

LAVACA-GUADALUPE COASTAL BASIN



LAVACA-GUADALUPE COASTAL BASIN

Segment 1701 (Victoria Barge Canal) represents the Victoria Barge Canal, which is a 35 mile long man made stream segment that was completed in 1968. The barge canal was constructed to provide a navigable waterway from the Victoria Turning Basin in Victoria County to the Gulf Intracoastal Waterway (GIWW) located at the confluence with the San Antonio Bay in Calhoun County. This waterway provides a route for barge traffic to reach the Port of Victoria without the need to deal with the frequent log jams and course changes in the Lower Guadalupe River. The canal was originally constructed 9 feet in depth and 100 feet in width, but was expanded from 1995 to 2002 to a depth of 12 feet and a width of 125 feet. The canal sees large amounts of shipping traffic to accommodate the needs of several industrial manufacturing plants located along its length.

TCEQ Region 14 staff and TCEQ predecessor agencies have monitored station 12536 quarterly at the State Highway 35 bridge crossing since 1969. The average depth to the bottom at this location is 1.9 meters. The 2014 Texas Integrated Report identified general use concerns for chlorophyll-a and nitrate-nitrogen. Chlorophyll-a concentrations were assessed at a mean value of 39.34 mg/L, which exceeded the nutrient screening criteria of 11.60 mg/L by more than three times. Elevated chlorophyll-a values are usually linked to excessive algal growth in the water

body. Algae biomass is dependent upon available nutrients and may be affected by the nitrate-nitrogen concern for this segment. The average nitrate-nitrogen concentration was assessed at 0.72 mg/L, which was four times greater than the nutrient screening criteria of 0.17 mg/L. Nutrient screening levels are more restrictive on the tidally influenced barge canal than in most freshwater waterways. This waterway is unique among tidally influenced segments in that it does not receive any direct freshwater influences from any perennial rivers or streams. Most of the water in the canal originates

in the San Antonio Bay system, although it does receive some freshwater from industrial wastewater effluent and storm runoff. The data from this segment was analyzed by GBRA for trends over time. The specific conductance, chloride and sulfate concentration are all significantly increasing over time (Figures 1, 2, & 3). The increase in all three of these parameters is an indication that this water body is becoming more saline. This change is most likely due to several years of prolonged drought and the resulting reduction in freshwater runoff into the system.



Lavaca-Guadalupe Coastal Basin

Drainage Area: 998 square miles

Length: 27 miles

Aquifer: Gulf Coast

River Segments: 1803, 1802, 1801, 1701

Cities and Communities: Victoria, Seadrift, Bloomington, Inez, Port O'Conner, Port Lavaca

Counties: Calhoun, Victoria, Jackson

EcoRegion: Texas Blackland Prairie, Post Oak Savannah, Gulf Coastal Plains, East Central Texas Plains

Climate: Average annual rainfall 34.76 inches, Average annual temperature 72.5°F

Vegetation Cover: Evergreen Forest 0.21%, Deciduous Forest 8.4%, Shrubland 16.9%; Grassland 13.7%; Woody Wetlands: 17.2% Cultivated Crops 21.4% ; Pasture Hay 15.1%

Land Uses: urban, heavy industry, agriculture, ranching and recreational.

Development: Low Intensity 1.33% ; Medium Intensity 0.18%; High Intensity 0.03%; Open Space 3.41%

Water Body Uses: aquatic life, non-contact recreation, general use, fish consumption, and industrial cooling.

Soils: Clay subsoil, deep black soil, sandy clay, dark clay loam, clay

Permitted Wastewater Treatment Facilities: Domestic 11, Land Application 1, Industrial 7

LAVACA-GUADALUPE COASTAL BASIN

Table 1

Station 12636 - Victoria Barge Canal at SH 35 12/2002 - 06/2017					
AU 1701_01 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C) at 0.3 meters	24.6	31.9	9.9	59	35.00
Temperature (°C) at all depths	24.8	31.9	9.9	131	35.00
pH at 0.3 meters	8.1	9.2	7.5	58	6.5 - 9.0
pH at all depths	8.1	9.2	7.4	130	6.5 - 9.0
Chloride (mg/L)	4,530	15,200	234	55	N/A
Sulfate (mg/L)	666	2,300	35	57	N/A
Total Dissolved Solids (mg/L)	12,600	38,500	1,020	59	N/A
Total Dissolved Solids (mg/L)	7,810	25,090	663	131	N/A
NH3-N (mg/L)	<0.10	0.33	<0.05	53	0.10
Total Phosphorus (mg/L)	0.16	0.30	<0.05	51	0.21
Chlorophyll-a (µg/L)	21.3	246	4.5	54	11.6
Nitrate Nitrogen (mg/L)	0.31	1.40	<0.04	55	0.17
TKN (mg/L)	0.97	2.57	0.44	52	N/A
AU 1701_01 Recreational Use					
<i>Enterococcus</i> (MPN/100 mL)	17 Geomean	1,250	<1.0	44	35 Geomean
AU 1701_01 Aquatic Life Use					
Dissolved Oxygen (mg/L) at 0.3 meters	8.0	17.6	4.9	59	≥3.0 Minimum & ≥4.0 Average
Dissolved Oxygen (mg/L) at all depths	7.8	17.6	4.5	131	≥3.0 Minimum & ≥4.0 Average

Figure 1

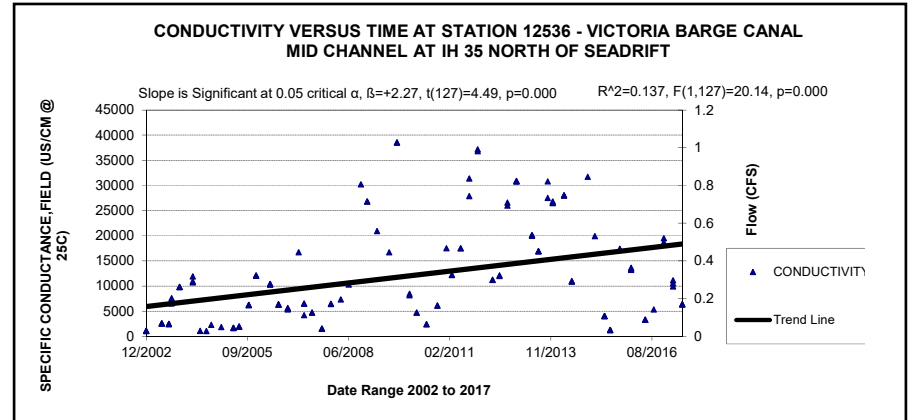


Figure 2

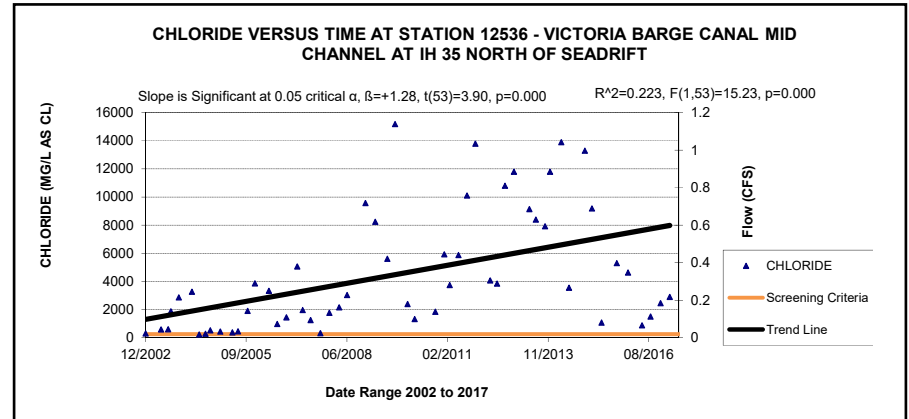
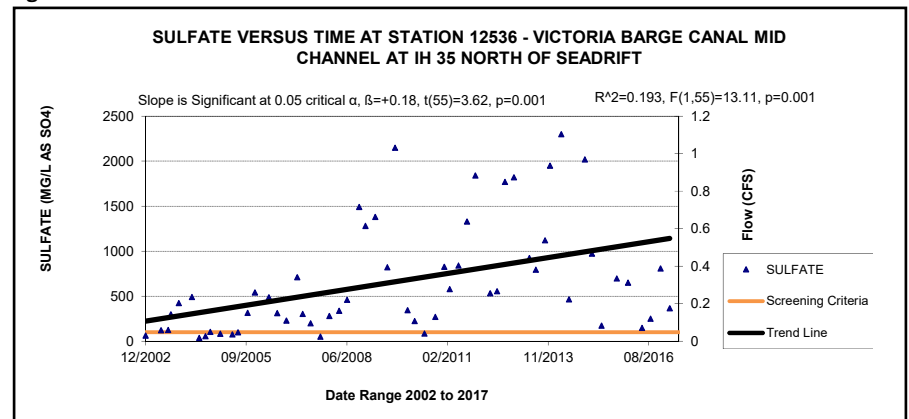


Figure 3



LAVACA-GUADALUPE COASTAL BASIN

