, from fixed ICWW Navigation Marker 27 steer 114 degrees for 0.393 km  
 18171 – South of Baffin Bay in Yarborough area, from fixed ICWW Navigation Marker 27 steer 170 degrees for 0.219 km  
 18172 – South of Baffin Bay in Yarborough area, from fixed ICWW Navigation Marker 27 steer 138 degrees for 1.209 km  
 18173 – South of Baffin Bay in Yarborough area, from fixed ICWW Navigation Marker 51 steer 074 degrees for 2.729 km  
 18174 – South of Baffin Bay in Yarborough area, from fixed ICWW Navigation Marker 51 steer 068 degrees for 1.493 km  
 18175 – South of Baffin Bay in Yarborough area, from fixed ICWW Navigation Marker 51 steer 104 degrees for 3.134 km  
 18176 – South of Baffin Bay in Yarborough area, from fixed ICWW Navigation Marker 51 steer 140 degrees for 2.057 km  
 18177 – In 9-Mile Hole, from end of 9-Mile Hole Channel steer 348 degrees for 8.413 km  
 18178 – In 9-Mile Hole, from end of 9-Mile Hole Channel steer 347 degrees for 8.242 km  
 18179 – In 9-Mile Hole, from end of 9-Mile Hole Channel steer 352 degrees for 6.601 km  
 18180 – In 9-Mile Hole, from end of 9-Mile Hole Channel steer 336 degrees for 4.488 km  
 18181 – In 9-Mile Hole, from end of 9-Mile Hole Channel steer 188 degrees for 3.842 km  
 18182 – In 9-Mile Hole, from end of 9-Mile Hole Channel steer 173 degrees for 5.438 km  
 18183 – In 9-Mile Hole, from end of 9-Mile Hole Channel steer 183 degrees for 6.017 km

18184 – In 9-Mile Hole, from end of 9-Mile Hole Channel steer 183 degrees for 5.916 km  
 18188 – East of Marker 221 at south end of dredge material placement island  
 18251 – From Marker 49 steer 271 degrees for 1.701 km, CBB280  
 18253 – From Marker 73 steer 289 degrees for 3.385 km, CBB282  
 18254 – From Marker 105 steer 222 degrees for 0.667 km, CBB283  
 18259 – From Marker 223 steer 346 degrees for 1.085 km  
 18261 – From Marker 27 steer 085 degrees for 1.346 km, CBB290  
 18262 – From Marker 59 steer 247 degrees for 0.701 km, CBB291  
 18263 – From Land Cut Marker 2 steer 183 degrees for 2.343 km, CBB292  
 18264 – From end of channel at 9-Mile Hole steer 065 degrees for 1.218 km, CBB293  
 18265 – From end of channel at 9-Mile Hole steer 165 degrees for 4.361 km, CBB294  
 18285 – From Marker 65 steer 118 degrees for 1.097 km, CBB315  
 18286 – From Marker 97 steer 297 degrees for 3.766 km, CBB316  
 18287 – From Marker 129 steer 272 degrees for 0.946 km, CBB317  
 18293 – From Marker 35 steer 088 degrees for 1.921 km, CBB323  
 18294 – From Marker 43 steer 073 degrees for 1.189 km, CBB324  
 18295 – From end of Rohoff's Channel steer 326 degrees for 3.615 km, CBB325  
 18452 – At Bird Island Basin 685m east and 825m north of ICWW Beacon 63 within Padre Island National Seashore Boundary  
 18605 – From Marker 97 steer 284 degrees for 2.55 km, CBB335  
 4845 – AT ICWW CM 109  
 14861 – 300 yards NW of the Yacht Club turning basin entrance  
 14862 – 300 yards NE of entrance to Yacht Club turning basin  
 14863 – Port Isabel side channel at SH 100  
 14868 – 200 yards off South Padre Island 2 miles north of the causeway  
 14868 – 200 yards off Laguna Heights shoreline  
 14876 – At the middle of the South Padre Island Causeway  
 14877 – Near Range Marker  
 14878 – At entrance to Sea Ranch Marina Channel  
 14879 – ¼ mile south of Coast Guard boat docks  
 17100 – 400m west of Andy Bowie Park  
 17975 – In Brazos Santiago Pass, 200m south and 325m west of SE tip of South Padre Island, TDH Station SOU20

AU\_3:

## 2492 – Baffin Bay

These stations are plotted on the map, but not labeled.

AU\_1: 18105 – WSW of Marker 207, from fixed ICWW Navigation Marker 207 steer 252 degrees for 1.65 km  
 18106 – From fixed Baffin Bay Navigation Marker 5 steer 230 degrees for 0.373km  
 18107 – From fixed Baffin Bay Navigation Marker 5 steer 222 degrees for 0.834km  
 18108 – From fixed Baffin Bay Navigation Marker 8 steer 188 degrees for 1.288km



18109 – From fixed Baffin Bay Navigation Marker 8 steer 216 degrees for 0.806km  
 18110 – From fixed Baffin Bay Navigation Marker 12 steer 096 degrees for 0.383km  
 18111 – From fixed Baffin Bay Navigation Marker 12 steer 185 degrees for 1.931km  
 18112 – From fixed Baffin Bay Navigation Marker 12 steer 256 degrees for 0.959km  
 18113 – From fixed Baffin Bay Navigation Marker 12 steer 268 degrees for 2.686km  
 18114 – From fixed Baffin Bay Navigation Marker 20 steer 030 degrees for 2.272km  
 18115 – From fixed Baffin Bay Navigation Marker 20 steer 326 degrees for 1.116km  
 18116 – From fixed Baffin Bay Navigation Marker 24 steer 023 degrees for 1.885km  
 18117 – From fixed Baffin Bay Navigation Marker 24 steer 244 degrees for 0.498km  
 18118 – From fixed Baffin Bay Navigation Marker 24 steer 352 degrees for 0.845km  
 18119 – From fixed Baffin Bay Navigation Marker 26 steer 222 degrees for 0.118km  
 18120 – From fixed ICWW Navigation Marker 34 steer 172 degrees for 1.925 km  
 18121 – From fixed Baffin Bay Navigation Marker 34 steer 196 degrees for 0.77km  
 18122 – From fixed Baffin Bay Navigation Marker 34 steer 342 degrees for 0.665km  
 18123 – Laguna Salada entrance, from fixed Baffin Bay Navigation Marker 40 steer 277 degrees for 1.04 km  
 18124 – Cayo del Grullo entrance, from fixed Baffin Bay Navigation Marker 40 steer 347 degrees for 2.396 km  
 18125 – Laguna Salada entrance, from fixed Baffin Bay Navigation Marker 40 steer 305 degrees for 1.741 km  
 18126 – Cayo del Grullo, from Kaufer-Hubert boat ramp steer 094 degrees for 1.226 km  
 18127 – Cayo del Grullo, from Kaufer-Hubert boat ramp steer 337 degrees for 1.067 km  
 18128 – Cayo del Grullo, from Kaufer-Hubert boat ramp steer 002 degrees for 1.207 km  
 18129 – Cayo del Grullo, from Kaufer-Hubert boat ramp steer 352 degrees for 1.384 km  
 18130 – Cayo del Grullo, from Kaufer-Hubert boat ramp steer 354 degrees for 1.783 km  
 18131 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 272 degrees for 2.81 km  
 18132 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 258 degrees for 3.103 km

18133 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 254 degrees for 3.115 km  
 18134 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 272 degrees for 3.276 km  
 18135 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 258 degrees for 5.159 km  
 18136 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 256 degrees for 5.993 km  
 18137 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 257 degrees for 6.366 km  
 18138 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 259 degrees for 6.489 km  
 18139 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 261 degrees for 7.314 km  
 18140 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 261 degrees for 7.356 km  
 18141 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 255 degrees for 7.304 km  
 18142 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 259 degrees for 7.575 km  
 18143 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 259 degrees for 7.625 km  
 18144 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 257 degrees for 7.672 km  
 18145 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 255 degrees for 8.082 km  
 18146 – Laguna Salada, from fixed Baffin Bay Navigation Marker 40 steer 257 degrees for 8.112 km  
 18147 – Alazan Bay mouth, from Starvation Point steer 285 degrees for 4.151km  
 18148 – Alazan Bay, from Starvation Point steer 229 degrees for 2.813 km  
 18149 – Alazan Bay, from Starvation Point steer 062 degrees for 2.15 km  
 18150 – Alazan Bay, from Starvation Point steer 299 degrees for 3.677 km  
 18151 – Alazan Bay, from Starvation Point steer 301 degrees for 3.931 km  
 18152 – Alazan Bay, from Starvation Point steer 003 degrees for 4.364 km  
 18153 – Alazan Bay, from Starvation Point steer 009 degrees for 4.4 km  
 18154 – Alazan Bay, from Starvation Point steer 011 degrees for 5.057 km  
 18155 – Alazan Bay, from Starvation Point steer 033 degrees for 5.687 km  
 18156 – Alazan Bay, from Starvation Point steer 049 degrees for 6.613 km  
 18157 – Alazan Bay, from Starvation Point steer 018 degrees for 6.589 km  
 18158 – Alazan Bay, from Starvation Point steer 028 degrees for 6.855 km  
 18159 – Alazan Bay, from Starvation Point steer 037 degrees for 7.913 km  
 18256 – Alazan Bay, from Starvation Point steer 030 degrees for 8.268 km  
 18257 – From boat ramp at Kaufer-Hubert steer 044 degrees for 3.012 km, CBB286  
 18258 – Alazan Bay, from Starvation Point steer 042 degrees for 7.265 km  
 18260 – From Marker 14 steer 167 degrees for 0.771 km, CBB345

**2492A – San Fernando Creek**

AU\_1: 15976 – At FM 665, 5 miles east of Alice in Jim Wells County

**2493 – South Bay**

AU\_1: 14855 – 100 yards NW of Brazos Island  
14856 – South Bay  
14858 – South Bay  
14880 – South Bay  
17101 – 1.9 miles east of Del Mar Beach

**2494 – Brownsville Ship Channel**

AU\_1 17102 – 4.2 miles west of the mouth at CM38

**2501 – Gulf of Mexico**

AU\_1: 13469 – At Port Mansfield, just beyond jetties at bell buoy