

TEXAS WATER DEVELOPMENT BOARD

REPORT 171

CHEMICAL AND PHYSICAL CHARACTERISTICS
OF WATER IN ESTUARIES OF TEXAS
OCTOBER 1969-SEPTEMBER 1970

By

D. C. Hahl and Karl W. Ratzlaff
United States Geological Survey

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under cooperative agreement with the
Texas Water Development Board

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OF WATER IN ESTUARIES OF TEXAS
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INTRODUCTION

The coastal waters of Texas are not classical estuaries, but are similar to them in ecosystems and mixing phenomena. A description of various types of estuaries is presented in *Estuaries*, edited by George H. Lauff (1967, p. 3-11). The term estuary, as used in this report, refers to concomitant water bodies in which streamflow mixes with sea water.

Purpose and Scope of the Investigation

Plans for the eventual development and utilization of all water resources in Texas include provisions for the use and preservation of water in the estuaries of the State. This provision requires a continuing evaluation of changes in the chemical and physical characteristics of the water and a knowledge of the hydrodynamics of the estuaries.

In September 1967, the U.S. Geological Survey, in cooperation with the Texas Water Development Board, began a water-resources investigation of the principal estuaries along the Texas coast (Figure 1) except Galveston Bay, which is being studied by other agencies, and the Rio Grande, which is under the jurisdiction of

the International Boundary and Water Commission—United States and Mexico.

The objectives of the investigation are to define: (1) The occurrence, source, and distribution of nutrients; (2) the physical, organic, and inorganic water quality and its areal distribution and time variation; (3) the chemical and physical characteristics of water which enters the estuaries from the Gulf of Mexico; (4) the occurrence, quality, quantity, and dispersion of drainage entering the estuarine systems; and (5) current patterns, directions, and rates of water movement.

Status of the Project

The first three objectives of the project were organized into three phases: (1) Reconnaissance for establishment of an optimum data-collection network; (2) repetitive surveys throughout this network to determine the general chemical and physical characteristics of the estuarine system; and (3) continued data collection at a reduced number of sites to maintain definition of the chemical and physical characteristics of each estuarine system and of the relationship between systems. The following tabulation shows the progress made through September 1970:

ESTUARY	PHASE		
	(1)	(2)	(3)
Sabine-Neches	Completed	Underway	No surveys
Brazos	Underway	No surveys	Do.
East Matagorda	Completed	do.	Do.
Colorado	do.	Underway	Do.
Lavaca-Tres Palacios	do.	do.	Do.
Guadalupe	do.	do.	Do.
Mission-Aransas	Underway	do.	Do.
Nueces	Completed	do.	Do.
Laguna Madre	Underway	No surveys	Do.

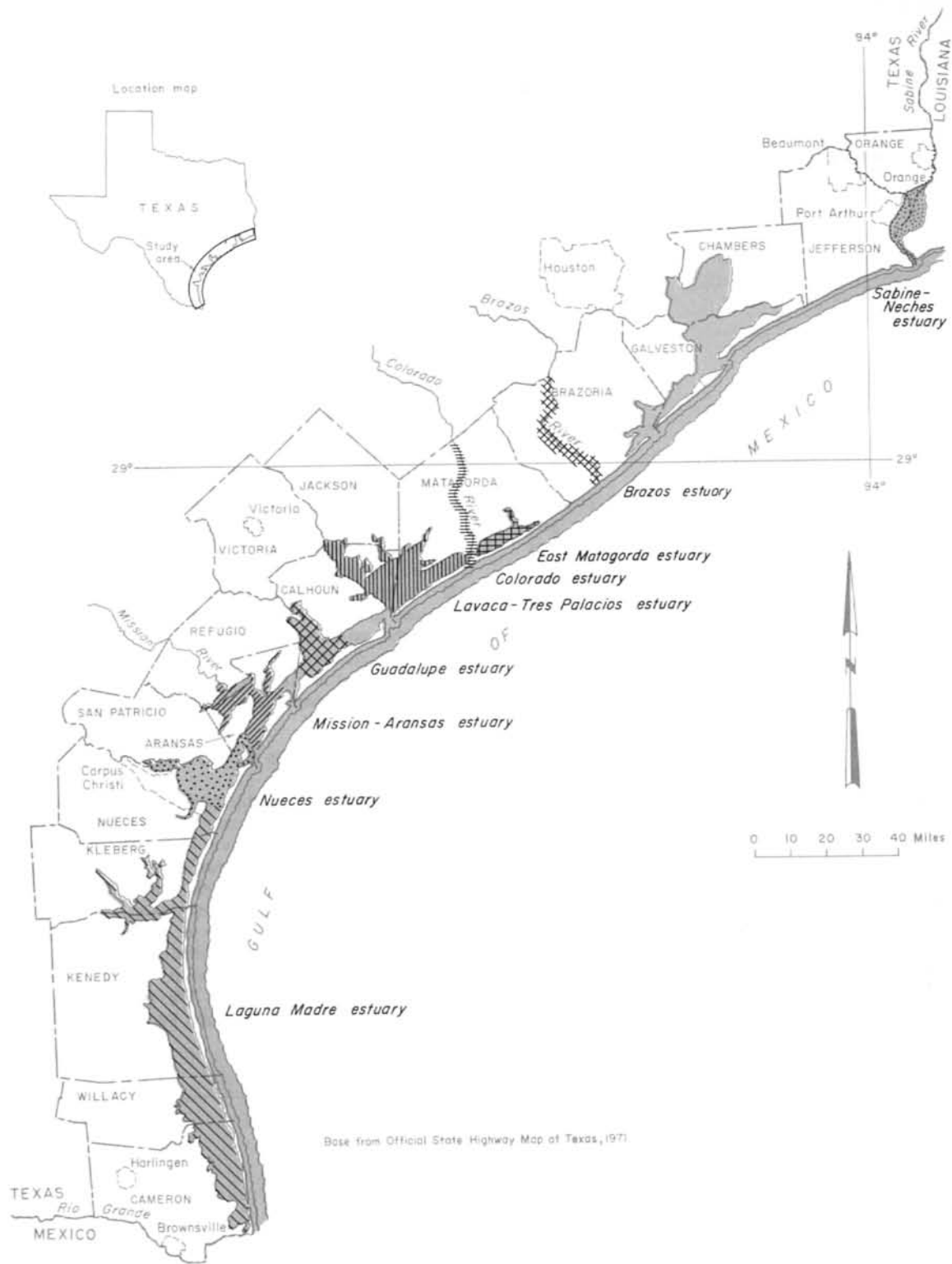


Figure 1.—Locations of the Estuaries

Data collection to meet the fourth objective has begun. Six continuous streamflow measuring stations

and 11 stations at which monthly data on streamflow and water quality are obtained were established. No data

collection has been initiated to provide a solution to the fifth objective, however, subjective information on circulation is available from water-quality data.

Previous and Related Reports

This report presents data collected during the 1970 water year and is the third in an annual series of basic-data reports (Hahl and Ratzlaff, 1970, 1972). A report by Grozier and others (1968, p. 47-61) includes data collected during flooding caused by Hurricane Beulah.

Acknowledgments

The U.S. Army Corps of Engineers at Galveston, the Texas Parks and Wildlife Department, and the Texas Water Development Board provided data and field assistance. Many private citizens and commercial fishermen furnished information on historical changes and existing conditions in the bays.

DATA-COLLECTION METHODS

A modified statistical grid was used to select initial data-collection sites. The network developed was then altered by adding sites to provide an improved record of significant changes in chemical and physical characteristics of the estuarine systems. Approximately 300 data-collection sites were visited during the 1970 water year. About 55 percent of these sites are located adjacent to or between navigation aids, bridge piers, power poles, survey platforms, well structures, or

<u>PARAMETER MEASURED</u>	<u>INSTRUMENT</u>	<u>MODEL</u>	<u>MANUFACTURER</u>
pH	Specific ion meter	401	Orion Research
pH	pH meter	175	Instrumentation Laboratory
Dissolved oxygen	Oxygen meter	54	Yellow Springs Instruments
Specific conductance	Solubridge	RB-3	Industrial Instruments
Temperature	Research thermometer	ET-100 Marine	Allied Research

landmarks and can be reoccupied exactly. About 17 percent of the sites are close to shore features or reefs and are located by compass heading and distance from that feature and water depth at the site; these sites can be reoccupied within 100 feet. About 28 percent of the sites are remote to any reference. They are usually reached by traveling from a known landmark at a known speed on a predetermined compass course. Upon arrival at the site, verification is made by checking the alignment of one or more sets of landmarks. These sites can be reoccupied within a quarter mile.

At each data-collection site, field data are collected from several points along a vertical. Samples

for laboratory analyses are collected from a predetermined number of data-collection sites and at other sites in the network when significant changes in field data indicate a need for additional samples. Properties or constituents measured in the field are dissolved oxygen, specific conductance, temperature, pH, and transparency by Secchi disk. Laboratory analyses include the principal inorganic ions, biochemical oxygen demand (BOD), chemical oxygen demand (COD), insecticides and herbicides, ammonia, nitrite, nitrate, ortho and total phosphate, and several other selected ions such as bromide, iodide, strontium, lithium, boron, and iron.

Before October 1968, results of analyses for nitrogen species were reported as ammonia, nitrite, or nitrate; those for phosphorus were reported as phosphate. In this report, each of the nitrogen species are reported as nitrogen; and phosphorus species are reported as phosphorus. Data reported before October 1968 may be converted to the nitrogen or phosphorus equivalent by multiplying the concentrations by the following factors:

<u>TO CONVERT</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Ammonia (NH ₄)	Nitrogen (N)	0.777
Nitrite (NO ₂)	Nitrogen (N)	.305
Nitrate (NO ₃)	Nitrogen (N)	.226
Phosphate (PO ₄)	Phosphorus (P)	.326

Field Instruments

The field instruments used in this investigation are as follows, but mention herein of the manufacturers and their instruments does not constitute an endorsement.

The instruments used for pH measurements were calibrated daily by using three standards: pH 4.0, 7.0, and 10.0. The dissolved-oxygen meter was calibrated at least daily by using the oxygen-saturation data compiled by the American Public Health Association and others (1966, p. 409). The Winkler method was used to verify the oxygen saturation during some of the calibrations. The conductivity meter was calibrated monthly by using at least two standards in each of the three conductivity ranges on the instrument. The electrical thermometer was calibrated weekly.

Probes of the instruments are set in a manifold through which water to be sampled is drawn. Several

tests were conducted to determine the effect of streaming potential on instrument output. Dissolved oxygen readings of water passing through the manifold deviated from the in situ readings by less than 0.1 mg/l (milligrams per liter), and pH readings differed by less than 0.05 pH units.

Treatment of Samples

All samples except those for insecticide and herbicide analyses were collected in plastic throwaway bottles. The BOD, COD, and nutrient samples were chilled to 1°C, stored in a refrigerator or ice chest, and shipped to the laboratory as soon as possible, usually within 24 hours. All other samples were stored at ambient temperature.

Since October 1969, one milliliter of mercuric chloride solution (55 gms HgCl₂ per liter H₂O) was added to each sample collected for nutrient analysis.

Previously, chloroform was used to preserve the nutrient sample. Samples for heavy metals and selected trace constituents (except boron, bromide, fluoride, and iodide) were filtered through 0.45 micron membrane filters and collected in bottles prewashed with 10 percent nitric acid. Two milliliters of concentrated nitric acid were added to each filtered sample.

Samples to be analysed for herbicides and insecticides were collected in specially treated glass bottles and shipped to the laboratory as soon as possible. Most herbicide and some insecticide samples were depth-integrated water samples; however, most insecticide and some herbicide samples were taken from bottom sediments. Sediment samples were collected by (1) dragging a large-mouth bottle along the bottom until the bottle contained at least 100 grams of sediment, or (2) coring with a 2-inch lucite tube and selectively removing 100 grams of material from the center of the core.

QUALITY OF WATER IN THE ESTUARIES

Sabine-Neches Estuary

The Sabine-Neches estuary covers an area of about 100 square miles and consists of the tidal parts of the Sabine and Neches Rivers and other tributaries, Sabine Lake, the Sabine-Neches Canal, the Port Arthur Canal, parts of the Intracoastal Waterway, and Sabine Pass (Figure 2). Water depth at mlw (mean low water) is greater than 40 feet in dredged parts of the rivers, canals,

and pass; about 15 feet in the Intracoastal Waterway; and generally 10 feet in Sabine Lake.

The water-quality data for the Sabine-Neches estuary (Table 1) were collected during December and July. Samples were not collected at all sites shown on Figure 2.

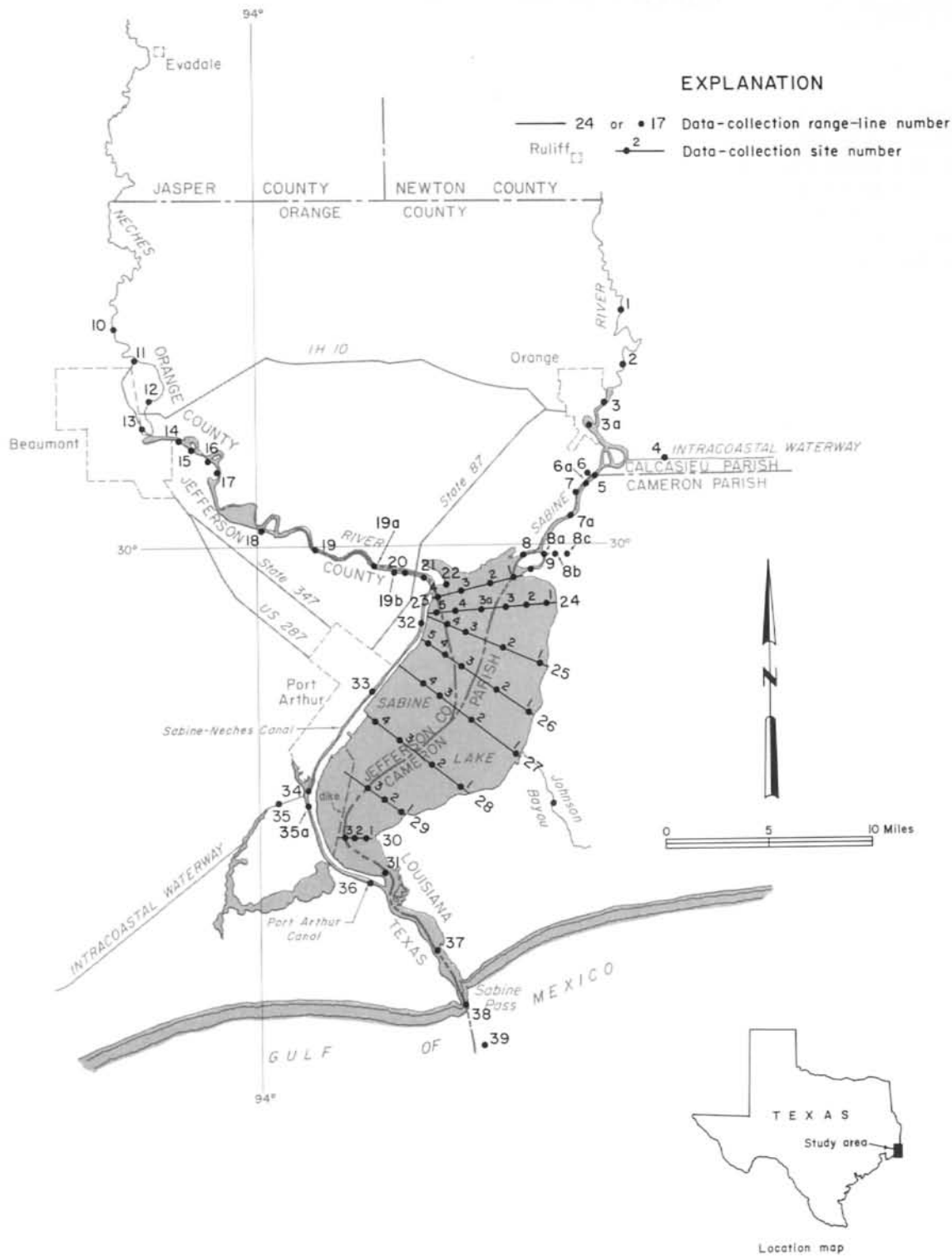


Figure 2
 Data-Collection Sites in the Sabine-Neches Estuary

Base by US Geological Survey, 1956

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year

Nutrient and other environmental characteristics

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 1. Sabine River</u>																	
Dec. 3	1010	2	1	490	7.1	14	46	9.2	88	1.0	8.6	8.0	0.3	--	0.01	0.05	0.07
			5	510	7.5	15		8.4	82								
			7	420	7.0	14		9.2	88								
			11	630	7.2	15		9.0	88								
			13	25,000	6.9	18		2.8	32								
			15	27,000	7.0	19.5		2.3	27								
July 29	1030	2	1	1,600	6.9	29.8	--	4.8	63	1.9	--	9.9	.0	0.04	.03	.03	.06
			5	2,300	7.0	29.4		4.2	55								
			7.5	6,000	6.9	29.7		3.7	50								
			10	24,000	7.0	30.3		3.2	46								
			20	30,000	7.1	30.6		--	--								
			31	29,000	7.0	30.2		--	--								
<u>Line 2. Sabine River</u>																	
Dec. 3	1110	2	1	1,400	7.1	15	53	9.4	92	--	--	--	--	--	--	--	--
			5	1,400	7.1	15		9.0	88								
			8	1,800	7.2	15		8.6	84								
			10	20,000	7.0	17		4.2	46								
			15	27,000	7.0	18		3.1	36								
			20	33,000	7.1	18		3.5	42								
July 28	1915	2	1	6,000	7.1	30.5	--	6.6	89	--	--	--	--	--	--	--	--
			5	7,500	7.1	30.3		5.9	80								
			10	27,000	7.0	30.0		.0	0								
			20	36,000	7.1	30.0		.0	0								
			31	37,000	7.1	30.0		.0	0								
			29	35,000	7.2	18		3.6	43								
July 29	1105	2	1	5,800	6.9	30.7	--	4.7	64	--	--	--	--	--	--	--	--
			5	9,200	6.9	30.8		3.6	49								
			7	20,000	6.9	30.8		1.9	27								
			10	26,000	6.9	30.9		--	--								
			20	34,000	7.1	30.7		--	--								
			29	34,000	7.1	30.6		--	--								
<u>Line 3. Sabine River</u>																	
Dec. 3	1130	2	1	2,600	7.2	15	53	9.3	92	--	--	--	--	--	--	--	--
			5	3,700	7.1	15		8.9	88								
			10	19,000	7.2	16		6.6	70								
			15	27,000	7.2	17		5.5	62								
			40	36,000	7.4	18		6.0	72								
July 29	--	2	1	9,500	7.4	30.8	--	6.2	85	--	--	--	--	--	--	--	--
			5	22,000	7.2	30.8		3.1	44								
			7	24,000	7.1	30.7		2.8	41								
			10	26,000	7.2	30.6		--	--								
			20	34,000	7.1	30.5		--	--								
31	40,000	7.2	30.5	--	--												
<u>Line 3a. Sabine River</u>																	
July 28	1835	2	1	16,000	8.5	32.1	--	13.2	186	--	--	--	--	--	--	--	--
			4	18,000	8.1	31.7		10.3	147								
			5	20,000	7.7	30.9		6.5	93								
			6	22,000	7.4	30.9		5.8	83								
			12	30,000	7.0	30.3		1.5	22								
<u>Line 4. Intracoastal Waterway</u>																	
Dec. 3	1200	2	1	20,000	7.2	16	38	7.8	84	--	--	--	--	--	--	--	--
			5	20,000	7.2	16		7.8	84								
			10	20,000	7.2	16.5		7.6	83								
			23	20,000	7.2	17		7.6	84								
July 28	1820	2	1	24,000	7.5	31.0	--	7.6	110	--	--	--	--	--	--	--	--
			3	26,000	7.3	30.8		5.6	81								
			10	26,000	7.3	30.7		4.9	71								
			22	31,000	7.1	30.4		1.6	24								
<u>Line 5. Sabine River</u>																	
Dec. 3	1235	2	1	14,000	7.3	16	69	8.8	92	1.6	18	7.9	.5	--	.02	.04	.06
			5	19,000	7.3	16		7.8	83								
			10	20,000	7.4	17		7.2	79								
			15	27,000	7.4	17		6.7	76								
			33	33,000	7.4	18		5.3	63								
24	2.5	.7	--	.04	.06	.08											

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 5. Sabine River--Continued</u>																	
July 29	1140	2	1	18,000	7.8	31.0	--	6.6	93	--	--	--	--	--	--	--	--
			5	24,000	7.4	30.7		4.2	61	--	--	--	--	--	--	--	--
			7	24,000	7.3	30.7		4.0	58	--	--	--	--	--	--	--	--
			10	26,000	7.3	30.7		--	--	--	--	--	--	--	--	--	--
			20	34,000	7.1	30.4		--	--	--	--	--	--	--	--	--	--
			28	37,000	7.1	30.4		--	--	--	--	--	--	--	--	--	--
<u>Line 6. Adams Bayou</u>																	
Dec. 3	1215	2	1	18,000	7.3	16	71	7.4	79	--	--	--	--	--	--	--	--
			5	22,000	7.3	16.5		6.9	76	--	--	--	--	--	--	--	--
			11	22,000	7.3	17		6.9	77	--	--	--	--	--	--	--	--
July 29	1145	2	1	19,000	7.7	31.5	--	6.1	87	--	--	--	--	--	--	--	--
			5	24,000	7.5	31.2		4.4	64	--	--	--	--	--	--	--	--
			7	26,000	7.3	31.0		4.5	65	--	--	--	--	--	--	--	--
			12	26,000	7.2	30.8		--	--	--	--	--	--	--	--	--	--
<u>Line 6a. Sabine River</u>																	
July 29	1155	2	2	20,000	7.7	36.7	--	4.6	72	--	--	--	--	--	--	--	--
<u>Line 7. Sabine River</u>																	
Dec. 3	1330	2	1	18,000	6.6	25.4	97	6.1	78	--	--	--	--	--	--	--	--
			3	18,000	6.8	23.9		5.7	71	--	--	--	--	--	--	--	--
			5	21,000	7.0	22.5		5.6	68	--	--	--	--	--	--	--	--
			10	25,000	7.2	22.2		5.1	63	--	--	--	--	--	--	--	--
			15	28,000	7.3	21.9		5.0	62	--	--	--	--	--	--	--	--
			20	30,000	7.5	21.8		5.3	67	--	--	--	--	--	--	--	--
			31	34,000	7.4	22.2		5.2	67	--	--	--	--	--	--	--	--
Do.	1330	3	1	21,000	7.1	17.5	84	8.2	91	--	--	--	--	--	--	--	--
			5	22,000	7.2	17		7.3	81	--	--	--	--	--	--	--	--
			9	22,000	7.2	18		7.3	83	--	--	--	--	--	--	--	--
July 29	1200	2	1	26,000	7.6	34.6	--	4.2	66	--	--	--	--	--	--	--	--
			5	26,000	7.4	32.3		3.6	53	--	--	--	--	--	--	--	--
			7	27,000	7.3	31.9		3.3	49	--	--	--	--	--	--	--	--
			10	28,000	7.3	32.3		--	--	--	--	--	--	--	--	--	--
			15	28,000	7.3	32.0		--	--	--	--	--	--	--	--	--	--
			20	34,000	7.1	31.0		--	--	--	--	--	--	--	--	--	--
			34	37,000	7.1	31.0		--	--	--	--	--	--	--	--	--	--
<u>Line 7a. Sabine River</u>																	
July 28	1730	2	1	28,000	7.5	30.7	--	6.1	90	--	--	--	--	--	--	--	--
			5	31,000	7.6	30.7		6.3	94	--	--	--	--	--	--	--	--
			20	36,000	7.5	30.2		2.8	42	--	--	--	--	--	--	--	--
			34	38,000	7.3	30.0		.8	12	--	--	--	--	--	--	--	--
<u>Line 8. Sabine River</u>																	
Dec. 3	1350	2	1	24,000	7.6	17	84	8.7	97	2.8	21	5.2	0.8	--	0.05	0.04	0.07
			5	26,000	7.7	17		8.8	99	--	--	--	--	--	--	--	--
			10	27,000	7.7	17		8.5	97	--	--	--	--	--	--	--	--
			15	31,000	7.6	17		7.6	87	--	--	--	--	--	--	--	--
			33.5	31,000	7.6	17.5		6.8	79	2.0	25	2.4	.8	--	.04	.07	.09
July 28	1330	2	1	32,000	7.8	30.7	--	7.5	112	--	--	--	--	--	--	--	--
			5	34,000	7.6	30.3		5.3	79	--	--	--	--	--	--	--	--
			10	34,000	7.6	30.3		4.5	68	--	--	--	--	--	--	--	--
			15	36,000	7.6	30.3		3.9	59	--	--	--	--	--	--	--	--
			20	36,000	7.5	30.3		3.4	52	--	--	--	--	--	--	--	--
			33	37,000	7.5	30.3		2.4	36	--	--	--	--	--	--	--	--
Do.	1455	2	1	32,000	7.8	31.1	--	7.4	110	--	--	--	--	--	--	--	--
			5	34,000	7.7	30.4		4.4	67	--	--	--	--	--	--	--	--
			10	36,000	7.6	30.4		4.3	65	--	--	--	--	--	--	--	--
			15	37,000	7.6	30.3		3.5	53	--	--	--	--	--	--	--	--
			20	37,000	7.5	30.3		3.0	45	--	--	--	--	--	--	--	--
			32	37,000	7.5	30.4		2.4	36	--	--	--	--	--	--	--	--
July 29	1330	2	1	30,000	8.0	32.6	--	6.2	95	5.2	31	4.7	.1	0.04	.10	.05	.08
			5	31,000	7.6	31.3		4.0	60	--	--	--	--	--	--	--	--
			7	32,000	7.6	31.3		3.5	52	--	--	--	--	--	--	--	--
			10	34,000	7.6	31.6		--	--	--	--	--	--	--	--	--	--
			20	36,000	7.6	31.8		--	--	--	--	--	--	--	--	--	--
			33	36,000	7.5	31.9		--	--	2.7	33	4.5	.0	.37	.08	.08	.09

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year

Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)		
								Concentration	Percent saturation										
<u>Line 8a. East Pass at Black Bayou</u>																			
Dec. 1	1040	2	1	27,000	7.9	14.9	99	6.9	76	3.3	49	3.8	0.9	--	0.04	0.04	0.08		
			5	29,000	7.9	15.2	--	6.6	73	--	--	--	--	--	--	--	--	--	
			10	28,000	7.8	15.8	--	7.0	78	--	--	--	--	--	--	--	--	--	--
			15	27,000	7.8	15.7	--	7.1	80	1.3	59	3.2	.4	--	.04	.06	.08		
<u>Line 8b. Black Bayou</u>																			
Dec. 1	1125	2	1	25,000	7.9	15.1	--	6.8	73	2.5	48	3.7	.2	--	.04	.03	.07		
			5	26,000	7.8	15.1	--	6.8	73	--	--	--	--	--	--	--	--	--	
			10	26,000	7.8	15.2	--	6.7	72	2.2	62	3.4	.6	--	.04	.03	.07		
<u>Line 8c. Black Bayou</u>																			
Dec. 1	1025	2	1	24,000	--	15.5	147	7.8	84	3.0	59	3.2	.2	--	.05	.04	.09		
			5	24,000	--	16.0	--	8.2	89	--	--	--	--	--	--	--	--	--	
Do.	1145	2	1	--	7.8	--	--	--	--	--	--	--	--	--	--	--	--		
			11	--	7.7	--	--	--	--	--	--	--	--	--	--	--	--	--	
<u>Line 9. Sabine River</u>																			
Dec. 3	1350	2	1	24,000	7.7	22.9	--	8.5	105	--	--	--	--	--	--	--	--		
			3	22,000	7.6	22.5	--	7.9	96	--	--	--	--	--	--	--	--	--	
			5	24,000	7.5	21.8	--	7.1	87	--	--	--	--	--	--	--	--	--	
			9.5	25,000	7.2	21.8	--	5.9	73	--	--	--	--	--	--	--	--	--	
July 28	1340	2	1	27,000	7.7	30.7	--	8.4	124	--	--	--	--	--	--	--	--		
			3	30,000	7.3	29.6	--	4.6	68	--	--	--	--	--	--	--	--	--	
			5	30,000	7.3	29.7	--	4.0	59	--	--	--	--	--	--	--	--	--	
			10	31,000	7.4	29.7	--	4.0	59	--	--	--	--	--	--	--	--	--	
			18	32,000	7.4	29.9	--	4.2	62	--	--	--	--	--	--	--	--	--	
Do.	1505	2	1	27,000	7.3	31.8	--	7.5	112	--	--	--	--	--	--	--	--		
			3	30,000	7.4	30.1	--	5.5	81	--	--	--	--	--	--	--	--	--	
			5	31,000	7.4	29.8	--	3.7	54	--	--	--	--	--	--	--	--	--	
			10	32,000	7.4	29.9	--	4.0	59	--	--	--	--	--	--	--	--	--	
			15	34,000	7.5	29.9	--	4.0	60	--	--	--	--	--	--	--	--	--	
July 29	1405	2	1	28,000	8.0	33.2	--	6.9	104	--	--	--	--	--	--	--	--		
			5	30,000	7.5	31.5	--	4.7	71	--	--	--	--	--	--	--	--		
			7	31,000	7.4	31.0	--	4.2	63	--	--	--	--	--	--	--	--		
			10	30,000	7.4	31.0	--	--	--	--	--	--	--	--	--	--	--	--	
			20	31,000	7.4	30.7	--	--	--	--	--	--	--	--	--	--	--	--	
<u>Line 10. Neches River</u>																			
Dec. 3	1030	2	1	1,800	6.7	17	38	10.0	103	.4	10	9.9	.3	--	.02	.03	.06		
			5	2,100	6.7	17	--	8.9	93	--	--	--	--	--	--	--	--	--	
			6.5	3,000	6.7	17	--	7.9	82	--	--	--	--	--	--	--	--	--	
			7.5	3,600	6.5	17	--	8.5	89	--	--	9.5	.3	--	--	--	--	--	
			9	15,000	6.5	19	--	1.8	20	--	--	--	--	--	--	--	--	--	
			10	21,000	6.5	21	--	.0	0	--	--	--	--	--	--	--	--	--	
			15	22,000	6.5	21	--	.0	0	--	--	--	--	--	--	--	--	--	
July 28	1730	2	1	1,800	7.0	29.5	--	6.3	82	2.8	--	10.0	.0	0.08	.02	.04	.06		
			3	5,500	7.0	29	--	4.9	64	--	--	--	--	--	--	--	--		
			5	10,000	6.9	29	--	1.5	20	--	--	--	--	--	--	--	--		
			10	20,000	7.0	30	--	.0	0	--	--	--	--	--	--	--	--	--	
			23	22,000	7.0	31	--	.0	0	3.1	57	8.4	.1	1.3	.11	.24	.24		
<u>Line 11. Neches River</u>																			
Dec. 3	1120	2	1	2,400	6.7	17	61	9.1	95	--	--	--	--	--	--	--	--		
			5	3,000	6.7	17	--	7.9	82	--	--	--	--	--	--	--	--		
			6.5	3,800	6.5	17	--	8.3	86	--	--	--	--	--	--	--	--		
			7	10,000	6.5	17	--	4.5	48	--	--	--	--	--	--	--	--		
			7.5	15,000	6.5	18.5	--	1.1	12	--	--	--	--	--	--	--	--		
July 28	1715	2	1	7,500	7.3	30.5	48	6.4	86	--	--	--	--	--	--	--	--		
			3	8,000	7.3	30.5	--	6.1	82	--	--	--	--	--	--	--	--		
			5	17,000	7.0	30	--	.0	0	--	--	--	--	--	--	--	--		
			10	23,000	7.0	30	--	.0	0	--	--	--	--	--	--	--	--		
			20	26,000	7.1	31	--	.0	0	--	--	--	--	--	--	--	--		

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH		Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)			
					1/	1/			Concentration	Percent saturation											
<u>Line 12. Neches River</u>																					
Dec. 3	1145	2	1	3,000	6.7	17.5	46	8.7	92	--	--	--	--	--	--	--	--	--			
			2.5	3,100	6.6	17.5													8.9	94	
			4	5,000	6.5	17.5													7.2	76	
			5	14,000	6.5	18													.9	10	
			7.5	15,000	6.5	18													.0	0	
			10	20,000	6.5	18.5													.0	0	
			15	28,000	6.8	19													1.3	15	
			20	32,000	6.9	19													1.0	12	
			30	33,000	6.8	19													.9	11	
			40	33,000	6.8	19													1.1	13	
July 28	1655	2	1	15,000	7.1	31	25	2.4	33	--	--	--	--	--	--	--	--	--			
			3	18,000	6.9	30													.0	0	
			5	19,000	7.0	30													.0	0	
			10	20,000	7.1	30													.0	0	
			20	29,000	7.2	30													.0	0	
			30	33,000	7.3	30.5													.0	0	
			40	32,000	7.3	31													.0	0	
<u>Line 13. Neches River</u>																					
Dec. 3	1205	2	1	7,000	6.7	18	30	6.6	71	--	--	--	--	--	--	--	--	--	--		
			3	14,000	6.6	18														5.2	57
			5	15,000	6.7	18														4.4	48
			10	23,000	6.7	19														2.3	26
			20	29,000	6.8	19														1.9	22
			30	33,000	6.8	19														1.2	14
			40	34,000	6.8	19														1.3	16
<u>Line 14. Neches River</u>																					
Dec. 3	1220	2	1	12,000	6.7	19	38	5.9	66	--	--	--	--	--	--	--	--	--	--		
			5	18,000	6.7	19														4.4	49
			10	24,000	6.8	19														3.3	38
			20	30,000	6.9	20														2.4	29
			30	35,000	6.9	20														1.9	24
			43.5	36,000	6.9	20														1.8	22
<u>Line 15. Neches River</u>																					
Dec. 3	1230	2	1	16,000	6.7	19	46	5.3	60	--	--	--	--	--	--	--	--	--	--		
			5	18,000	6.7	19														4.1	46
			10	24,000	6.7	19.5														2.9	34
			20	31,000	6.8	20														2.2	27
			30	35,000	6.9	20														2.4	30
			41	36,000	6.9	20														1.8	22
July 28	1635	2	1	24,000	7.2	33	--	.7	10	--	--	--	--	--	--	--	--	--	--		
			5	24,000	7.2	32														.4	6
			10	25,000	7.2	30														.0	0
			20	31,000	7.3	30														.0	0
			30	33,000	7.4	30														.0	0
			40	35,000	7.4	31														.0	0
<u>Line 16. Neches River</u>																					
Dec. 3	1240	2	1	15,000	6.7	19.5	30	5.6	64	--	--	--	--	--	--	--	--	--	--		
			5	22,000	6.8	22														4.6	56
			10	26,000	6.8	20														2.8	33
			20	30,000	6.8	20														1.8	22
			30	34,000	7.0	20														3.0	37
			41.5	36,000	6.9	20														2.2	28
<u>Line 17. Neches River</u>																					
Dec. 3	1250	2	1	15,000	7.0	20	25	5.5	63	5.1	90	7.3	0.4	--	0.05	0.04	0.08	--	--		
			5	22,000	6.8	20														3.1	36
			10	24,000	6.8	20														2.7	32
			20	30,000	7.0	20														1.8	22
			30	34,000	7.2	20														3.4	42
			40	35,000	7.1	20														3.6	45
July 28	1625	2	1	24,000	7.2	33	--	.6	9	--	--	--	--	--	--	--	--	--	--		
			5	24,000	7.1	32														.0	0
			10	27,000	7.2	31														.0	0
			20	29,000	7.2	30														.0	0
			30	33,000	7.4	30														.0	0
			40	35,000	7.4	31.5														.0	0

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)			
								Concentration	Percent saturation											
				1/	1/	1/	1/	1/												
<u>Line 17. Neches River--Continued</u>																				
July 28	1615	3	1	23,000	7.1	33	46	0.0	0	--	--	--	--	--	--	--	--			
			5	25,000	7.1	32		.0	0	--	--	--	--	--	--	--	--	--		
			10	26,000	7.2	31		.0	0	--	--	--	--	--	--	--	--	--	--	
			15	29,000	7.2	30.5		.0	0	--	--	--	--	--	--	--	--	--	--	
			20	29,000	7.2	30		.0	0	--	--	--	--	--	--	--	--	--	--	
			25	31,000	7.3	30		.0	0	--	--	--	--	--	--	--	--	--	--	--
			35	34,000	7.4	30		.0	0	--	--	--	--	--	--	--	--	--	--	--
			35	33,000	7.4	31		.0	0	--	--	--	--	--	--	--	--	--		
<u>Line 18. Neches River</u>																				
Dec. 2	1315	2	1	19,000	6.8	20	38	1.3	15	--	--	--	--	--	--	--	--			
			5	21,000	6.8	20		1.0	12	--	--	--	--	--	--	--	--	--		
			10	26,000	6.8	20		1.6	19	--	--	--	--	--	--	--	--	--	--	
			20	31,000	7.0	20		3.4	41	--	--	--	--	--	--	--	--	--	--	
			30	36,000	7.2	20		4.3	54	--	--	--	--	--	--	--	--	--	--	
			40	36,000	7.2	20		4.6	58	--	--	--	--	--	--	--	--	--	--	--
<u>Line 19. Neches River</u>																				
Dec. 2	1330	2	1	24,000	6.8	19.5	51	3.1	36	--	--	--	--	--	--	--	--			
			5	24,000	6.9	19		2.9	33	--	--	--	--	--	--	--	--	--		
			10	27,000	7.0	19.5		3.4	40	--	--	--	--	--	--	--	--	--	--	
			20	30,000	7.2	20		4.8	59	--	--	--	--	--	--	--	--	--	--	
			30	35,000	7.4	19.5		5.5	68	--	--	--	--	--	--	--	--	--	--	
			40	35,000	7.3	20		4.8	60	--	--	--	--	--	--	--	--	--		
July 28	1550	2	1	28,000	7.9	32	--	4.9	73	--	--	--	--	--	--	--	--			
			5	28,000	7.8	31		3.8	56	--	--	--	--	--	--	--	--	--		
			10	28,000	7.7	31		3.3	49	--	--	--	--	--	--	--	--	--		
			20	29,000	7.5	30.5		1.5	22	--	--	--	--	--	--	--	--	--	--	
			30	32,000	7.6	31		2.6	39	--	--	--	--	--	--	--	--	--	--	
			35	33,000	7.6	30.5		.3	4	--	--	--	--	--	--	--	--	--	--	
			40	35,000	7.7	32		.0	0	--	--	--	--	--	--	--	--			
<u>Line 19a. Neches River</u>																				
Dec. 1	1525	1	1	26,000	7.5	16.5	--	3.0	33	--	--	--	--	--	--	--	--			
			5	26,000	7.5	16.5		3.0	33	--	--	--	--	--	--	--	--	--		
			10	31,000	7.6	16.4		2.7	31	--	--	--	--	--	--	--	--	--		
			20	33,000	8.1	16.9		5.7	66	--	--	--	--	--	--	--	--	--	--	
			36	43,000	8.1	16.4		5.2	63	--	--	--	--	--	--	--	--	--	--	
Do.	1510	2	1	25,000	7.4	16.4	66	2.3	26	2.2	48	5.0	0.4	--	0.07	0.02	0.06			
			5	27,000	7.5	16.5		2.8	31	--	--	--	--	--	--	--	--	--		
			10	29,000	7.6	16.9		3.1	35	--	--	--	--	--	--	--	--	--		
			20	40,000	8.1	17.0		5.3	64	--	--	--	--	--	--	--	--	--		
			30	40,000	8.1	16.2		5.7	67	--	--	--	--	--	--	--	--	--		
			40	40,000	8.1	16.2		5.5	65	1.8	60	1.8	.3	--	.01	.15	.22			
Do.	1600	3	.2	24,000	--	16.6	66	3.2	35	--	--	--	--	--	--	--	--			
			1	25,000	--	16.5		2.6	29	--	--	--	--	--	--	--	--	--		
			5	28,000	--	16.4		2.7	30	--	--	--	--	--	--	--	--	--		
			10	36,000	--	16.6		2.8	33	--	--	--	--	--	--	--	--	--		
			20	40,000	--	16.5		5.9	70	--	--	--	--	--	--	--	--	--		
			30	40,000	--	16.4		6.3	75	--	--	--	--	--	--	--	--			
<u>Line 19b. Neches River</u>																				
Dec. 1	1530	1	1	28,000	8.4	17	--	3.7	42	1.9	58	3.0	.2	--	.05	.03	.05			
			5	30,000	8.8	21.5		5.9	75	--	--	--	--	--	--	--	--	--		
			10	32,000	8.8	22		6.1	77	--	--	--	--	--	--	--	--	--		
			16	32,000	8.8	22		9.1	115	--	--	--	--	--	--	--	--	--		
Do.	1435	3	1	24,000	8.2	17	--	2.1	23	1.9	58	5.0	.3	--	.07	.02	.06			
			5	25,000	8.3	17		2.4	27	--	--	--	--	--	--	--	--			
			10	25,000	8.4	19		3.2	37	--	--	--	--	--	--	--	--			
			15	33,000	8.8	18		4.5	54	--	--	--	--	--	--	--	--			
			20	38,000	8.9	17		4.9	58	1.8	--	2.6	.2	--	.04	.03	.05			
			30	41,000	8.9	16		5.2	61	--	--	--	--	--	--	--	--			
			36	41,000	8.9	16.5		7.1	84	1.4	56	1.7	.2	--	.02	.03	.06			
Do.	1510	5	1	26,000	9.9	26.5	--	2.3	31	7.6	79	4.8	.3	--	.19	.06	.07			
			6	25,000	8.3	17		2.4	27	--	--	--	--	--	--	--	--			

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 20. Neches River</u>																	
Dec. 1	1520	1	1	24,000	7.5	19	--	3.4	39	--	--	--	--	--	--	--	--
			5	24,000	7.5	20	--	4.3	51	--	--	--	--	--	--	--	--
			10	29,000	7.7	21	--	6.9	85	--	--	--	--	--	--	--	--
			15	24,000	7.8	21	--	6.9	83	--	--	--	--	--	--	--	--
Dec. 3	1345	2	1	26,000	7.4	22	71	6.1	75	--	--	--	--	--	--	--	--
			5	27,000	7.4	21.5	--	5.6	70	--	--	--	--	--	--	--	--
			10	28,000	7.4	20.5	--	4.9	60	--	--	--	--	--	--	--	--
			20	32,000	7.5	19.5	--	5.8	70	--	--	--	--	--	--	--	--
			30	33,000	7.5	19	--	6.1	73	--	--	--	--	--	--	--	--
Do.	1445	2	43.5	35,000	7.5	19	--	5.4	66	--	--	--	--	--	--	--	--
			1	24,000	7.7	20	--	3.3	39	2.7	44	4.5	0.3	--	0.09	0.04	0.07
			5	24,000	7.5	19	--	4.0	46	--	--	--	--	--	--	--	--
			10	27,000	7.7	20	--	5.7	69	--	--	--	--	--	--	--	--
			15	32,000	8.0	20	--	7.0	85	1.5	38	2.6	.4	--	.05	.03	.05
Dec. 1	1530	3	20	36,000	8.2	19	--	7.4	90	--	--	--	--	--	--	--	
			30	37,000	8.2	19	--	8.0	98	--	--	--	--	--	--	--	
			42	38,000	8.0	20	--	8.3	105	1.7	26	1.6	.2	--	.02	.05	.06
Dec. 1	1530	3	1	24,000	7.9	20	--	3.3	39	--	--	--	--	--	--	--	
			5	25,000	7.6	19	--	3.8	44	--	--	--	--	--	--	--	
			10	26,000	7.6	20	--	5.0	60	--	--	--	--	--	--	--	
			15	29,000	8.0	19	--	6.5	76	--	--	--	--	--	--	--	
July 28	1500	2	1	29,000	8.6	36	--	.0	0	--	--	--	--	--	--	--	
			5	29,000	8.4	34.5	--	.8	12	--	--	--	--	--	--	--	
			10	29,000	8.1	32	--	.8	12	--	--	--	--	--	--	--	
			20	31,000	7.7	31	--	1.7	25	--	--	--	--	--	--	--	
			30	33,000	7.7	31	--	.9	14	--	--	--	--	--	--	--	
			40	33,000	7.6	33	--	.6	9	--	--	--	--	--	--	--	
<u>Line 21. Neches River</u>																	
Dec. 3	1400	2	1	27,000	7.6	21.5	102	4.3	54	4.5	27	3.5	.2	--	.06	.02	.06
			5	28,000	7.4	21	--	4.8	59	--	--	--	--	--	--	--	--
			10	30,000	7.4	20	--	5.4	66	--	--	--	--	--	--	--	--
			20	31,000	7.4	19	--	6.0	71	--	--	--	--	--	--	--	--
			30	34,000	7.4	19	--	5.9	71	--	--	--	--	--	--	--	--
July 28	1230	2	40	34,000	7.5	19	--	5.6	67	1.5	27	2.5	.3	--	.04	.06	.10
			1	34,000	7.7	31.1	--	5.3	82	--	--	--	--	--	--	--	
			5	36,000	7.7	30.9	--	5.3	82	--	--	--	--	--	--	--	
			10	36,000	7.5	30.2	--	3.2	48	--	--	--	--	--	--	--	
			15	37,000	7.5	30.2	--	2.8	42	--	--	--	--	--	--	--	
Do.	1410	2	20	38,000	7.5	30.1	--	2.6	39	--	--	--	--	--	--	--	
			30	41,000	7.5	29.9	--	1.9	29	--	--	--	--	--	--	--	
			38	41,000	7.4	29.8	--	1.5	23	--	--	--	--	--	--	--	
			1	34,000	7.8	31.4	--	5.8	89	--	--	--	--	--	--	--	
			5	34,000	7.7	30.8	--	4.6	71	--	--	--	--	--	--	--	
Do.	1700	2	10	37,000	7.6	30.2	--	3.0	45	--	--	--	--	--	--	--	
			15	40,000	7.5	29.9	--	2.4	37	--	--	--	--	--	--	--	
			20	41,000	7.5	29.8	--	2.4	37	--	--	--	--	--	--	--	
			30	41,000	7.5	29.8	--	1.9	29	--	--	--	--	--	--	--	
			35	43,000	7.4	29.8	--	.8	12	--	--	--	--	--	--	--	
Do.	1700	2	40	43,000	7.4	29.7	--	.0	0	--	--	--	--	--	--	--	
			1	28,000	7.8	32	--	7.0	104	8.1	33	5.8	.0	.44	.08	.05	.11
			5	28,000	7.6	31.5	--	5.9	87	--	--	--	--	--	--	--	
			10	29,000	7.5	31	--	5.8	85	--	--	--	--	--	--	--	
			15	31,000	7.3	30	--	5.0	74	--	--	--	--	--	--	--	
July 29	0950	2	20	33,000	7.3	30	--	4.3	64	--	--	--	--	--	--	--	
			30	34,000	7.3	29.5	--	3.8	57	--	--	--	--	--	--	--	
			45	34,000	7.1	29	--	.0	0	3.0	46	4.5	.1	.40	.12	.09	.09
			1	28,000	7.7	31	--	4.7	69	--	--	--	--	--	--	--	
			5	29,000	7.6	31	--	3.9	57	--	--	--	--	--	--	--	
July 29	0950	2	10	29,000	7.5	31	--	2.8	41	--	--	--	--	--	--	--	
			15	29,000	7.5	31	--	2.5	37	--	--	--	--	--	--	--	
			20	31,000	7.4	31	--	2.0	30	--	--	--	--	--	--	--	
			30	31,000	7.4	31	--	1.3	19	--	--	--	--	--	--	--	
			43	31,000	7.2	31	--	.0	0	--	--	--	--	--	--	--	

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)		
								Concentration	Percent saturation										
<u>Line 22. Sabine-Neches Canal</u>																			
July 28	1300	2	1	36,000	7.8	31.1	--	6.9	106	--	--	--	--	--	--	--	--		
			5	37,000	7.7	30.6	--	5.4	83	--	--	--	--	--	--	--	--	--	
			10	37,000	7.6	30.0	--	3.6	55	--	--	--	--	--	--	--	--	--	
			15	40,000	7.6	29.9	--	3.2	49	--	--	--	--	--	--	--	--	--	--
			20	41,000	7.6	30.0	--	3.3	51	--	--	--	--	--	--	--	--	--	--
			30	41,000	7.6	30.0	--	3.3	51	--	--	--	--	--	--	--	--	--	--
Do.	1435	2	1	37,000	8.0	31.4	--	8.2	126	--	--	--	--	--	--	--	--		
			3	37,000	7.9	31.4	--	6.9	106	--	--	--	--	--	--	--	--	--	
			5	38,000	7.7	30.5	--	4.8	74	--	--	--	--	--	--	--	--	--	
			10	38,000	7.7	30.2	--	4.1	62	--	--	--	--	--	--	--	--	--	--
			15	40,000	7.7	30.0	--	3.8	58	--	--	--	--	--	--	--	--	--	--
			20	40,000	7.6	29.8	--	3.5	54	--	--	--	--	--	--	--	--	--	--
33	42,000	7.6	30.0	--	3.3	52	--	--	--	--	--	--	--	--	--	--	--		
<u>Line 23. Sabine Lake</u>																			
Dec. 1	1400	1	1.5	25,000	8.1	18	--	11.4	131	--	--	--	--	--	--	--	--		
Do.	1415	2	1	30,000	7.8	17	76	10.4	120	--	--	--	--	--	--	--	--		
			3	30,000	7.9	17	10.8	124	--	--	--	--	--	--	--	--	--		
Do.	1430	3	1	31,000	7.8	17	76	8.2	94	--	--	--	--	--	--	--	--		
			6.5	31,000	7.8	17	7.8	90	--	--	--	--	--	--	--	--	--		
Do.	1440	4	1	30,000	7.7	19.5	64	5.0	60	--	--	--	--	--	--	--	--		
			3	30,000	7.8	19.5	5.2	63	--	--	--	--	--	--	--	--	--		
July 28	1355	1	1	28,000	7.6	30.4	--	7.4	107	--	--	--	--	--	--	--	--		
			3	30,000	7.6	30.0	--	7.0	103	--	--	--	--	--	--	--	--		
Do.	1515	1	1	28,000	7.6	30.7	--	6.8	100	--	--	--	--	--	--	--	--		
			3	31,000	7.6	29.9	--	6.4	94	--	--	--	--	--	--	--	--		
Do.	1310	2	1	30,000	7.9	30.6	--	8.2	122	--	--	--	--	--	--	--	--		
			3	31,000	7.9	30.6	--	7.8	116	--	--	--	--	--	--	--	--		
			5	36,000	7.6	30.2	--	4.8	73	--	--	--	--	--	--	--	--		
Do.	1440	2	1	30,000	7.9	31.4	--	8.8	131	--	--	--	--	--	--	--	--		
			3	34,000	7.9	31.1	--	8.4	127	--	--	--	--	--	--	--	--		
			5	37,000	7.6	30.3	--	4.2	64	--	--	--	--	--	--	--	--		
Do.	1520	2	1	31,000	7.7	31.2	--	7.9	118	--	--	--	--	--	--	--	--		
			4	31,000	7.6	30.9	--	7.4	110	--	--	--	--	--	--	--	--		
Do.	1250	4	1	34,000	7.9	31.1	--	6.8	105	--	--	--	--	--	--	--	--		
			3.5	36,000	7.9	31.0	--	6.8	105	--	--	--	--	--	--	--	--		
Do.	1425	4	1	32,000	8.0	31.7	--	8.4	127	--	--	--	--	--	--	--	--		
			3.5	34,000	8.0	31.5	--	8.3	130	--	--	--	--	--	--	--	--		
<u>Line 24. Sabine Lake</u>																			
Dec. 3	1445	1	1	28,000	8.0	20.3	168	10.2	124	--	--	--	--	--	--	--	--		
			4.5	25,000	8.0	20.4	10.6	128	--	--	--	--	--	--	--	--	--		
Do.	1600	2	1	27,000	8.1	16	165	10.4	116	2.7	--	1.8	0.2	--	0.03	0.02	0.04		
			6.5	28,000	8.1	15	10.7	118	.6	--	1.4	1.1	--	.02	.02	.02	.04		
Do.	1600	3a	1	29,000	8.0	20.6	196	9.5	116	--	--	--	--	--	--	--	--		
			6.5	32,000	7.7	20.9	10.7	134	--	--	--	--	--	--	--	--	--		
Do.	1605	3	1	27,000	8.0	16	--	11.0	122	--	--	--	--	--	--	--	--		
			6	30,000	8.1	15	11.2	124	--	--	--	--	--	--	--	--	--		
Do.	1545	4	1	33,000	--	23.9	91	8.2	109	3.3	--	2.6	.1	--	.06	.02	.06		
			3	33,000	--	22.6	6.4	83	--	--	--	--	--	--	--	--	--		
			5	33,000	--	22.0	7.8	100	1.1	--	2.6	.2	--	.05	.03	.06			
Do.	1450	5	2	31,000	7.9	19	38	7.0	83	--	--	--	--	--	--	--	--		
			5	31,000	8.0	31.4	--	6.3	95	--	--	--	--	--	--	--	--		
July 29	1430	2	1	30,000	8.1	32.0	--	6.3	95	--	--	--	--	--	--	--	--		
			5	31,000	8.0	31.4	--	6.4	96	--	--	--	--	--	--	--	--		
			7	31,000	7.3	30.9	--	6.3	94	2.2	30	4.5	.2	.14	.08	.03	.17		
Do.	1500	4	1	27,000	7.7	32.7	--	5.4	82	--	--	--	--	--	--	--	--		
			2.5	27,000	7.7	32.7	--	5.1	77	--	--	--	--	--	--	--	--		
			4	34,000	8.2	32.5	--	6.0	94	5.2	36	3.9	.1	.05	.08	.05	.07		

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni- trate nitrogen (N)	Ammo- nia nitrogen (N)	Ni- trite nitrogen (N)	Ortho- phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 25. Sabine Lake</u>																	
Dec. 3	1545	1	1	28,000	7.9	15.5	152	9.9	110	--	--	--	--	--	--	--	--
			6	31,000	7.8	15.5		10.1	112								
Do.	1510	2	1	31,000	7.9	16	165	9.4	106	--	--	--	--	--	--	--	--
			6.5	31,000	7.8	16		9.7	109								
Do.	1503	3	1	30,000	8.0	16.5	165	10.2	116	--	--	--	--	--	--	--	--
			6.5	31,000	8.0	15.5		10.9	121								
Do.	1500	4	1	31,000	8.0	16	127	10.9	122	--	--	--	--	--	--	--	--
			5	31,000	8.0	16		10.7	120								
July 29	1225	1	1	21,000	7.2	32.5	74	7.1	104	--	--	--	--	--	--	--	--
			5	21,000	7.0	33		5.9	87								
			7	22,000	6.7	33		3.2	48								
Do.	1215	2	1	22,000	7.1	32	122	6.7	99	--	--	--	--	--	--	--	--
			5	21,000	7.0	31.5		6.4	91								
			8	22,000	6.7	32		3.4	50								
Do.	1200	3	1	22,000	7.0	31.5	117	6.6	97	--	--	--	--	--	--	--	--
			5	22,000	6.9	30.5		5.4	77								
			8	24,000	6.6	34		4.1	62								
Do.	1150	4	1	21,000	7.1	34.0	114	7.8	116	--	--	--	--	--	--	--	--
			3	22,000	7.2	33.0		7.0	104								
			6	28,000	7.4	34.4		8.3	128								
<u>Line 26. Sabine Lake</u>																	
July 29	1235	1	1	20,000	7.1	32	81	6.9	100	--	--	--	--	--	--	--	--
			5	20,000	6.8	31		5.6	80								
			6.5	20,000	6.6	32		4.6	67								
Do.	1245	2	1	21,000	7.0	32	117	6.5	94	--	--	--	--	--	--	--	--
			5	21,000	6.8	31		5.6	80								
			8	21,000	6.7	32		5.7	83								
Do.	1252	3	1	22,000	7.5	32	94	7.2	104	--	--	--	--	--	--	--	--
			5	22,000	7.4	31.5		6.7	96								
			8	22,000	7.2	31.5		6.0	86								
Do.	1303	4	1	21,000	7.5	32	107	6.9	100	--	--	--	--	--	--	--	--
			6	21,000	7.7	31.5		7.0	100								
<u>Line 27. Sabine Lake</u>																	
Dec. 3	1035	1	1	30,000	7.4	19.4	112	9.6	114	1.0	--	1.4	.2	--	.03	.02	.03
			4.5	29,000	7.5	19.3		9.9	118								
Do.	1050	2	1	29,000	7.0	19.1	224	8.8	104	.3	--	2.5	.2	--	.03	.02	.03
			7	28,000	7.0	19.1		9.3	109								
Do.	1100	3	1	29,000	7.4	19.6	216	8.9	106	--	--	--	--	--	--	--	--
			7	28,000	7.4	19.2		9.3	109								
Do.	1120	4	1	30,000	7.2	19.9	193	10.6	129	.7	--	1.7	.1	--	.04	.01	.04
			6	32,000	7.1	20.8		9.6	120								
July 29	1350	1	1	20,000	7.2	32	97	6.3	91	--	--	--	--	--	--	--	--
			5	20,000	7.2	31.5		6.3	90								
			7	20,000	7.1	31		5.7	81								
Do.	1340	2	1	20,000	7.2	32	127	6.6	96	--	--	--	--	--	--	--	--
			5	21,000	7.2	32.5		6.6	97								
			8.5	21,000	7.1	32		6.6	96								
Do.	1330	3	1	20,000	7.3	31.5	135	6.8	97	--	--	--	--	--	--	--	--
			5	20,000	7.2	31		6.7	96								
			7.5	20,000	7.2	31		6.5	93								
Do.	1315	4	1	20,000	7.6	32	125	7.1	103	--	--	--	--	--	--	--	--
			5	20,000	7.6	32		7.1	103								
			6.5	21,000	7.5	31.5		7.1	101								
<u>Johnson Bayou</u>																	
July 29	1425	-	1	20,000	7.9	33	43	8.4	124	--	--	--	--	--	--	--	--
			5	20,000	7.1	32		5.2	75								
			7	20,000	7.0	32		4.3	62								

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni- trate nitrogen (N)	Ammo- nia nitrogen (N)	Ni- trite nitrogen (N)	Ortho- phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 28. Sabine Lake</u>																	
Dec. 3	1015	1	1	30,000	7.8	19.0	158	9.8	117	--	--	--	--	--	--	--	--
			5	29,000	7.8	19.0		10.1	119								
Do.	1000	2	1	30,000	7.8	19.1	198	8.6	102	--	--	--	--	--	--	--	--
			6	30,000	7.7	19.0		8.8	105								
Do.	0950	3	1	30,000	7.9	19.1	179	9.1	108	--	--	--	--	--	--	--	--
			5	30,000	7.8	19.1		10.6	126								
Do.	0940	4	1	32,000	7.9	19.1	132	8.7	104	--	--	--	--	--	--	--	--
			4	32,000	7.9	19.0		9.3	111								
<u>Line 29. Sabine Lake</u>																	
Dec. 2	1150	1	1	27,000	8.0	14.0	122	8.0	86	--	--	--	--	--	--	--	--
			4	28,000	8.0	13.8		7.7	83								
Do.	1200	2	1	27,000	7.9	14.0	--	7.7	83	--	--	--	--	--	--	--	--
			6	28,000	7.9	13.9		7.5	81								
Do.	1210	3	1	28,000	7.9	13.9	137	8.2	88	--	--	--	--	--	--	--	--
			4.5	28,000	7.9	14.0		7.7	83								
July 29	1452	1	1	26,000	7.7	32	84	7.7	113	--	--	--	--	--	--	--	--
			5	32,000	7.8	31		6.9	105								
			7	32,000	7.8	32		7.1	108								
Do.	1510	2	1	21,000	7.6	31.5	109	7.6	109	--	--	--	--	--	--	--	--
			5	24,000	7.5	31		7.2	104								
			7	32,000	7.6	30.5		6.2	91								
Do.	1520	3	1	25,000	7.8	32.5	109	8.4	124	--	--	--	--	--	--	--	--
			5	18,000	7.8	32		8.7	124								
			6.5	28,000	7.2	31		6.5	96								
<u>Line 30. Sabine Lake</u>																	
Dec. 2	1150	1	1	27,000	8.0	16	--	11.0	122	--	--	--	--	--	--	--	--
			5	27,000	8.0	16		10.6	118								
Do.	1155	2	1	26,000	8.0	16	--	10.6	116	--	--	--	--	--	--	--	--
			7.5	26,000	8.0	16		10.6	116								
Do.	1205	3	1	25,000	8.1	16	--	11.1	122	--	--	--	--	--	--	--	--
			3	27,000	8.1	16		11.0	122								
July 29	1330	1	1	34,000	7.8	32	--	5.9	91	--	--	--	--	--	--	--	--
			5	35,000	7.8	32		5.6	88								
			10	35,000	7.8	32		5.5	86								
Do.	1340	2	1	35,000	7.9	31.5	--	6.8	106	--	--	--	--	--	--	--	--
			7	35,000	7.8	31.5		5.8	91								
Do.	1350	3	1	31,000	8.0	32	--	8.4	127	--	--	--	--	--	--	--	--
			6	35,000	7.9	32		7.1	111								
<u>Line 31. Sabine Lake</u>																	
Dec. 2	1240	1	1	27,000	8.1	16.5	--	10.5	118	--	--	--	--	--	--	--	--
			3	28,000	8.0	16		9.4	104								
Do.	1225	2	1	30,000	7.8	14.5	--	6.9	75	.1	25	1.9	.3	--	.03	.01	.03
			5	30,000	7.9	13.8		6.8	74								
			10	31,000	7.9	13.6		6.6	72								
			15	33,000	7.9	13.4		6.3	68								
			25.5	36,000	8.0	14.2		6.0	67								
July 29	1315	2	1	37,000	7.9	31.5	--	6.8	106	--	--	--	--	--	--	--	--
			5	37,000	7.9	31		6.3	97								
			10	37,000	7.9	31		5.4	83								
			15	39,000	7.9	31		6.0	92								
			20	39,000	7.9	31		5.4	83								
			24	39,000	7.9	31		5.4	83								
<u>Line 32. Sabine-Neches Canal</u>																	
Dec. 3	1645	2	1	32,000	7.6	18	--	8.2	96	1.9	23	2.5	.2	--	.04	.05	.10
			5	32,000	7.5	18		7.8	92								
			10	34,000	7.5	17.5		7.2	85								
			20	35,000	7.5	17.5		6.8	81								
			30	36,000	7.5	17.5		6.6	79								
			41	36,000	7.5	17.5		6.0	71								

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)		
								Concentration	Percent saturation										
<u>Line 32. Sabine-Neches Canal--Continued</u>																			
July 29	1020	2	1	31,000	7.5	31	--	4.3	64	--	--	--	--	--	--	--	--		
			5	31,000	7.5	30.5	--	4.1	60	--	--	--	--	--	--	--	--	--	
			10	31,000	7.8	30.5	--	4.2	62	--	--	--	--	--	--	--	--	--	--
			15	32,000	7.8	30.5	--	3.9	57	--	--	--	--	--	--	--	--	--	--
			20	32,000	7.8	30.5	--	3.7	54	--	--	--	--	--	--	--	--	--	--
			35	33,000	7.7	30	--	3.0	45	--	--	--	--	--	--	--	--	--	--
<u>Line 33. Sabine-Neches Canal</u>																			
Dec. 12	1100	2	1	31,000	7.9	17.5	38	6.5	76	--	--	--	--	--	--	--	--	--	
			10	32,000	7.9	17.5	--	6.4	74	--	--	--	--	--	--	--	--	--	
			20	35,000	7.9	17.5	--	6.1	73	--	--	--	--	--	--	--	--	--	--
			41	38,000	7.9	17.5	--	6.1	73	--	--	--	--	--	--	--	--	--	--
July 29	1055	2	1	34,000	7.6	30	--	5.2	78	--	--	--	--	--	--	--	--	--	
			5	33,000	7.7	30	--	5.1	76	--	--	--	--	--	--	--	--	--	--
			10	33,000	7.7	30	--	5.1	76	--	--	--	--	--	--	--	--	--	--
			15	32,000	7.6	30	--	5.0	74	--	--	--	--	--	--	--	--	--	--
			20	33,000	7.7	30	--	4.7	70	--	--	--	--	--	--	--	--	--	--
			43	33,000	7.6	30	--	4.2	63	--	--	--	--	--	--	--	--	--	--
<u>Line 34. Sabine-Neches Canal</u>																			
Dec. 2	1115	2	1	33,000	7.9	17.5	--	6.4	74	--	--	--	--	--	--	--	--	--	
			5	33,000	7.9	17	--	6.3	73	--	--	--	--	--	--	--	--	--	
			10	33,000	7.9	17	--	6.4	74	--	--	--	--	--	--	--	--	--	
			20	36,000	7.9	17	--	6.1	72	--	--	--	--	--	--	--	--	--	
			30	38,000	7.9	17	--	6.6	79	--	--	--	--	--	--	--	--	--	
July 29	1120	2	1	34,000	7.7	30	--	6.3	94	--	--	--	--	--	--	--	--	--	
			5	35,000	7.7	30	--	6.1	92	--	--	--	--	--	--	--	--	--	
			10	38,000	7.6	30	--	5.0	76	--	--	--	--	--	--	--	--	--	
			15	38,000	7.6	30	--	4.9	74	--	--	--	--	--	--	--	--	--	
			20	39,000	7.6	30	--	4.9	74	--	--	--	--	--	--	--	--	--	
			38	39,000	7.6	30	--	4.8	73	--	--	--	--	--	--	--	--	--	
<u>Line 35. Intracoastal Waterway</u>																			
Dec. 2	1040	2	1	33,000	7.4	17	--	5.7	66	--	--	--	--	--	--	--	--		
			10	34,000	7.4	17	--	5.3	62	--	--	--	--	--	--	--	--		
			14	34,000	7.4	17	--	5.5	64	--	--	--	--	--	--	--	--		
July 29	1145	2	1	25,000	7.3	33	--	3.9	58	6.9	35	6.1	0.0	0.95	0.04	0.14	0.31		
			5	29,000	7.3	31.5	--	2.5	37	--	--	--	--	--	--	--	--		
			8	31,000	7.3	31.5	--	2.6	39	--	--	--	--	--	--	--	--		
			12	33,000	7.3	31	--	2.1	31	3.6	35	3.7	.0	.40	.08	.07	.60		
<u>Line 35a. Port Arthur Canal</u>																			
July 29	1900	2	1	41,000	7.8	30.2	--	5.7	88	--	--	--	--	--	--	--	--		
			5	41,000	7.7	30.2	--	5.8	89	--	--	--	--	--	--	--	--		
			10	42,000	7.8	30.2	--	5.9	92	--	--	--	--	--	--	--	--		
			15	44,000	7.7	29.6	--	5.2	83	--	--	--	--	--	--	--	--		
			20	44,000	7.9	29.4	--	5.0	78	--	--	--	--	--	--	--	--		
			40	50,000	8.0	29.2	--	4.9	78	--	--	--	--	--	--	--	--		
<u>Line 36. Port Arthur Canal</u>																			
Dec. 2	1245	2	1	38,000	7.8	11.0	117	7.3	77	1.7	27	1.8	.2	--	.03	.05	.08		
			10	40,000	7.9	10.5	--	7.4	78	--	--	--	--	--	--	--	--		
			20	43,000	7.9	10.5	--	7.3	78	--	--	--	--	--	--	--	--		
			30	47,000	8.0	10.3	--	8.0	86	--	--	--	--	--	--	--	--		
			39	47,000	8.0	10.2	--	10.0	108	1.2	23	1.4	.4	--	.02	.05	.05		
July 29	1235	2	1	39,000	8.0	31	--	8.2	126	3.0	36	1.7	.0	.02	.00	.01	.04		
			5	39,000	8.0	31	--	7.9	122	--	--	--	--	--	--	--			
			10	41,000	8.0	30.5	--	6.7	103	--	--	--	--	--	--	--			
			15	44,000	8.0	30.5	--	6.1	97	--	--	--	--	--	--	--			
			20	44,000	8.0	30.5	--	6.0	95	--	--	--	--	--	--	--			
			43	45,000	7.9	30.5	--	6.0	95	1.8	36	1.5	.0	.01	.01	.00	.13		

See footnote at end of table.

Table 1A.--Quality of water in the Sabine-Neches estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
				1/	1/	1/	1/	1/									
<u>Line 36. Port Arthur Canal--Continued</u>																	
July 29	1930	2	1	44,000	8.0	30.6	--	8.3	134	--	--	--	--	--	--	--	--
			5	44,000	8.0	30.4		7.1	113	--	--	--	--	--	--	--	--
			10	46,000	7.8	30.0		6.1	97	--	--	--	--	--	--	--	--
			15	47,000	7.9	29.8		5.7	92	--	--	--	--	--	--	--	--
			20	50,000	7.9	29.7		5.6	90	--	--	--	--	--	--	--	--
			30	50,000	8.0	29.5		5.9	95	--	--	--	--	--	--	--	--
			40	56,000	7.8	29.6		5.8	97	--	--	--	--	--	--	--	--
<u>Line 37. Sabine Pass</u>																	
Dec. 2	0937	1	1	38,000	8.1	14.1	66	6.5	73	--	--	--	--	--	--	--	--
			5	38,000	8.1	14.1		6.6	74	--	--	--	--	--	--	--	--
			10	38,000	8.1	14.0		6.7	75	--	--	--	--	--	--	--	--
			13	38,000	8.1	14.0		6.7	75	--	--	--	--	--	--	--	--
Do.	1355	1	1	36,000	7.9	15.1	122	5.9	67	--	--	--	--	--	--	--	--
			5	36,000	7.9	15.1		6.0	68	--	--	--	--	--	--	--	--
			11	38,000	7.8	15.1		5.8	67	--	--	--	--	--	--	--	--
Do.	0915	2	1	38,000	8.1	13.9	86	6.9	78	--	--	--	--	--	--	--	--
			5	38,000	8.1	14.0		6.9	78	--	--	--	--	--	--	--	--
			10	40,000	8.1	14.0		6.9	78	--	--	--	--	--	--	--	--
			15	42,000	8.1	14.0		6.9	79	--	--	--	--	--	--	--	--
			30	43,000	8.2	14.4		7.1	82	--	--	--	--	--	--	--	--
			40	43,000	8.2	14.4		7.1	82	--	--	--	--	--	--	--	--
Do.	0930	3	1	40,000	7.9	9.0	107	7.7	79	2.8	--	1.6	0.1	--	0.02	0.03	0.04
			5	41,000	7.9	9.0		7.5	77	--	--	--	--	--	--	--	--
			10	41,000	8.0	9.0		7.6	78	--	--	--	--	--	--	--	--
			15	43,000	8.0	10.0		7.6	80	1.5	--	1.9	.2	--	.02	.04	.04
			20	47,000	8.0	10.0		7.6	82	--	--	--	--	--	--	--	--
			30	49,000	7.9	10.2		8.0	88	--	--	--	--	--	--	--	--
			43	50,000	7.9	10.0		8.0	88	.5	23	1.2	.1	--	.02	.04	.05
Do.	1400	3	1	37,000	7.9	10.3	150	7.8	80	--	--	--	--	--	--	--	--
			5	38,000	7.9	9.9		7.9	82	--	--	--	--	--	--	--	--
			10	41,000	7.9	10.1		8.1	84	--	--	--	--	--	--	--	--
			15	43,000	8.0	10.2		8.0	84	--	--	--	--	--	--	--	--
			20	50,000	8.0	10.3		7.8	86	--	--	--	--	--	--	--	--
			30	52,000	8.0	10.6		7.9	90	--	--	--	--	--	--	--	--
			43	52,000	8.0	10.9		8.9	101	--	--	--	--	--	--	--	--
Do.	0915	4	1	35,000	8.1	15.5	91	8.6	99	--	--	--	--	--	--	--	--
			5	36,000	8.1	15.5		8.5	98	--	--	--	--	--	--	--	--
			10	36,000	8.1	15.5		8.4	97	--	--	--	--	--	--	--	--
			15	38,000	8.0	16		8.3	97	--	--	--	--	--	--	--	--
			20	39,000	8.1	16		8.3	97	--	--	--	--	--	--	--	--
			30	43,000	8.1	16		8.2	98	--	--	--	--	--	--	--	--
			42	44,000	8.2	16		8.1	98	--	--	--	--	--	--	--	--
Do.	--	5	1	35,000	8.0	16	84	8.6	99	--	--	--	--	--	--	--	--
			5	35,000	7.9	16		8.5	98	--	--	--	--	--	--	--	--
			9.8	35,000	7.9	16		8.6	99	--	--	--	--	--	--	--	--
Do.	1400	5	1	33,000	8.1	17	137	8.9	103	--	--	--	--	--	--	--	--
			5.5	34,000	8.1	17		8.9	103	--	--	--	--	--	--	--	--
<u>Line 38. Sabine Pass</u>																	
Dec. 2	1215	2	1	41,000	8.0	15	107	8.9	104	--	--	--	--	--	--	--	--
			10	44,000	8.0	14		7.8	91	--	--	--	--	--	--	--	--
			20	50,000	8.0	15		8.0	98	--	--	--	--	--	--	--	--
			30	50,000	8.0	15		9.4	115	--	--	--	--	--	--	--	--
<u>Line 39. Gulf of Mexico</u>																	
Dec. 2	1145	2	1	50,000	8.0	15.5	107	7.9	96	1.2	26	1.4	.1	--	.02	.03	.04
			10	50,000	8.0	16		7.9	98	--	--	--	--	--	--	--	--
			20	50,000	8.1	16		7.9	98	--	--	--	--	--	--	--	--
			32	50,000	8.0	16.5		9.6	120	1.1	29	.7	.1	--	.01	.03	.03

1/ Determined at data-collection site.

Table 1B.--Quality of water in the Sabine-Neches estuary, 1970 water year

Chemical analyses

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25° C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃		Density (g/ml at 20°C)
													Calcium, magnesium	Non-carbonate	
<u>Line 1. Sabine River</u>															
Dec. 3	1010	2	1 22	448 27,800	11 232	9.1 844	52 5,270	37 102	22 1,410	88 9,900	210 17,700	65 4,050	35 3,970		
July 29	1030	2	31	25,000	205	666	4,440	96	1,220	8,200	14,800	3,250	3,170		
<u>Line 5. Sabine River</u>															
Dec. 3	1235	2	1 33	12,800 34,500	--	--	--	--	--	4,150 12,200	--	--	--		
<u>Line 8. Sabine River</u>															
Dec. 3	1350	2	1 33.5	22,600 32,600	180	528	4,330	91	1,060	7,700	13,900	2,620	2,550		
July 29	1330	2	1 33	23,800 29,800	195 246	611 755	4,310 5,790	95 95	1,250 1,500	7,800 10,400	14,200 18,700	3,000	2,920 3,640		
<u>Line 8a. East Pass at Black Bayou</u>															
Dec. 1	1040	2	1 15	24,100 27,200	--	--	--	--	--	8,500 9,750	--	--	--		
<u>Line 8b. Black Bayou</u>															
Dec. 1	1125	2	1 10	23,400 23,800	--	--	--	--	--	8,100 8,250	--	--	--		
<u>Line 8c. Black Bayou</u>															
Dec. 1	1030	2	1	22,000	200	511	4,100	108	960	7,400	13,200	2,600	2,510		
<u>Line 10. Neches River</u>															
Dec. 3	1030	2	1 7.5 23	2,780 3,640 22,900	31 40 188	71 84 713	514 740 4,140	42 51 132	146 197 1,110	922 1,280 7,900	1,720 2,380 14,100	370 445 3,400	336 403 3,290		
July 28	1730	2	23	22,000	180	547	3,730	120	1,070	6,800	12,400	2,700	2,600		
<u>Line 17. Neches River</u>															
Dec. 3	1250	2	1 40	15,700 35,700	135 290	365 882	2,930 6,960	90 119	768 1,820	5,200 12,400	9,450 22,400	1,840 4,350	1,770 4,250		
<u>Line 19a. Neches River</u>															
Dec. 1	1510	2	1 40	22,700 38,700	200 322	550 947	4,220 7,490	95 132	1,100 1,900	7,600 13,400	13,700 24,100	2,760 4,700	2,680 4,590		
<u>Line 19b. Neches River</u>															
Dec. 1	1530	1	1	28,600	250	748	5,630	52	1,450	10,200	18,300	3,700	3,660		
Do.	1435	3	1 20 36	22,800 34,700 39,700	--	--	--	--	--	7,900 11,600 13,200	--	--	--		
Do.	1510	5	1	24,200	235	553	4,540	139	1,140	8,100	14,600	2,860	2,750		
<u>Line 20. Neches River</u>															
Dec. 1	1445	2	1 15 42	23,200 32,800 39,600	--	--	--	--	--	8,100 11,200 13,800	--	--	--		
<u>Line 21. Neches River</u>															
Dec. 3	1400	2	1 40	26,400 35,300	225 290	676 840	5,170 7,070	114 115	1,320 1,750	9,300 12,500	16,800 22,500	3,340 4,180	3,250 4,090		
July 28	1700	2	1 45	27,800 36,900	244 265	717 860	5,040 6,810	107 102	1,390 1,780	9,200 12,100	16,700 21,900	3,560 4,200	3,470 4,120		
<u>Line 24. Sabine Lake</u>															
Dec. 3	1600	2	1 6.5	25,500 26,100	--	--	--	--	--	8,900 9,200	--	--	--		
Do.	1545	4	1 5	28,700 29,700	--	--	--	--	--	10,200 10,600	--	--	--		

See footnote at end of table.

Table 1B.--Quality of water in the Sabine-Neches estuary, 1970 water year

Chemical analyses--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25° C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃		Density (g/ml at 20°C)
													Calcium, magnesium	Non-carbonate	
<u>Line 27. Sabine Lake</u>															
Dec. 3	1035	1	1	25,700	--	--	--	--	--	--	9,000	--	--	--	
			4.5	25,800	--	--	--	--	--	--	9,100	--	--	--	
Do.	1050	2	1	24,500	--	--	--	--	--	--	8,450	--	--	--	
			7	25,600	--	--	--	--	--	--	9,000	--	--	--	
Do.	1120	4	1	28,200	--	--	--	--	--	--	10,000	--	--	--	
			6	28,100	--	--	--	--	--	--	10,000	--	--	--	
July 29	1315	4	6.5	20,600	160	657	4,520		40	1,000	8,400	14,800	3,100	3,070	
<u>Line 30. Sabine Lake</u>															
July 29	1340	2	7	36,100	265	1,080	6,040		88	1,870	11,500	20,800	5,100	5,030	
<u>Line 31. Sabine Lake</u>															
Dec. 2	1225	2	1	27,600	--	--	--	--	--	--	9,800	--	--	--	
			25.5	36,600	--	--	--	--	--	--	12,600	--	--	--	
<u>Line 32. Sabine-Neches Canal</u>															
Dec. 3	1645	2	1	32,500	270	828	6,400		118	1,620	11,500	20,700	4,080	3,980	
			41	37,400	325	921	7,460		117	1,880	13,300	24,000	4,600	4,500	
<u>Line 35. Intracoastal Waterway</u>															
July 29	1145	2	1	20,800	180	717	3,930		87	1,100	7,600	13,600	3,400	3,330	
			12	32,500	275	854	6,000		95	1,580	11,000	19,800	4,200	4,120	
<u>Line 36. Port Arthur Canal</u>															
Dec. 2	1245	2	1	36,500	--	--	--	--	--	--	12,400	--	--	--	
			39	43,700	--	--	--	--	--	--	15,300	--	--	--	
July 29	1235	2	1	40,800	300	1,140	7,700		108	1,980	14,200	25,400	5,450	5,360	
			43	46,800	340	1,400	8,650		135	2,360	16,200	29,000	6,620	6,510	
<u>Line 37. Sabine Pass</u>															
Dec. 2	0930	3	1	40,400	320	1,070	7,470		122	1,940	13,700	24,600	5,200	5,100	
			15	37,500	292	1,040	6,820		114	1,760	12,700	22,700	5,000	4,910	
			43	46,000	390	1,220	9,050		141	2,320	16,400	29,500	6,000	5,880	
<u>Line 39. Gulf of Mexico</u>															
Dec. 1	1145	2	1	46,200	360	1,240	8,730		137	2,220	16,000	28,600	6,000	5,890	
			32	49,600	--	--	--	--	--	--	17,700	--	--	--	

1/ Included in sodium-ion concentration.

Table 1C.--Quality of water in the Sabine-Neches estuary, 1970 water year

Analyses for selected ions

(Results in micrograms per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25°C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Fluoride (F) a/	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Bromide (Br) a/	Iodide (I) a/	Strontium (Sr)
<u>Line 1. Sabine River</u>																			
Dec. 3	1010	2	1	448	--	--	--	0.1	50	--	--	--	--	--	--	--	0.0	0.017	--
			22	27,800	--	--	--	.6	2,400	--	--	--	--	--	--	--	33	.040	--
July 29	1030	2	31	25,000	1,700	1,100	80	.5	2,700	0	9	4	--	<10	<0.5	1	31	.057	3,800
<u>Line 8. Sabine River</u>																			
Dec. 3	1350	2	1	22,600	--	--	--	.4	2,200	--	--	--	--	--	--	--	24	.042	--
July 29	1330	2	1	23,800	0	80	80	.5	2,000	0	6	3	--	<10	<.5	1	27	.054	3,700
			33	29,800	20	90	110	.6	2,500	0	7	4	--	<10	<.5	1	37	.048	4,900
<u>Line 8c. Black Bayou</u>																			
Dec. 1	1025	2	1	22,000	--	--	--	.5	2,200	--	--	--	--	--	--	--	23	.052	--
<u>Line 10. Neches River</u>																			
Dec. 3	1030	2	1	2,780	--	--	--	.2	240	--	--	--	--	--	--	--	1.9	.024	--
			7.5	3,640	--	--	--	.2	370	--	--	--	--	--	--	--	2.5	.021	--
			23	22,900	--	--	--	.4	2,500	--	--	--	--	--	--	--	26	.019	--
July 28	1730	2	23	22,000	460	910	80	.4	1,400	0	7	4	--	<10	<.5	0	25	.029	3,400
<u>Line 17. Neches River</u>																			
Dec. 3	1250	2	1	15,700	--	--	--	.3	1,700	--	--	--	--	--	--	--	16	.033	--
			40	35,700	--	--	--	.6	3,200	--	--	--	--	--	--	--	42	.046	--
<u>Line 19a. Neches River</u>																			
Dec. 1	1510	2	1	22,700	--	--	--	.4	2,200	--	--	--	--	--	--	--	25	.041	--
			40	38,700	--	--	--	.6	3,500	--	--	--	--	--	--	--	46	.036	--
<u>Line 19b. Neches River</u>																			
Dec. 1	1530	1	1	28,600	--	--	--	.6	2,900	--	--	--	--	--	--	--	34	.036	--
Do.	1510	5	1	24,200	--	--	--	.3	2,300	--	--	--	--	--	--	--	26	.024	--
<u>Line 21. Neches River</u>																			
Dec. 3	1400	2	1	26,400	--	--	--	.6	2,500	--	--	--	--	--	--	--	29	.039	--
			40	35,300	--	--	--	.7	3,800	--	--	--	--	--	--	--	41	.046	--
July 28	1700	2	1	27,800	120	130	100	.5	2,100	0	30	12	--	<10	<.5	1	33	.046	4,200
			45	36,900	480	570	570	.6	1,100	0	80	12	--	<10	.6	2	45	.034	5,500
<u>Line 27. Sabine Lake</u>																			
July 29	1315	4	6.5	20,600	--	--	--	.0	1,800	--	--	--	--	--	--	--	23	.039	--
<u>Line 30. Sabine Lake</u>																			
July 29	1340	2	7	36,100	760	44	120	.6	3,200	0	180	13	--	<10	<.5	1	42	.045	4,500
<u>Line 32. Sabine-Neches Canal</u>																			
Dec. 3	1645	2	1	32,500	--	--	--	.6	2,900	--	--	--	--	--	--	--	37	.045	--
			41	37,400	--	--	--	.7	3,900	--	--	--	--	--	--	--	44	.045	--
<u>Line 35. Intracoastal Waterway</u>																			
July 29	1145	2	1	20,800	--	--	--	.5	2,800	--	--	--	--	--	--	--	26	.069	--
			12	32,500	--	--	--	.6	2,200	--	--	--	--	--	--	--	36	.048	--
<u>Line 35a. Port Arthur Canal</u>																			
July 29	1900	2	1	--	90	22	140	--	--	0	7	4	--	<10	<.5	1	--	--	5,300
			40	--	180	140	170	--	--	0	11	3	--	<10	--	1	--	--	6,500
<u>Line 36. Port Arthur Canal</u>																			
July 29	1235	2	1	40,800	--	--	--	.7	3,700	--	--	--	--	--	--	--	39	.049	--
			43	46,800	--	--	--	.7	3,400	--	--	--	--	--	--	--	49	.047	--
Do.	1930	2	1	--	100	21	130	--	--	0	7	3	--	<10	<.5	1	--	--	5,600
			40	--	2,600	920	170	--	--	0	16	8	--	<10	<.5	1	--	--	6,400
<u>Line 37. Sabine Pass</u>																			
Dec. 2	0930	3	1	40,400	--	--	--	.7	3,800	--	--	--	--	--	--	--	47	.046	--
			15	37,500	--	--	--	.7	3,400	--	--	--	--	--	--	--	43	.046	--
			43	46,000	--	--	--	.9	4,300	--	--	--	--	--	--	--	58	.042	--
<u>Line 39. Gulf of Mexico</u>																			
Dec. 2	1145	2	1	46,200	--	--	--	.8	3,700	--	--	--	--	--	--	--	55	.042	--

a/ Results in milligrams per liter.

Table 1D.--Quality of water in the Sabine-Neches estuary, 1970 water year
Insecticide and herbicide analyses

Date of Collection	Time	Type of Sample	(Water analyses in micrograms per liter; sediment analyses in micrograms per kilogram sediment, dry weight)																	
			Insecticides										Herbicides							
			Aldrin	DDD	DDE	DOT	Dieldrin	Endrin	Heptachlor	Heptachlor Epoxide	Lin-dane	Chlor-dane	Para-thion	Methyl Para-thion	Malathion	Diazinon	2,4-D	Silvex	2,4,5-T	
<u>Line 1. Site 2. Sabine River</u>																				
July 29	1050	Water Sediment	a/	0.0	0.0	0.0	0.0	0.0	a/	a/	a/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<u>Line 24. Site 2. Sabine Lake</u>																				
July 29	1505	Water	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<u>Line 27. Site 1. Sabine Lake</u>																				
July 29	1400	Water Sediment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<u>Line 27. Site 4. Sabine Lake</u>																				
July 29	1315	Water Sediment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<u>Line 30. Site 2. Sabine Lake</u>																				
July 29	1340	Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<u>Line 36. Site 2. Sabine Pass</u>																				
July 29	1235	Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

a/ Undetermined due to interfering compounds.

Brazos Estuary

The Brazos estuary covers an area of about 3 square miles and consists of the tidal parts of the Brazos River and parts of the Intracoastal Waterway (Figure 3). Although Freeport Harbor is not directly connected

with the estuary, wastes from industrial operations around the harbor are discharged into the estuary.

Water-quality data (Table 2) for the Brazos estuary were collected during June at many of the data-collection sites shown on Figure 3.

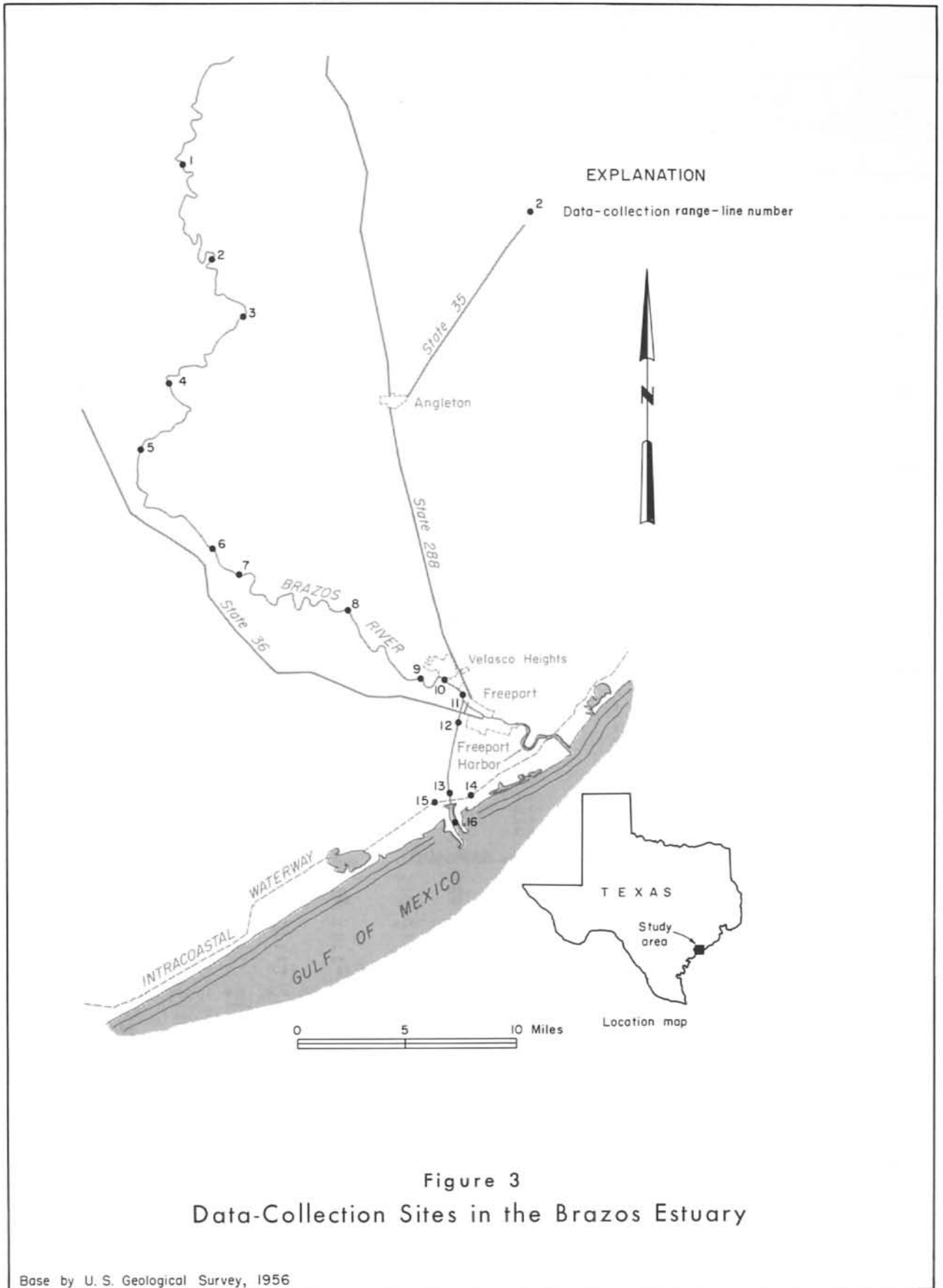


Figure 3
Data-Collection Sites in the Brazos Estuary

Base by U. S. Geological Survey, 1956

Table 2A.--Quality of water in the Brazos estuary, 1970 water year

Nutrient and other environmental characteristics

(Results in milligrams per liter except as indicated)

Date of collection	Time (24 hour)	Site	Depth below water surface (ft)	Specific Conductance (micro mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 1. Brazos River</u>																	
June 11	1305	2	1	505	8.1	27	6	7.0	86	1.8	8.6	7.6	0.8	--	0.02	0.06	0.56
			14	580	8.1	27		7.4	91	2.2	--	5.9	.7	--	.01	.03	.62
<u>Line 10. Brazos River</u>																	
June 11	1410	1	1	3,000	8.3	26.4	20	7.1	88	2.9	10	7.5	1.0	0.58	.01	.06	.16
			5	4,000	8.5	26.4		7.0	86	--	--	--	--	--	--	--	--
			10	19,000	9.1	28.2		6.5	88	--	--	--	--	--	--	--	--
			14	35,000	9.1	28.9		6.0	88	4.2	51	.6	.9	.58	.07	.01	.21
Do.	1420	2	1	3,800	8.2	26.5	20	6.9	86	3.3	11	7.5	.9	2.8	.02	.04	.15
			5	5,700	8.5	26.5		6.8	85	--	--	--	--	--	--	--	
			8	15,000	8.9	26.7		6.6	86	--	--	--	--	--	--	--	
			12.5	27,000	9.0	28.8		6.0	86	4.3	75	2.0	.8	1.3	.07	.02	.12
Do.	1435	3	1	6,200	8.3	26.7	23	6.9	87	3.7	--	7.2	.8	.60	.02	.03	.15
			5	12,000	8.5	27.0		6.6	85	--	--	--	--	--	--	--	
			8	18,000	8.6	27.5		6.4	85	--	--	--	--	--	--	--	
			11	30,000	9.0	28.7		5.9	86	3.9	--	3.3	.9	1.2	.08	.01	.10
<u>Line 11. Brazos River</u>																	
June 11	1320	1	1	8,500	8.5	27.0	--	7.0	89	4.1	--	6.7	1.0	.55	.02	.04	.10
			5	14,000	8.7	27.2		6.7	86	--	--	--	--	--	--	--	
			10	32,000	8.8	28.2		5.9	84	--	--	--	--	--	--	--	
			15	36,000	8.7	28.2		5.7	83	--	--	--	--	--	--	--	
			20	36,000	8.7	28.3		5.7	83	8.0	--	2.6	.6	3.3	.04	.01	.10
Do.	1330	2	1	6,500	8.5	26.8	28	6.9	87	3.3	--	7.6	1.0	.37	.02	.04	.12
			5	9,000	8.6	27.3		6.7	86	--	--	--	--	--	--	--	
			10	33,000	8.8	28.2		5.7	83	--	--	--	--	--	--	--	
			17	38,000	8.7	28.2		5.5	81	8.0	--	2.0	.6	3.3	.04	.00	.09
Do.	1345	3	1	6,500	8.4	27.0	25	7.0	89	3.5	--	7.4	.9	.43	.03	.05	.12
			5	10,000	8.5	27.2		7.0	89	--	--	--	--	--	--	--	
			8	24,000	8.7	27.7		6.3	85	7.8	--	4.5	1.0	2.0	.04	.02	.08
<u>Line 12. Brazos River</u>																	
June 11	1200	1	1	9,000	8.5	26.9	30	7.0	89	3.2	--	5.9	.9	.63	.02	.04	.10
			5	10,000	8.5	26.9		7.0	89	--	--	--	--	--	--	--	
			10	19,000	8.6	27.2		6.4	85	--	--	--	--	--	--	--	
			17	32,000	8.7	27.8		5.8	83	7.9	--	2.4	.7	3.7	.06	.02	.12
Do.	1215	2	1	9,000	8.5	26.9	--	7.0	89	3.5	--	7.0	.9	.53	.02	.04	.11
			5	10,000	8.5	26.9		7.0	89	--	--	--	--	--	--	--	
			10	16,000	8.6	27.1		6.5	86	--	--	--	--	--	--	--	
			15	30,000	8.7	27.9		5.8	83	--	--	--	--	--	--	--	
Do.	1230	3	1	9,000	8.4	27.0	28	7.0	89	3.8	--	6.6	1.0	.75	.03	.04	.09
			5	9,000	8.5	27.0		7.0	89	--	--	--	--	--	--	--	
			10	19,000	8.6	27.4		6.4	85	--	--	--	--	--	--	--	
13	22,000	8.7	27.5	6.2	84	7.9	--	3.2	.7	2.8	.05	.02	.17				
<u>Line 13. Brazos River</u>																	
June 11	1100	1	1	12,000	8.5	26.8	36	6.9	88	4.6	--	6.4	1.0	.90	.02	.03	.06
			5	12,000	8.5	26.9		6.9	88	--	--	--	--	--	--	--	
			11.5	28,000	8.7	27.7		6.0	83	8.0	38	3.9	.8	2.1	.04	.01	.09
Do.	1120	2	1	12,000	8.5	26.8	36	6.9	88	4.5	--	6.8	.9	--	.03	.04	.07
			5	12,000	8.4	27.0		6.9	88	--	--	--	--	--	--	--	
			10	28,000	8.8	27.5		5.9	82	--	--	--	--	--	--	--	
			15	32,000	8.8	27.6		5.7	80	--	--	--	--	--	--	--	
Do.	1130	3	1	12,000	8.5	26.9	--	6.9	88	4.4	--	6.8	1.0	.92	.02	.04	.08
			5	12,000	8.6	26.9		6.9	88	--	--	--	--	--	--	--	
			10	26,000	8.7	27.4		6.0	82	--	--	--	--	--	--	--	
15	31,000	8.8	27.6	5.7	80	7.9	50	3.7	.7	2.1	.04	.02	.16				
<u>Line 14. Intracoastal Waterway</u>																	
June 11	1015	2	1	24,000	8.4	26.8	28	5.1	68	3.1	--	4.3	.7	1.0	.03	.05	.07
			5	32,000	8.1	26.2		3.6	49	--	--	--	--	--	--	--	
			10	33,000	8.0	26.0		3.8	53	--	--	--	--	--	--	--	
			16	35,000	8.0	26.0		3.6	50	2.8	--	3.2	.3	.57	.03	.03	.47
<u>Line 15. Intracoastal Waterway</u>																	
June 11	1045	2	1	16,000	8.5	27.0	38	6.5	86	5.7	--	6.4	.8	.92	.02	.03	.07
			5	17,000	8.4	27.0		6.0	79	--	--	--	--	--	--	--	
			10	21,000	8.5	27.2		5.6	75	--	--	--	--	--	--	--	
			16.5	27,000	8.7	27.7		5.6	78	7.7	--	4.1	.6	2.0	.04	.02	.12

I/ Determined at data-collection site.

Table 2B.--Quality of water in the Brazos estuary, 1970 water year

Chemical analyses

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25° C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K) 1/	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃		Density (g/ml at 20°C)
													Calcium, magnesium	Non-carbonate	
<u>Line 1. Brazos River</u>															
June 11	1305	2	1	436	50	5.7	33	136	41	44	252	148	37		
<u>Line 10. Brazos River</u>															
June 11	1410	1	1	3,120	70	50	548	156	149	898	1,820	380	232		
			14	38,500	242	1190	7,080	51	1,750	13,500	23,800	5,500	5,460		
	2	1	3,680	56	72	626	95	177	1,080	2,080	436	340			
			12.5	36,600	238	974	6,740	77	1,630	12,400	22,000	4,600	4,540		
1435	3	1	1	5,620	83	139	1,020	131	276	1,820	3,430	780	649		
			11	33,200	228	693	7,000	77	1,590	12,000	21,600	3,420	3,360		
<u>Line 13. Brazos River</u>															
June 11	1100	1	11.5	28,400	234	772	5,730	114	1,390	10,400	18,600	3,760	3,650		
	1120	2	18	34,100	265	873	6,370	146	1,560	11,600	20,800	4,250	4,130		
	1130	3	15	32,900	255	757	6,590	137	1,550	11,600	20,800	3,750	3,640		

1/ Included in sodium-ion concentration.

Table 2C.--Quality of water in the Brazos estuary, 1970 water year

Analyses for selected ions

(Results in micrograms per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25° C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Fluoride (F) a/	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Bromide (Br) a/	Iodide (I) a/	Strontium (Sr)
June 11	1305	2	1	436	--	--	--	0.2	70	--	--	--	--	--	--	--	1.8	0.022	--
<u>Line 10. Brazos River</u>																			
June 11	1410	1	1	3,120	--	--	--	.3	240	--	--	--	--	--	--	--	4.4	.023	--
			14	38,500	--	--	--	.4	2,900	--	--	--	--	--	--	--	--	45	.042
Do.	1420	2	1	3,680	--	--	--	.2	240	--	--	--	--	--	--	--	6.1	.023	--
			12.5	36,600	--	--	--	.4	2,800	--	--	--	--	--	--	--	--	44	.040
Do.	1435	3	1	5,620	--	--	--	.3	400	--	--	--	--	--	--	--	6.0	.022	--
			11	33,200	--	--	--	.4	3,200	--	--	--	--	--	--	--	--	35	.039
<u>Line 13. Brazos River</u>																			
June 11	1100	1	11.5	28,400	--	--	--	.4	2,200	--	--	--	--	--	--	--	41	.033	--
	1120	2	18	34,100	--	--	--	.5	2,700	--	--	--	--	--	--	--	49	.035	--
	1130	3	15	32,900	--	--	--	.5	2,600	--	--	--	--	--	--	--	41	.033	--

a/ Results in milligrams per liter.

East Matagorda Estuary

The East Matagorda estuary covers an area of about 56 square miles and consists of East Matagorda Bay, part of the Intracoastal Waterway, the tidal reaches of Caney Creek, and Live Oak Bayou, and the tidal part of small tributaries (Figure 4). The maximum water

depth at mllw is 5 feet in East Matagorda Bay and about 15 feet in the Intracoastal Waterway.

Water-quality data (Table 3) were collected during February at most of the sites shown in Figure 4.

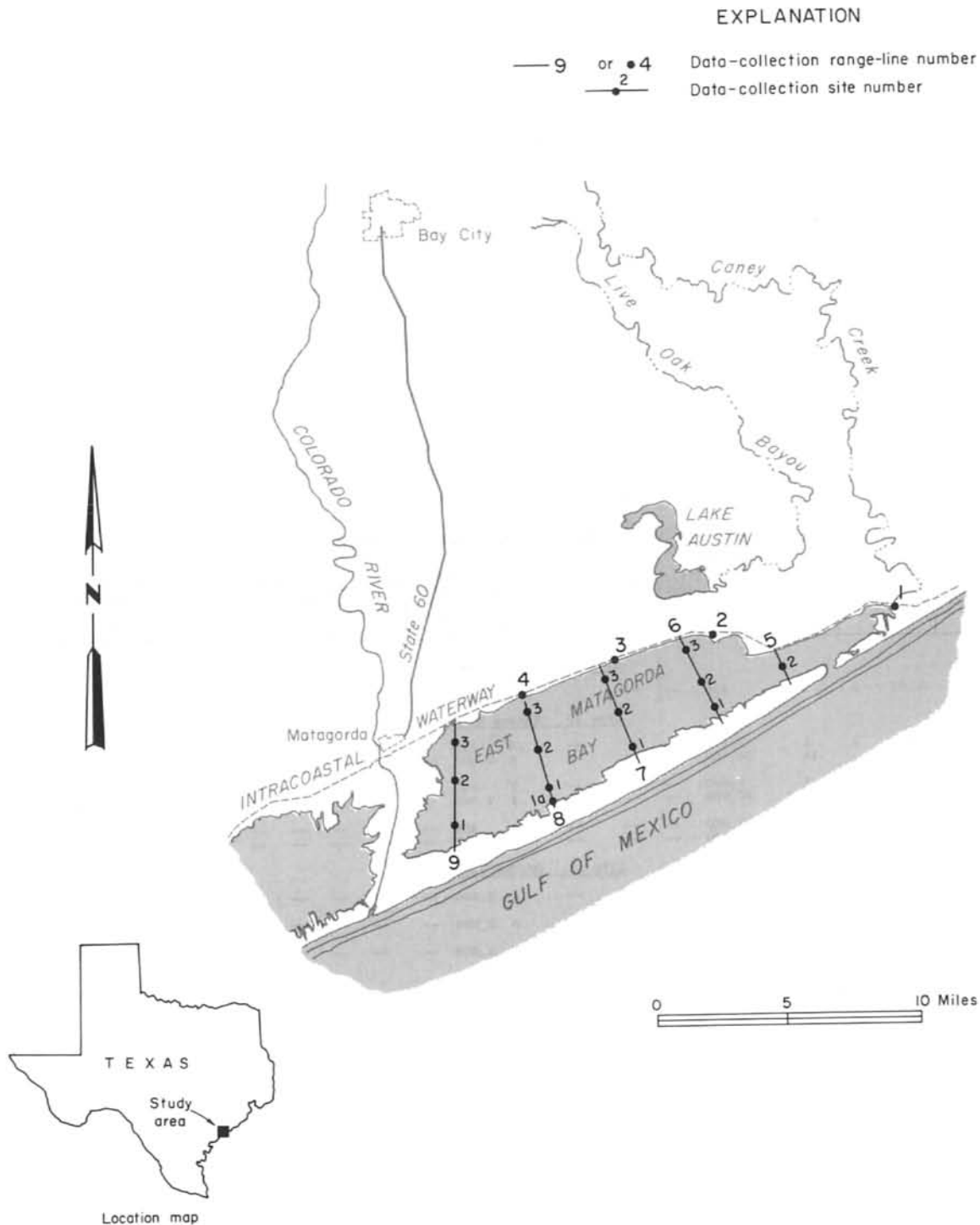


Figure 4.—Data-Collection Sites in the East Matagorda Estuary

Table 3A.--Quality of water in the East Matagorda estuary, 1970 water year
Nutrient and other environmental characteristics

(Results in milligrams per liter except as indicated)

Date of collection	Time (24 hour)	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)		
								Concentration	Percent saturation										
				1/	1/	1/	1/	1/											
<u>Line 1. Intracoastal Waterway</u>																			
Feb. 24	1310	2	1	41,000	8.3	15.4	--	6.3	73	3.4	49	2.1	0.2	0.82	0.14	0.03	0.10		
			5	42,000	8.4	15.0	--	5.5	65	--	--	--	--	--	--	--	--	--	
			10	44,000	8.4	15.0	--	5.6	66	--	--	--	--	--	--	--	--	--	--
			14	42,000	8.2	15.0	--	5.5	65	3.8	49	1.8	.1	.59	.14	.05	.09		
<u>Line 2. Intracoastal Waterway</u>																			
Feb. 24	1405	2	1	38,000	8.2	15.1	--	8.3	95	--	--	--	--	--	--	--	--		
			5	38,000	8.2	15.0	--	8.1	93	--	--	--	--	--	--	--	--	--	
			10	38,000	8.2	15.0	--	8.0	92	--	--	--	--	--	--	--	--	--	
			15	40,000	8.0	15.0	--	8.6	100	--	--	--	--	--	--	--	--	--	
<u>Line 3. Intracoastal Waterway</u>																			
Feb. 24	1420	2	1	37,000	8.1	15.0	--	8.8	100	--	--	--	--	--	--	--	--		
			5	37,000	8.1	15.0	--	9.1	103	--	--	--	--	--	--	--	--	--	
			12	37,000	8.1	15.0	--	9.1	103	--	--	--	--	--	--	--	--	--	
<u>Line 4. Intracoastal Waterway</u>																			
Feb. 24	1435	2	1	36,000	8.1	15.4	--	8.7	99	2.2	40	3.2	.0	.00	.00	.03	.09		
			5	36,000	8.0	15.2	--	8.1	92	--	--	--	--	--	--	--	--	--	
			10	36,000	8.0	15.4	--	8.5	97	--	--	--	--	--	--	--	--	--	
			13	36,000	8.0	15.4	--	8.5	97	1.5	--	2.2	.0	.00	.00	.04	.16		
<u>Line 5. East Matagorda Bay</u>																			
Feb. 23	1450	2	1	37,000	7.9	14.5	13	7.2	81	--	--	--	--	--	--	--	--		
			4	36,000	7.9	14.9	--	7.4	84	3.2	--	1.8	.2	.00	.00	.10	.25		
<u>Line 6. East Matagorda Bay</u>																			
Feb. 23	1515	1	1	40,000	7.9	14.3	20	7.5	86	--	--	--	--	--	--	--	--		
			5	40,000	7.9	15.0	--	7.6	88	--	--	--	--	--	--	--	--	--	
Do.	1525	2	1	41,000	7.9	14.4	27	7.7	88	--	--	--	--	--	--	--	--		
			4	40,000	7.8	14.6	--	7.9	91	--	--	--	--	--	--	--	--	--	
Do.	1530	3	1	40,000	7.9	14.3	41	7.8	90	--	--	--	--	--	--	--	--		
			4	42,000	7.9	14.4	--	7.9	92	--	--	--	--	--	--	--	--	--	
<u>Line 7. East Matagorda Bay</u>																			
Feb. 23	1615	1	1	37,000	7.9	14.3	--	7.7	87	--	--	--	--	--	--	--	--		
			4.5	37,000	7.8	14.3	--	7.8	88	1.6	--	3.1	.0	.00	.00	.05	.06		
Do.	1600	2	1	37,000	7.9	14.2	15	7.6	84	--	--	--	--	--	--	--	--		
			4.5	37,000	7.8	14.4	--	7.8	88	1.7	54	2.5	.0	.08	.00	.06	.12		
Do.	1545	3	1	36,000	8.0	14.5	11	7.8	88	--	--	--	--	--	--	--	--		
			3.5	36,000	8.0	14.6	--	7.7	87	2.8	--	1.8	.1	.15	.08	.09	.21		
<u>Line 8. East Matagorda Bay</u>																			
Feb. 23	1330	1	1	37,000	7.8	14.2	20	7.8	87	--	--	--	--	--	--	--	--		
			5	37,000	7.8	14.3	--	8.0	90	--	--	--	--	--	--	--	--	--	
Do.	1320	2	1	37,000	7.8	14.2	17	7.8	87	--	--	--	--	--	--	--	--		
			4.5	37,000	7.8	14.2	--	8.0	89	--	--	--	--	--	--	--	--	--	
Do.	1310	3	1	36,000	7.9	14.2	--	7.8	87	--	--	--	--	--	--	--	--		
			4	37,000	7.8	14.3	--	7.8	88	--	--	--	--	--	--	--	--	--	
<u>Line 9. East Matagorda Bay</u>																			
Feb. 23	1345	1	1	37,000	7.8	14.1	42	7.8	87	--	--	--	--	--	--	--	--		
			5	37,000	7.8	14.4	--	8.0	90	1.2	--	2.3	.0	.18	.12	.07	.07		
Do.	1240	3	1	28,000	7.7	14.2	11	6.6	85	--	--	--	--	--	--	--	--		
			4	28,000	7.8	14.3	--	6:7	70	2.0	--	3.6	.2	.18	.00	.05	.37		

1/ Determined at data-collection site.

Table 3B.--Quality of water in the East Matagorda estuary, 1970 water year

Chemical analyses

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25° C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃		Density (g/ml at 20°C)
													Calcium, magnesium	Non-carbonate	
<u>Line 1. Intracoastal Waterway</u>															
Feb. 24	1310	2	1	38,200	305	885	7,460	159	1,810	13,200	23,700	4,400	4,270		
			14	41,000	322	1,060	7,980	158	2,000	14,400	25,800	5,150	5,020		
<u>Line 4. Intracoastal Waterway</u>															
Feb. 24	1435	2	1	34,400	282	887	6,580	142	1,680	11,900	21,400	4,350	4,230		
<u>Line 5. East Matagorda Bay</u>															
Feb. 23	1450	2	4	44,500	355	1,100	8,660	147	2,180	15,500	27,900	5,400	5,280		
<u>Line 7. East Matagorda Bay</u>															
Feb. 23	1600	2	4.5	36,300	288	859	6,840	136	1,730	12,200	22,000	4,250	4,140		
<u>Line 9. East Matagorda Bay</u>															
Feb. 23	1345	1	5	35,700	270	857	6,730	134	1,720	12,000	21,600	4,200	4,090		

1/ Included in sodium-ion concentration.

Table 3C.--Quality of water in the East Matagorda estuary, 1970 water year

Analyses for selected ions

(Results in micrograms per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25°C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Fluoride (F)	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Bromide (Br)	Iodide (I)	Strontium (Sr)
<u>Line 1. Intracoastal Waterway</u>																			
Feb. 24	1310	2	1	38,200	--	--	--	0.7	3,600	--	--	--	--	--	--	--	44	0.027	--
			14	41,000	--	--	--	.7	3,600	--	--	--	--	--	--	--	--	48	.030
<u>Line 4. Intracoastal Waterway</u>																			
Feb. 24	1435	2	1	34,400	--	--	--	.7	3,000	--	--	--	--	--	--	--	40	.036	--
<u>Line 5. East Matagorda Bay</u>																			
Feb. 23	1450	2	4	44,500	--	--	--	.8	4,400	--	--	--	--	--	--	--	53	.031	--
<u>Line 7. East Matagorda Bay</u>																			
Feb. 23	1600	2	4.5	36,300	--	--	--	.6	3,500	--	--	--	--	--	--	--	41	.029	--
<u>Line 9. East Matagorda Bay</u>																			
Feb. 23	1345	1	5	35,700	--	--	--	.6	3,200	--	--	--	--	--	--	--	41	.028	--

a/ Results in milligrams per liter.

Colorado Estuary

The Colorado estuary covers an area of about 2 square miles and consists of the tidal part of the Colorado River and part of the Intracoastal Waterway (Figure 5). The minimum depth at mlw is about 6 feet in

the river channel and about 15 feet in the Intracoastal Waterway.

Water-quality data (Table 4) for the Colorado estuary were collected in February, April, May, and June at sites shown on Figure 5.

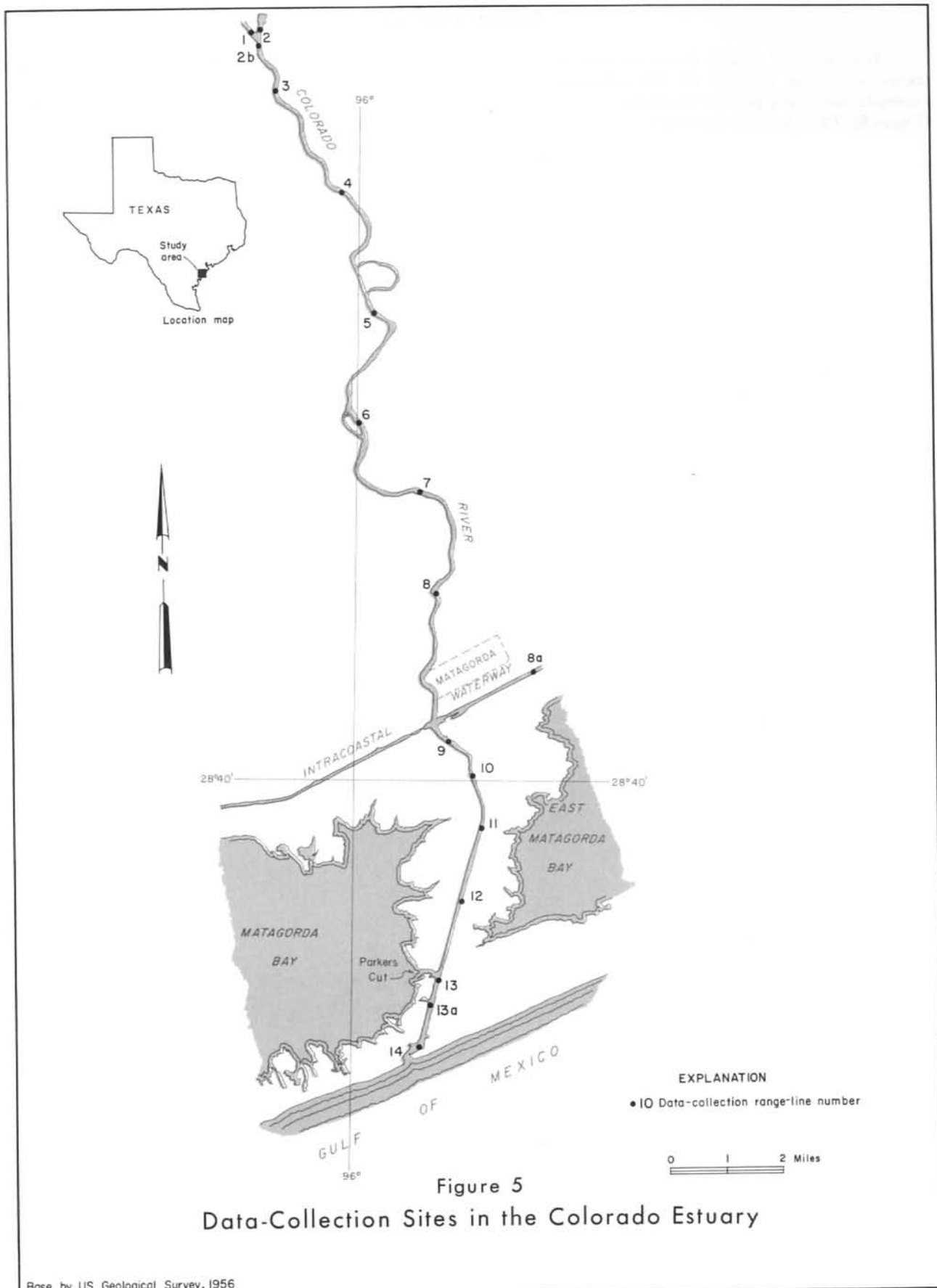


Figure 5
Data-Collection Sites in the Colorado Estuary

Base by US Geological Survey, 1956

Table 4A.--Quality of water in the Colorado estuary, 1970 water year
Nutrient and other environmental characteristics

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni- trate nitrogen (N)	Ammo- nia nitrogen (N)	Ni- trite nitrogen (N)	Ortho- phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 1. Colorado River</u>																	
Feb. 25	1110	2	1	560	8.3	15.1	41	10.3	101	3.8	11	10	0.1	0.05	0.08	0.07	0.16
			10	590	8.3	15.1		10.3	101	--							
			17	600	8.4	15.0		10.4	102	5.9							
Apr. 20	1610	2	1	360	8.2	23.5	25	9.2	107	--	--	--	--	--	--	--	--
			5	360	8.2	23.5		9.0	105	--							
			17	370	8.1	23.6		9.0	105	.8							
<u>Line 2. Colorado River</u>																	
Feb. 25	1130	2	1	540	8.3	15.0	--	9.9	97	3.4	--	9.4	.3	.00	.13	.03	.20
			5	540	8.3	15.1		9.8	96	--							
			16	550	8.3	15.1		9.6	94	6.9							
Apr. 20	1630	2	1	370	8.1	23.8	37	8.6	101	--	--	--	--	--	--	--	--
			15	390	8.1	23.9		8.0	94	.8							
<u>Line 3. Colorado River</u>																	
Feb. 25	1145	2	1	570	8.3	15.0	52	9.8	96	--	--	--	--	--	--	--	--
			5	570	8.3	15.0		9.9	97	--							
			15	570	8.3	15.0		10.2	100	--							
<u>Line 4. Colorado River</u>																	
Feb. 25	1300	2	1	560	8.3	15.4	51	9.9	98	--	--	--	--	--	--	--	--
			5	560	8.3	15.4		10.0	99	--							
			16	560	8.3	15.4		9.8	97	--							
<u>Line 5. Colorado River</u>																	
Feb. 25	1320	2	1	560	8.4	15.7	--	10.9	108	--	--	--	--	--	--	--	--
			5	560	8.4	15.7		10.8	107	--							
			13	560	8.4	15.8		10.6	106	--							
<u>Line 6. Colorado River</u>																	
Feb. 25	1340	2	1	980	8.4	15.5	--	10.9	108	3.7	6.7	9.0	.2	.00	.11	.06	.16
			3	1,000	8.4	15.5		10.8	107	--							
			5	11,000	8.4	15.4		10.5	107	--							
			10	16,000	8.1	15.1		7.8	81	--							
			12	33,000	7.9	14.8		5.0	56	1.7							
<u>Line 7. Colorado River</u>																	
Feb. 25	1400	2	1	1,600	8.5	15.7	61	11.7	116	--	--	--	--	--	--	--	--
			5	2,200	8.4	15.4		10.7	107	--							
			8	11,000	8.3	15.2		9.5	96	--							
			9	30,000	8.0	14.8		6.4	71	--							
			10	34,000	8.0	14.7		6.0	67	--							
			15	34,000	8.0	14.6		5.5	62	--							
<u>Line 8. Colorado River</u>																	
Feb. 25	1420	2	1	2,400	8.5	15.6	64	11.6	116	4.6	--	9.0	.1	.00	.06	.05	.15
			5	2,600	8.5	15.5		11.5	115	--							
			8	2,700	8.5	15.5		11.4	114	--							
			10	32,000	8.0	14.8		7.1	79	--							
			15	37,000	8.0	14.6		5.7	64	--							
			20	41,000	8.0	14.5		5.2	60	--							
			27	42,000	8.0	14.6		5.1	59	1.5							
Apr. 20	1530	2	1	370	8.3	23.8	41	9.0	106	--	--	--	--	--	--	--	--
			5	370	8.2	23.9		9.3	109	--							
			15	370	8.2	24.0		9.8	115	--							
			22	390	8.2	24.1		9.9	116	.9							
May 21	0905	2	1	440	7.6	23.5	--	8.0	93	3.3	--	9.4	1.1	.12	.02	.17	.44
			5	440	7.6	23.5		8.0	93	--							
			10	450	7.6	23.5		8.0	93	--							
			15	460	7.6	23.5		8.1	94	--							
			20	485	7.6	23.5		8.1	94	--							
			23	850	7.7	23.5		8.2	95	2.5							
June 9	1310	2	1	550	7.9	26.1	23	8.3	101	2.1	--	9.0	.5	.03	.00	.04	.14
			5	550	7.9	26.1		8.2	100	--							
			10	550	7.9	26.2		8.3	101	--							
			15	655	7.9	26.2		8.2	100	--							
			22	750	7.9	26.2		8.2	100	1.9							

See footnote at end of table.

Table 4A.--Quality of water in the Colorado estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)		
								Concentration	Percent saturation										
<u>Line 8a. Intracoastal Waterway</u>																			
Apr. 20	1515	2	1	2,400	8.3	24.8	46	9.2	111	--	--	--	--	--	--	--	--		
			5	3,400	8.2	24.7		9.2	111	--	--	--	--	--	--	--	--	--	
			9	6,500	8.0	24.3		7.8	94	--	--	--	--	--	--	--	--	--	--
May 21	1025	2	1	20,000	7.7	24.2	56	6.6	84	--	--	--	--	--	--	--	--		
			3	25,000	7.7	24.1		6.3	81	--	--	--	--	--	--	--	--	--	
			5	33,000	7.7	24.2		6.0	80	--	--	--	--	--	--	--	--	--	
			10	40,000	7.7	24.4		5.7	78	--	--	--	--	--	--	--	--	--	--
			17	40,000	7.7	24.6		6.2	86	--	--	--	--	--	--	--	--	--	--
June 9	1510	2	1	3,600	8.0	26.5	36	8.2	102	2.0	--	8.5	0.5	0.05	0.01	0.04	0.10		
			5	5,200	8.0	26.5		7.8	98	--	--	--	--	--	--	--	--		
			10	7,000	7.8	26.4		7.4	92	--	--	--	--	--	--	--	--		
			16	11,000	7.8	26.6		7.0	89	2.5	--	7.4	.3	.06	.01	.03	.11		
<u>Line 9. Colorado River</u>																			
Feb. 25	1450	2	1	11,000	8.3	15.6	76	10.9	111	3.0	--	6.8	.2	.00	.06	.05	.10		
			5	16,000	8.2	15.3		9.7	102	--	--	--	--	--	--	--	--		
			8	28,000	8.1	15.1		8.0	88	--	--	--	--	--	--	--	--		
			11	30,000	8.0	15.1		7.4	82	3.8	--	4.0	.1	.14	.08	.06	.12		
Apr. 20	1425	2	1	340	8.3	24.0	39	8.9	105	--	--	--	--	--	--	--	--		
			5	370	8.2	23.8		8.8	104	--	--	--	--	--	--	--	--		
			11.5	390	8.2	23.9		8.6	101	1.4	6.4	7.5	.4	.03	.01	.07	.12		
May 21	0930	2	1	400	7.5	23.5	8	8.0	93	2.4	--	9.5	1.1	.06	.10	.18	.33		
			5	440	7.5	23.5		8.0	93	--	--	--	--	--	--	--	--		
			10	720	7.6	23.5		8.0	93	--	--	--	--	--	--	--	--		
			14	5,900	7.5	23.5		8.0	95	3.1	--	8.2	1.0	.11	.05	.07	.64		
June 9	1330	2	1	460	8.0	26.4	30	8.6	105	2.4	.6	9.8	.6	.10	.00	.04	.10		
			5	550	8.0	26.4		8.4	102	--	--	--	--	--	--	--	--		
			10	850	8.0	26.3		8.2	100	--	--	--	--	--	--	--	--		
			13	2,600	7.9	26.3		7.7	95	--	--	--	--	--	--	--	--		
			16.5	7,500	7.7	27.0		6.8	86	1.9	19	7.4	.2	.07	.01	.04	.09		
Do.	1600	2	1	550	7.9	26.3	28	8.4	102	--	--	--	--	--	--	--	--		
			5	590	7.9	26.3		8.4	102	--	--	--	--	--	--	--	--		
			8	650	7.9	26.3		8.2	100	--	--	--	--	--	--	--	--		
			10	2,500	7.8	26.3		7.8	96	--	--	--	--	--	--	--	--		
			12	11,500	7.7	27.1		6.3	81	--	--	--	--	--	--	--	--		
<u>Line 10. Colorado River</u>																			
Apr. 20	1415	2	1	360	8.2	23.6	--	8.7	101	--	--	--	--	--	--	--	--		
			5	360	8.2	23.6		8.8	102	--	--	--	--	--	--	--			
			10	360	8.2	23.7		9.5	110	--	--	--	--	--	--	--			
			17	370	7.9	23.7		9.6	112	--	--	--	--	--	--	--			
May 21	0945	2	1	560	7.6	23.5	8	8.0	93	--	--	--	--	--	--	--	--		
			5	650	7.6	23.5		8.0	93	--	--	--	--	--	--	--			
			10	950	7.6	23.5		8.0	93	--	--	--	--	--	--	--			
			14.5	2,300	7.5	23.5		8.1	95	--	--	--	--	--	--	--			
<u>Line 11. Colorado River</u>																			
Feb. 25	1515	2	1	11,000	8.3	15.7	77	11.5	117	--	--	--	--	--	--	--	--		
			5	12,000	8.3	15.6		11.3	116	--	--	--	--	--	--	--			
			8	19,000	8.2	15.2		9.6	100	--	--	--	--	--	--	--			
			10	31,000	8.0	15.0		8.0	89	--	--	--	--	--	--	--			
			14	44,000	8.0	15.0		6.5	76	--	--	--	--	--	--	--			
Apr. 20	1355	2	1	370	8.3	23.9	46	9.8	115	--	--	--	--	--	--	--	--		
			5	430	8.3	23.8		9.8	115	--	--	--	--	--	--	--			
			10	790	8.3	23.7		9.5	110	--	--	--	--	--	--	--			
			12	1,200	8.2	23.7		9.5	110	--	--	--	--	--	--	--			
			14	10,000	8.2	23.0		9.3	109	--	--	--	--	--	--	--			
			15.5	41,000	8.0	21.6		7.5	99	--	--	--	--	--	--	--			
Do.	1730	2	1	560	7.9	23.5	--	--	--	--	--	--	--	--	--	--	--		
			15.5	6,000	7.8	23.3		--	--	--	--	--	--	--	--	--			
May 21	0955	2	1	800	7.5	23.5	8	8.0	93	--	--	--	--	--	--	--	--		
			5	1,000	7.5	23.0		8.0	92	--	--	--	--	--	--	--			
			10	1,400	7.6	23.5		8.0	93	--	--	--	--	--	--	--			
			15	6,500	7.6	23.5		8.0	95	--	--	--	--	--	--	--			

See footnote at end of table.

Table 4A.--Quality of water in the Colorado estuary, 1970 water year

Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)	
								Concentration	Percent saturation									
<u>Line 12. Colorado River</u>																		
Apr. 20	1330	2	1	590	8.3	24.0	57	8.7	102	--	--	--	--	--	--	--	--	
			5	920	8.4	24.0		8.8	104	--	--	--	--	--	--	--	--	--
			10	1,000	8.5	23.7		8.7	101	--	--	--	--	--	--	--	--	--
			12.5	1,200	8.2	23.8		8.6	101	--	--	--	--	--	--	--	--	--
			14	9,500	8.1	23.5		7.9	94	--	--	--	--	--	--	--	--	--
			15	35,000	8.0	22.0		6.5	83	--	--	--	--	--	--	--	--	
			15.5	40,000	8.0	21.6		6.0	79	--	--	--	--	--	--	--	--	
Do.	1740	2	1	560	7.9	23.5	43	--	--	--	--	--	--	--	--	--	--	
			14	4,000	7.8	23.0		--	--	--	--	--	--	--	--	--	--	
			16	44,000	7.6	20.5		--	--	1.1	37	1.6	0.1	0.08	0.00	0.01	0.05	
May 21	1000	2	1	1,400	7.6	23.0	18	8.0	92	--	--	--	--	--	--	--	--	
			5	1,600	7.6	23.0		8.0	92	--	--	--	--	--	--	--	--	
			10	2,200	7.7	23.0		7.7	90	--	--	--	--	--	--	--	--	
			15	28,000	7.9	25.0		7.2	95	--	--	--	--	--	--	--	--	
			20	28,000	7.9	25.0		7.2	95	--	--	--	--	--	--	--	--	
June 9	1405	2	1	2,400	8.2	26.4	39	8.6	106	--	--	--	--	--	--	--	--	
			5	3,500	8.1	26.4		7.9	98	--	--	--	--	--	--	--	--	
			7	10,000	7.9	26.1		7.3	91	--	--	--	--	--	--	--	--	
			8	32,000	7.9	25.8		7.2	99	--	--	--	--	--	--	--	--	
			10	38,000	8.0	25.7		7.1	99	--	--	--	--	--	--	--	--	
			15	39,000	8.0	25.7		7.3	101	--	--	--	--	--	--	--	--	
			20	38,000	8.0	25.7		7.3	101	--	--	--	--	--	--	--		
<u>Parkers Cut</u>																		
Feb. 25	1615	-	1	13,000	8.3	15.5	76	--	--	--	--	--	--	--	--	--	--	
			5	16,000	8.2	15.3		--	--	--	--	--	--	--	--	--		
			10	32,000	8.0	14.9		--	--	--	--	--	--	--	--	--		
June 9	1440	-	1	6,500	7.4	27	46	7.9	100	--	--	--	--	--	--	--	--	
			3	12,000	7.4	27		7.7	99	--	--	--	--	--	--	--		
			5	16,000	7.3	27.5		7.3	96	--	--	--	--	--	--	--		
			7	24,000	7.3	28		6.8	93	--	--	--	--	--	--	--		
Do.	1445	-	1	8,000	8.0	26.8	36	8.6	109	--	--	--	--	--	--	--	--	
			3	13,000	8.0	26.6		8.5	109	--	--	--	--	--	--	--		
			6	16,000	7.9	26.5		8.2	105	--	--	--	--	--	--	--		
Do.	1605	-	1	4,800	--	27.5	--	8.0	101	--	--	--	--	--	--	--	--	
			3	6,500	--	27.5		8.0	103	--	--	--	--	--	--	--		
			4	19,000	--	27.5		7.6	101	--	--	--	--	--	--	--		
			5	26,000	--	27		7.4	100	--	--	--	--	--	--	--		
			12	22,000	--	27		7.5	100	--	--	--	--	--	--	--		
Do.	1630	-	1	12,000	7.4	27.5	--	8.9	116	--	--	--	--	--	--	--	--	
			5	14,000	7.3	27		8.1	105	--	--	--	--	--	--	--		
			7	20,000	7.3	27		7.4	99	--	--	--	--	--	--	--		
			10	41,000	7.3	26		6.3	90	--	--	--	--	--	--	--		
			12	42,000	7.3	26		6.2	90	--	--	--	--	--	--	--		
<u>Line 13. Colorado River</u>																		
Feb. 25	1540	2	1	12,000	8.3	15.6	64	--	--	3.0	14	7.0	.2	.06	.06	.06	.17	
			3	13,000	8.3	15.6		--	--	--	--	--	--	--	--	--	--	
			5	23,000	8.3	15.3		--	--	--	--	--	--	--	--	--	--	
			8	23,000	8.2	15.1		--	--	--	--	--	--	--	--	--	--	
			11	31,000	8.0	15.0		--	--	2.7	--	3.8	.2	.06	.00	.04	.08	
Apr. 20	1300	2	1	980	8.3	24.2	41	8.6	101	1.0	--	6.9	.8	.00	.01	.06	.10	
			3	2,600	8.2	24.0		8.6	102	--	--	--	--	--	--	--		
			5	3,700	8.2	23.8		8.2	98	--	--	--	--	--	--	--		
			6.5	4,000	8.1	23.8		8.2	98	--	--	--	--	--	--	--		
			8.5	6,500	8.1	23.8		8.1	98	1.2	--	6.7	1.7	.03	.01	.07	.07	
May 21	1015	2	1	6,000	7.6	24.0	15	7.8	94	1.6	--	7.8	1.6	.09	.04	.05	.16	
			5	9,500	7.8	24.0		7.8	94	--	--	--	--	--	--	--		
			11.5	30,000	7.9	25.0		7.3	97	2.0	--	2.0	.3	.33	.03	.03	.16	
June 9	1340	2	1	4,700	7.2	27	--	8.0	100	2.0	--	8.2	.5	.47	.01	.04	.08	
			3	5,000	7.1	27		7.9	99	--	--	--	--	--	--	--		
			4	11,000	7.1	27		7.7	97	--	--	--	--	--	--	--		
			5	25,000	7.2	27		7.5	101	--	--	--	--	--	--	--		
			12	44,000	7.1	26.5		6.7	99	2.4	--	2.2	.1	.11	.00	.03	.08	

See footnote at end of table.

Table 4A.--Quality of water in the Colorado estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate phosphorus (P)	Total phosphate phosphorus (P)
							Concentration	Percent saturation								
Line 13a. Colorado River																
Apr. 20	1315	2	4,300	8.2	24.3	41	8.4	100	--	--	--	--	--	--	--	--
		2.5	8,500	8.1	24.3		8.0	96	--	--	--	--	--	--	--	--
		4	12,000	8.1	24.2		7.7	94	--	--	--	--	--	--	--	--
		6.5	22,000	7.9	24.0		6.2	78	--	--	--	--	--	--	--	--
May 21	1030	2	12,000	7.8	24.5	19	7.7	94	1.3	7.3	1.0	0.12	0.05	0.07	0.07	0.14
		5	14,000	7.8	25.0		7.6	95	--	--	--	--	--	--	--	--
		10	16,000	7.8	25.0		7.5	95	1.7	6.0	.7	.20	.05	.05	.14	
Line 14. Colorado River																
Feb. 25	1600	2	14,000	8.2	15.7	76	--	--	--	--	--	--	--	--	--	--
		3	14,000	8.3	15.8		--	--	--	--	--	--	--	--	--	--
Apr. 20	1240	2	7,500	8.1	23.9	42	8.3	100	--	--	--	--	--	--	--	--
		3.5	12,000	8.0	23.7		8.1	98	--	--	--	--	--	--	--	--
May 21	1040	2	32,000	8.0	26.0	19	7.7	105	--	--	--	--	--	--	--	--
		4	30,000	8.0	26.0		7.8	107	--	--	--	--	--	--	--	--
June 9	1320	2	47,000	7.4	26.5	30	7.2	106	2.6	--	.3	.0	.11	.00	.01	.07
		7	44,000	7.4	27		7.4	110	3.1	--	.8	.0	.11	.00	.07	.11

1/ Determined at data-collection site.

Table 4B.--Quality of water in the Colorado estuary, 1970 water year
Chemical analyses

(Results in milligrams per liter except as indicated)

Date of collection	Time Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃		Density (g/ml at 20°C)
												Calcium	Non-carbonate	
Line 1. Colorado River														
Feb. 25	1110	2	647	71	19	42	253	41	66	376	256	48		
Apr. 20	1615	2	506	38	17	34	126	32	54	261	166	39		
Line 6. Colorado River														
Feb. 25	1340	2	30,400	260	815	5,950	175	1,510	10,800	19,400	4,000	3,860		
Line 8. Colorado River														
Feb. 25	1420	2	2,810	80	68	424	246	133	750	1,590	480	278		
		27	41,200	330	1,170	7,910	170	2,030	14,600	26,100	5,650	5,510		
Line 9. Colorado River														
Apr. 20	1425	2	526	--	--	--	--	32	56	--	--	--		
May 21	0930	2	--	--	--	--	--	28	20	--	--	--		
		14	5,920	80	127	981	92	284	1,740	3,290	720	618		
June 9	1330	2	624	44	16	52	168	35	75	322	174	30		
		16.5	11,100	107	227	1,990	149	480	3,480	6,370	1,200	1,080		
Line 12. Colorado River														
Apr. 20	1740	2	45,100	350	1,200	8,460	141	2,280	15,400	27,800	5,800	5,680		
Line 13. Colorado River														
Feb. 25	1540	2	11,700	145	272	1,990	220	522	3,600	6,650	1,480	1,300		
		11	28,600	235	781	5,050	181	1,320	9,400	16,900	3,800	3,650		
Apr. 20	1300	2	6,990	82	163	1,070	161	320	1,930	3,660	875	736		
May 21	1015	2	30,800	258	942	5,740	136	1,580	10,800	19,400	4,520	4,410		
June 9	1340	2	4,600	71	89	753	171	440	1,110	2,570	544	388		
Line 14. Colorado River														
June 9	1320	2	48,400	378	1,550	9,190	156	2,400	17,500	31,100	7,300	7,170		

1/ Included in sodium-ion concentration.

Table 4C.--Quality of water in the Colorado estuary, 1970 water year

Analyses for selected ions

(Results in micrograms per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25°C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Fluoride (F) a/	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Bromide (Br) a/	Iodide (I) a/	Strontium (Sr)
<u>Line 1. Colorado River</u>																			
Feb. 25	1110	2	17	647	--	--	--	0.2	100	--	--	--	--	--	--	--	0.8	0.035	--
Apr. 20	1615	2	17	506	--	--	--	.2	80	--	--	--	--	--	--	--	1.0	.018	--
<u>Line 6. Colorado River</u>																			
Feb. 25	1340	2	12	30,400	--	--	--	.6	2,700	--	--	--	--	--	--	--	19	.037	--
<u>Line 8. Colorado River</u>																			
Feb. 25	1420	2	1	2,810	--	--	--	.7	250	--	--	--	--	--	--	--	2.9	.034	--
			27	41,200	--	--	--	.3	3,500	--	--	--	--	--	--	--	38	.037	--
<u>Line 9. Colorado River</u>																			
Apr. 20	1425	2	11.5	526	--	--	--	.2	120	--	--	--	--	--	--	--	.9	.014	--
May 21	0930	2	1	--	--	--	--	.3	80	--	--	--	--	--	--	--	1.3	.013	--
			14	5,920	--	--	--	.4	500	--	--	--	--	--	--	--	7.1	.017	--
June 9	1330	2	1	624	--	--	--	.2	80	--	--	--	--	--	--	--	2.9	.018	--
			16.5	11,100	--	--	--	.3	850	--	--	--	--	--	--	--	14	.026	--
<u>Line 12. Colorado River</u>																			
Apr. 20	1740	2	16	45,100	--	--	--	.7	1,500	--	--	--	--	--	--	--	60	.029	--
<u>Line 13. Colorado River</u>																			
Feb. 25	1540	2	1	11,700	--	--	--	.4	880	--	--	--	--	--	--	--	14	.033	--
			11	28,600	--	--	--	.6	2,200	--	--	--	--	--	--	--	32	.028	--
Apr. 20	1300	2	8.5	6,990	--	--	--	.3	610	--	--	--	--	--	--	--	7.6	.018	--
May 21	1015	2	11.5	30,800	--	--	--	.7	1,700	--	--	--	--	--	--	--	37	.026	--
June 9	1340	2	1	4,600	--	--	--	.2	380	--	--	--	--	--	--	--	8.6	.021	--
<u>Line 14. Colorado River</u>																			
June 9	1320	2	7	48,400	--	--	--	.7	4,600	--	--	--	--	--	--	--	55	.020	--

a/ Results in milligrams per liter.

Lavaca-Tres Palacios Estuary

The Lavaca-Tres Palacios estuary covers about 350 square miles and consists of the tidal parts of the Lavaca and Navidad Rivers, Tres Palacios Creek and other tributaries, Lavaca Bay, Cox Bay, Keller Bay, Carancahua Bay, Tres Palacios Bay, Matagorda Bay, Matagorda Ship Channel pass, Pass Cavallo, and parts of the Intercoastal Waterway (Figure 6). Water depth at

mlw is 13 feet or less in Matagorda Bay, except in the Matagorda Ship Channel, which is more than 40 feet deep. The rivers generally are less than 15 feet deep.

Water-quality surveys of the Lavaca-Tres Palacios estuary (Table 5) were made during February, April, May, and June.

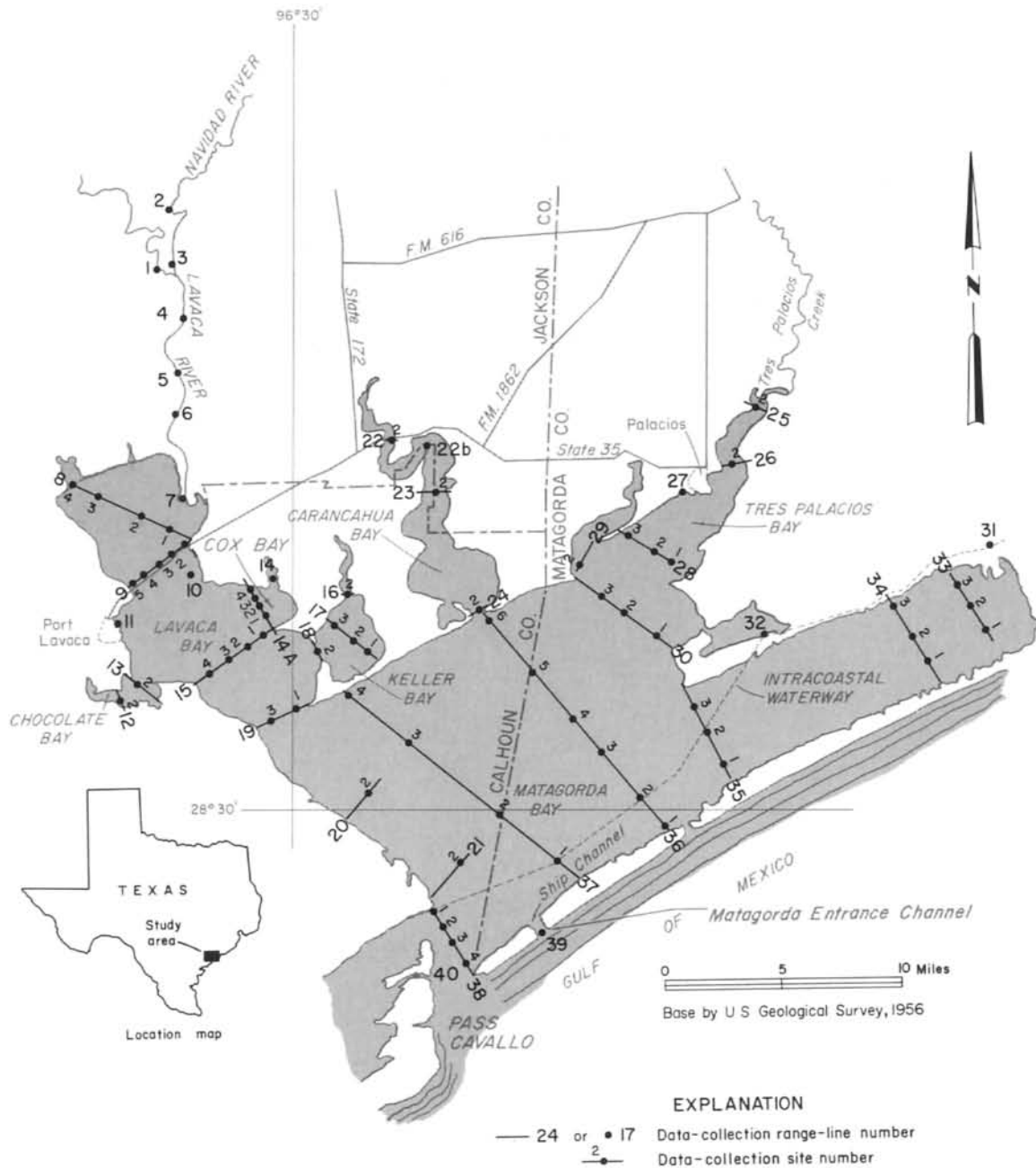


Figure 6.—Data-Collection Sites in the Lavaca-Tres Palacios Estuary

Table 5A.--Quality of water in the Lavaca-Tres Palacios estuary, 1970 water year
Nutrient and other environmental characteristics

Date of collection	Time Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25°C)	pH	Temperature (°C)	Secchi transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Orthophosphate phosphorus (P)	Total phosphorus (P)
							Concentration (mg/l)	Saturation (%)								
<u>Line 1. Lavaca River</u>																
Feb. 24	1420 2	1	1,100	8.2	16.2	--	11.9	119	3.2	--	12	0.0	0.05	0.00	0.03	0.10
		3	1,200	8.1	16.0	--	12.1	121	--	--	--	--	--	--	--	--
		5	3,400	7.9	15.5	--	9.1	91	--	--	--	--	--	--	--	--
		6	16,000	7.6	15.2	--	4.6	46	--	--	--	--	--	--	--	--
		9	19,000	7.6	15.1	--	4.5	47	4.3	--	5.8	.0	.14	.08	.07	.11
Apr. 21	1710 2	1	650	8.1	25.3	39	9.5	114	3.9	--	13	.1	.06	.02	.03	.06
		5	700	8.0	25.0	--	8.8	105	--	--	--	--	--	--	--	--
		14	850	7.8	24.2	--	6.4	75	4.4	--	13	.0	.23	.02	.04	.08
May 19	1350 2	1	480	7.7	24.4	28	6.8	80	2.4	--	13	.4	.89	.01	.01	.11
		5	480	7.6	23.2	--	6.2	71	--	--	--	--	--	--	--	--
		12	490	7.5	22.6	--	5.8	67	1.7	--	14	.5	.07	.01	.15	.16
June 10	1115 2	1	570	7.9	26.8	46	9.2	114	4.1	--	19	.0	.10	.00	.04	.10
		5	570	7.9	26.5	--	8.9	109	--	--	--	--	--	--	--	--
		11	590	7.8	26.5	--	8.1	99	6.6	--	20	.0	.07	.00	.04	.16
<u>Line 2. Navidad River</u>																
Feb. 24	1500 2	1	900	8.0	16.3	75	9.4	95	2.2	--	15	.0	.00	.00	.10	.12
		5	1,200	7.9	15.8	--	8.0	80	--	--	--	--	--	--	--	--
		7	4,200	7.9	15.7	--	5.9	59	--	--	--	--	--	--	--	--
		10.5	13,000	7.7	15.5	--	4.8	49	6.3	--	8.6	.0	.19	.12	.10	.15
Apr. 21	1650 2	1	390	8.4	27.5	24	12.5	156	7.0	--	14	.2	.11	.02	.08	.13
		5	410	7.9	25.7	--	9.0	108	--	--	--	--	--	--	--	--
		11	450	7.5	24.2	--	6.4	75	3.2	--	15	.3	.10	.03	.12	.12
May 19	1330 2	1	360	7.5	23.6	18	7.4	86	2.8	--	13	1.0	.03	.03	.06	.17
		6	350	7.4	21.4	--	6.6	74	2.4	--	13	1.0	.06	.03	.07	.17
June 10	1100 2	1	440	7.4	26.4	46	7.2	88	2.9	--	19	.3	.08	.02	.06	.10
		5	400	7.4	26.3	--	7.0	85	--	--	--	--	--	--	--	--
		11.5	460	7.4	26.4	--	6.8	83	2.9	--	20	.3	.10	.02	.06	.10
<u>Line 3. Navidad River</u>																
Feb. 24	1515 2	1	1,900	8.2	15.9	56	10.0	101	--	--	--	--	--	--	--	--
		5	8,500	7.9	15.3	--	6.4	65	--	--	--	--	--	--	--	--
		9	22,000	7.6	15.0	--	3.9	41	--	--	--	--	--	--	--	--
May 19	1315 2	1	300	7.4	24.4	18	6.6	78	--	--	--	--	--	--	--	--
		6.5	300	7.3	21.2	--	6.3	70	--	--	--	--	--	--	--	--
June 10	1050 2	1	380	7.5	26.3	46	7.5	91	--	--	--	--	--	--	--	--
		5.5	360	7.5	26.3	--	7.4	90	--	--	--	--	--	--	--	--
<u>Line 4. Lavaca River</u>																
Feb. 24	1525 2	1	6,500	8.4	16.2	75	11.7	119	5.3	24	11	.0	.00	.00	.04	.11
		3	6,500	8.4	15.9	--	10.9	111	--	--	--	--	--	--	--	--
		5	6,500	8.3	15.8	--	10.0	102	--	--	--	--	--	--	--	--
		7	23,000	7.7	15.2	--	5.2	55	--	--	--	--	--	--	--	--
		10	27,000	7.6	14.8	--	4.5	49	1.8	--	3.4	.0	.00	.03	.05	--
Apr. 21	1625 2	1	360	7.7	24.7	20	7.2	86	3.3	20	12	.5	.23	.06	.11	.11
		5	360	7.7	24.7	--	7.1	85	--	--	--	--	--	--	--	--
		10.5	400	7.6	24.3	--	6.4	75	2.4	21	12	.5	.21	.06	.10	.11
May 19	1250 2	1	360	7.5	23.0	--	6.2	71	2.2	--	12	.9	.08	.02	.05	.17
		5	350	7.5	22.4	--	6.1	69	--	--	--	--	--	--	--	--
		10	480	7.5	22.0	--	5.6	64	--	--	--	--	--	--	--	--
		13.5	2,200	7.5	22.0	--	4.4	51	2.2	--	12	.9	.14	.03	.15	.15
June 10	1040 2	1	400	7.8	26.4	46	8.5	104	3.6	20	18	.1	.20	.01	.04	.11
		5	420	7.8	26.4	--	8.4	102	--	--	--	--	--	--	--	--
		10	460	7.8	26.4	--	8.4	102	3.6	17	19	.1	.14	.02	.04	.08
<u>Line 5. Lavaca River</u>																
Feb. 24	1550 2	1	7,500	8.5	16.0	77	10.2	104	--	--	--	--	--	--	--	--
		5	8,500	8.5	16.0	--	10.2	105	--	--	--	--	--	--	--	--
		7	26,000	7.8	15.2	--	5.7	61	--	--	--	--	--	--	--	--
		13	31,000	7.7	15.5	--	4.3	48	--	--	--	--	--	--	--	--
Apr. 21	1615 2	1	1,000	7.8	24.4	17	7.3	86	--	--	--	--	--	--	--	--
		5	1,100	7.8	24.4	--	7.3	86	--	--	--	--	--	--	--	--
		13	1,200	7.7	24.4	--	7.4	87	--	--	--	--	--	--	--	--
May 19	1230 2	1	1,000	7.8	23.8	16	6.4	75	--	--	--	--	--	--	--	--
		5	2,800	7.9	23.0	--	6.1	71	--	--	--	--	--	--	--	--
		7	8,000	7.8	23.0	--	5.8	68	--	--	--	--	--	--	--	--
		10	14,000	7.7	22.4	--	4.3	51	--	--	--	--	--	--	--	--
		13	16,000	7.5	22.2	--	3.3	40	--	--	--	--	--	--	--	--
June 10	1030 2	1	550	7.8	26.1	46	7.6	93	--	--	--	--	--	--	--	--
		5	550	7.8	26.1	--	7.6	93	--	--	--	--	--	--	--	--
		11	750	7.9	26.1	--	7.2	88	--	--	--	--	--	--	--	--

See footnote at end of table.

Table 5A.--Quality of water in the Lavaca-Tres Palacios estuary, 1970 water year

Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH		Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
					1/	1/			Concentration	Percent saturation								
<u>Line 6. Lavaca River</u>																		
Feb. 24	1600	2	1	14,000	8.4	16.0	91	9.8	102	2.6	--	7.3	0.0	0.00	0.00	0.03	0.05	
			5	16,000	8.4	15.8		9.6	101	--								--
			7	28,000	7.9	15.1		6.1	67	--								--
			11.5	32,000	7.7	15.2		5.1	57	2.1		2.6	.0	.10	.06	.03	.06	
Apr. 21	1600	2	1	2,400	7.6	24.3	22	7.3	87	2.4	--	10	1.8	.29	.07	.12	.18	
			5	3,100	7.6	24.0		7.0	83	--								--
			12.5	3,600	7.6	23.8		6.7	80	3.3								--
May 19	1155	2	1	3,000	8.0	23.8	--	7.4	88	2.5	--	13	.5	.11	.02	.11	.11	
			5	4,400	8.0	23.4		7.1	84	--								--
			8	12,000	7.9	23.0		6.2	74	--								--
			10	16,000	7.7	22.8		4.9	53	--								--
			11.5	16,000	7.8	22.6		5.4	65	2.1								--
June 10	1010	2	1	810	7.6	26.0	43	7.1	87	3.4	--	17	.0	.34	.02	.06	.10	
			5	810	7.6	26.0		7.0	85	--								--
			11.5	850	7.6	26.1		6.9	84	3.3								--
<u>Line 7. Lavaca River</u>																		
Feb. 24	1630	2	1	31,000	8.0	16.2	64	8.3	93	--	--	--	--	--	--	--	--	
			5	32,000	8.0	16.4		8.5	97	--								--
			11	32,000	8.0	16.5		8.5	97	--								--
Apr. 21	1545	2	1	14,000	7.8	24.5	28	7.8	95	--	--	--	--	--	--	--	--	
			5	14,000	7.8	24.4		7.8	95	--								--
			12	14,000	7.6	23.1		6.8	82	--								--
May 19	1135	2	1	18,000	8.3	23.8	61	9.9	124	--	--	--	--	--	--	--	--	
			5	20,000	8.2	23.0		7.8	96	--								--
			12	24,000	8.1	22.9		7.1	89	--								--
June 10	0950	2	1	6,000	8.2	25.3	28	8.1	100	--	--	--	--	--	--	--	--	
			5	7,500	8.2	25.3		7.9	98	--								--
<u>Line 8. Lavaca Bay</u>																		
Feb. 24	1255	1	1	32,000	8.0	15.4	--	8.2	91	--	--	--	--	--	--	--	--	
			5	34,000	8.0	15.2		7.0	80	--								--
			10	34,000	8.0	15.3		8.0	90	1.5								--
Do.	1325	2	1	30,000	8.0	15.4	61	8.7	97	--	--	--	--	--	--	--	--	
			5	30,000	8.0	15.4		8.6	96	--								--
Do.	1335	3	1	27,000	7.9	15.3	43	8.5	93	--	--	--	--	--	--	--	--	
			5	28,000	7.9	15.2		7.7	85	2.6								--
May 19	0950	1	1	20,000	8.1	23.0	61	9.2	114	2.2	--	6.0	.0	.04	.02	.02	.06	
			5.5	27,000	8.0	23.0		7.4	94	1.6								--
Do.	1005	2	1	18,000	8.2	23.0	55	9.5	116	--	--	--	--	--	--	--	--	
			6	21,000	8.1	22.8		8.4	104	--								--
Do.	1020	3	1	21,000	8.1	23.0	43	8.9	110	2.4	--	5.1	.1	.06	.01	.03	.06	
			6	21,000	8.1	23.0		8.9	110	2.6								--
Do.	1030	4	1	19,000	8.0	23.1	52	8.1	99	--	--	--	--	--	--	--	--	
			3	19,000	8.0	23.1		8.1	99	--								--
<u>Line 9. Lavaca Bay</u>																		
Feb. 24	1245	2	1	36,000	8.0	15.4	--	7.6	86	--	--	--	--	--	--	--	--	
			6	37,000	7.9	15.4		7.7	88	--								--
Do.	1240	3	1	36,000	8.0	15.2	--	8.2	93	1.6	--	.9	.0	.00	.00	.03	.03	
			5	37,000	7.9	15.2		7.1	81	--								--
			12	38,000	7.9	15.2		7.3	84	2.0								--
Do.	1230	4	1	34,000	8.0	15.0	51	7.7	88	--	--	--	--	--	--	--	--	
			5	34,000	7.9	15.0		8.0	91	--								--
Do.	1220	5	1	36,000	7.9	15.0	51	8.2	93	--	--	--	--	--	--	--	--	
			4.5	36,000	7.9	15.0		8.2	93	--								--
May 19	1100	1	1	24,000	8.2	23.2	47	8.8	110	--	--	--	--	--	--	--	--	
			5.5	24,000	8.1	23.0		8.5	106	--								--
Do.	1110	2	1	28,000	8.2	23.0	46	8.6	109	--	--	--	--	--	--	--	--	
			5	28,000	8.2	23.0		8.7	110	--								--
			11.5	28,000	8.2	23.0		8.8	111	--								--
Do.	1115	3	1	24,000	8.2	23.2	64	9.2	114	2.7	--	4.5	.0	.07	.00	.04	.04	
			7	28,000	8.0	23.0		6.5	82	1.6								--
May 20	1520	3	1	30,000	7.9	24.3	42	8.2	108	--	--	--	--	--	--	--	--	
			5	31,000	7.9	24.2		8.2	108	--								--
			12.5	30,000	7.7	24.2		7.4	97	--								--
Do.	1530	4	1	28,000	7.8	24.2	38	8.0	104	--	--	--	--	--	--	--	--	
			6	28,000	7.8	24.2		8.0	104	--								--

See footnote at end of table.

Table 5A.--Quality of water in the Lavaca-Tres Palacios estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 10. Lavaca Bay</u>																	
Feb. 24	1050	1	1	38,000	8.0	15.0	41	7.6	88	1.5	49	0.8	0.0	0.13	0.00	0.03	0.09
			5	40,000	8.0	14.9		7.3	85								
			10	40,000	8.0	14.8		7.3	85								
			20	40,000	8.0	14.7		7.5	86								
			30	42,000	8.0	14.6		6.7	78								
			41	46,000	7.9	14.5		4.8	56	1.7	--	1.0	.0	.12	.00	.08	.12
May 20	1340	1	1	34,000	8.0	24.5	46	8.0	108	2.7	--	1.3	.0	.02	.00	.03	.04
			5	34,000	8.0	24.5		7.9	107								
			15	40,000	7.9	24.1		6.7	92								
			37	40,000	7.7	23.5		4.0	54								
<u>Line 11. Lavaca Bay</u>																	
May 20	1425	2	1	25,000	7.7	24.8	46	5.8	75	7.5	--	3.8	.0	.35	.02	.25	.36
			5	25,000	7.7	24.8		6.1	79								
			10	26,000	7.7	24.8		5.4	70								
			16	29,000	7.7	24.6		4.6	61								
<u>Line 12. Chocolate Bay</u>																	
Feb. 24	1130	2	1	34,000	8.0	15.7	38	7.8	90	--	--	--	--	--	--	--	--
			3	34,000	7.9	15.7		7.9	91								
<u>Line 13. Chocolate Bay</u>																	
Feb. 24	1120	2	1	36,000	8.0	15.0	34	8.1	92	--	--	--	--	--	--	--	--
			5	37,000	7.9	15.0		7.5	85								
			12	37,000	7.9	15.0		7.6	86								
<u>Line 14. Cox Bay</u>																	
Apr. 21	0950	2	1	26,000	7.9	23.2	50	7.1	89	--	--	--	--	--	--	--	--
			2.5	26,000	7.8	23.2		7.1	89								
			5	26,000	8.0	23.6		7.1	90								
May 20	0935	2	1	27,000	8.1	23.6	61	7.3	94	--	--	--	--	--	--	--	--
			4.5	26,000	8.1	23.6		7.4	94								
Do.	1130	2	1	28,000	8.2	24.3	48	7.7	100	--	--	--	--	--	--	--	--
			5.5	28,000	8.1	24.2		7.7	100								
<u>Line 14a. Cox Bay</u>																	
May 20	1050	1	1	28,000	8.2	24.0	46	7.9	103	--	--	--	--	--	--	--	--
			7	28,000	8.2	23.9		7.8	101								
Do.	1100	2	1	28,000	8.2	24.0	38	8.1	105	2.2	--	1.4	.1	.04	.00	.01	.04
			7.5	28,000	8.2	23.9		8.0	104								
Do.	1110	3	1	28,000	8.2	24.0	36	8.4	109	--	--	--	--	--	--	--	--
			7	28,000	8.1	23.9		8.4	109								
Do.	1115	4	1	28,000	8.2	23.9	46	8.7	113	--	--	--	--	--	--	--	--
			5.5	28,000	8.2	23.9		8.7	113								
<u>Line 15. Lavaca Bay</u>																	
Feb. 24	1030	4	1	37,000	8.0	14.7	51	8.4	94	1.5	--	.3	.0	.00	.00	.02	.05
			5	38,000	8.0	14.7		8.2	93								
			10	40,000	7.9	14.6		7.6	87								
			20	40,000	7.9	14.6		7.5	86								
			30	40,000	7.9	14.6		6.9	79								
			40	40,000	7.9	14.6		7.0	80	1.8	--	1.4	.0	.26	.00	.07	.07
May 20	1210	1	1	28,000	8.2	--	48	--	--	--	--	--	--	--	--	--	--
			6	28,000	8.2	--		--	--								
Do.	1200	2	1	28,000	8.2	--	38	--	--	2.1	--	.8	.0	.02	.00	.03	.03
			8.5	28,000	8.2	--		--	2.2								
Do.	1150	3	1	27,000	8.2	24.2	46	8.7	113	--	--	--	--	--	--	--	--
			7	27,000	8.2	24.0		8.5	110								
Do.	1310	4	1	32,000	8.0	24.6	51	8.4	114	--	--	--	--	--	--	--	--
			5	34,000	7.9	24.2		8.1	108								
			15	36,000	7.8	23.9		6.6	88								
			30	38,000	7.7	23.5		5.3	72								
			44	38,000	7.7	23.5		5.4	73								

See footnote at end of table.

Table 5A.--Quality of water in the Lavaca-Tres Palacios estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

Date of collection	Time Site	Depth below surface (ft)	Specific Conductance (micro-mhos/cm at 25°C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Orthophosphate phosphorus (P)	Total phosphorus (P)
							Concentration	Saturation								
Line 17. Keller Bay																
Apr. 21	1050	1	28,000	8.3	23.3	55	7.4	94	---	---	---	---	---	---	---	---
		5.5	28,000	8.3	23.2		7.4	94								
Do.	1020	2	28,000	8.5	23.1	61	7.6	96	---	---	---	---	---	---	---	---
		6	28,000	8.4	23.0		7.6	96								
Do.	1010	3	26,000	7.9	23.0	41	7.5	94	---	---	---	---	---	---	---	---
		5	26,000	7.9	23.0		7.5	94								
May 20	1020	1	27,000	8.2	23.7	41	7.5	96	---	---	---	---	---	---	---	---
		6	27,000	8.1	23.6		7.5	96								
Do.	1010	2	28,000	8.1	24.0	48	6.7	87	---	---	---	---	---	---	---	---
		7	28,000	8.1	24.0		6.9	90								
Do.	1000	3	27,000	8.1	24.2	76	7.0	91	---	---	---	---	---	---	---	---
		5.5	28,000	8.1	24.2		7.0	91								
Line 18. Keller Bay																
Apr. 21	1115	2	28,000	7.9	23.4	34	7.0	90	---	2.7	0.2	0.11	0.31	0.00	0.03	
		7	28,000	7.9	23.4		6.8	87	1.5							
May 20	1030	2	28,000	8.2	24.0	48	7.7	100	1.8							
		6.5	28,000	8.2	23.8		7.7	100	1.6	.7	.0	.05	.00	.03	.03	
										.7	.0	.01	.00	.03	.03	
Line 19. Lavaca Bay																
Feb. 24	1000	3	40,000	7.9	14.6	70	7.8	90	1.5	.4	.0	.08	.00	.07	.07	
		5	40,000	7.9	14.6		7.7	88								
		10	38,000	7.9	14.6		7.8	89								
		15	40,000	7.9	14.6		7.8	90								
		20	40,000	7.9	14.6		7.8	90								
		30	40,000	7.6	24.2		6.6	90								
		44	40,000	7.6	24.2		6.6	90								
		40	42,000	7.9	14.6		7.6	88		.4	.0	.10	.00	.06	.06	
		44	42,000	7.9	14.6		7.7	90	1.7							
Line 20. Matagorda Bay																
May 20	1115	2	37,000	7.6	24.3	96	7.6	101	---	---	---	---	---	---	---	---
		5	38,000	7.7	24.3		7.4	100								
		15	38,000	7.6	24.3		7.4	100								
		30	40,000	7.6	24.3		7.1	97								
		44	40,000	7.6	24.2		6.6	90								
Line 24. Caranchuh Bay																
May 20	1015	2	32,000	7.6	24.2	61	7.9	104	3.5	.6	.0	.04	.01	.02	.04	
		5.5	31,000	7.7	24.2		7.9	104	3.8	.5	.0	.14	.01	.03	.06	
Line 25. Tres Palacios Bay																
May 18	1245	2	16,000	8.2	23.2	30	17.7	213	---	---	---	---	---	---	---	---
		3	16,000	8.1	24.6		15.4	195	2.6							
Line 26. Tres Palacios Bay																
May 18	1315	2	20,000	8.1	23.7	46	17.6	220	---	---	---	---	---	---	---	---
		5	20,000	8.0	23.7		16.6	208								
Line 27. Tres Palacios Bay																
May 18	1405	2	26,000	8.0	25.1	48	7.6	99	2.5	1.4	.2	.12	.04	.06	.07	
		5	26,000	8.0	24.5		7.4	95								
		13.5	24,000	8.0	24.8		7.8	100	3.3	1.6	.3	.09	.02	.07	.17	
June 9	0900	2	8,500	7.9	26.5	--	4.3	54	4.7	6.9	.0	.32	.02	.06	.15	
		5	8,500	7.9	26.4		5.0	62								
		10	8,500	8.0	26.0		6.2	78								
		13	8,500	8.1	25.9		6.5	81	3.7	6.3	.0	.11	.01	.04	.11	
Line 28. Tres Palacios Bay																
May 18	1430	1	24,000	8.1	24.3	36	8.9	113	2.2	1.9	.2	.03	.05	.04	.05	
		5	22,000	8.1	24.3		8.6	109	2.3	2.1	.3	.04	.05	.05	.08	
Do.	1445	2	27,000	8.1	24.0	58	8.9	116	2.0	.7	.1	.04	.02	.03	.03	
		5	26,000	8.1	23.9		9.0	115								
		12	28,000	8.1	23.5		7.4	93	2.1	.8	.2	.04	.02	.04	.12	
Do.	1500	3	28,000	8.1	24.0	53	8.7	113	1.7	.1	.0	.06	.02	.03	.03	
		5	28,000	8.1	23.9		8.6	112								
		7	28,000	8.1	23.6		7.7	99	1.8	.3	.1	.10	.02	.02	.05	
June 9	0935	1	16,000	8.2	25.9	--	7.0	91	3.6	4.7	.0	.02	.00	.02	.05	
		4	16,000	8.1	26.0		7.1	92	3.7	4.8	.0	.03	.00	.02	.09	
Do.	0950	2	14,000	8.2	26.1	41	7.3	92	3.8	5.7	.0	.05	.01	.02	.07	
		5	16,000	8.2	26.0		6.8	88								
		11	18,000	8.2	26.1		6.8	88	3.9	4.5	.0	.00	.00	.02	.11	
Do.	1005	3	15,000	8.3	26.1	55	7.3	94	4.4	5.3	.0	.06	.00	.02	.07	
		5.5	15,000	8.3	26.1		7.3	96	4.0	5.4	.0	.03	.01	.02	.07	

See footnote at end of table.

Table 5A.--Quality of water in the Lavaca-Tres Palacios estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni- trate nitrogen (N)	Amo- nia nitro- gen (N)	Ni- trite nitro- gen (N)	Or- tho- phosphate phosphorus (P)	Total phosphorus (P)
								Concen- tration	Percent saturation								
Line 29. Tres Palacios Bay																	
May 18	1520	2	1	26,000	8.2	24.4	56	10.1	129	2.8	--	0.9	0.1	0.00	0.02	0.03	0.06
			5.5	24,000	8.1	23.9		9.1	117	2.3	--						
Line 30. Tres Palacios Bay																	
May 18	1615	3	1	28,000	8.2	24.5	66	9.6	126	--	--	--	--	--	--	--	--
			5	21,000	8.1	24.3		9.2	119	--	--	--	--	--	--	--	--
			7.5	28,000	8.1	23.9		7.7	100	--	--	--	--	--	--	--	--
May 19	0830	1	6	31,000	8.2	22.5	61	7.8	100	--	--	--	--	--	--	--	--
Do.	0815	2	1	32,000	8.1	22.5	81	7.4	96	--	--	--	--	--	--	--	--
			5	32,000	8.1	22.5		7.4	96	--	--	--	--	--	--	--	--
			12	32,000	8.1	22.5		7.4	95	--	--	--	--	--	--	--	--
Do.	0845	3	1	30,000	8.2	22.6	97	7.9	101	--	--	--	--	--	--	--	--
			5	30,000	8.1	22.6		7.9	101	--	--	--	--	--	--	--	--
			8.5	31,000	8.1	22.6		7.7	99	--	--	--	--	--	--	--	--
Line 31. Intracoastal Waterway																	
Feb. 24	1535	2	1	27,000	8.2	15.4	--	9.4	103	1.9	39	4.7	.2	.06	.06	.04	.05
			5	27,000	8.2	15.2		9.1	100	--	--	--	--	--	--	--	--
			10	30,000	8.1	15.1		8.8	98	1.7	--	--	--	--	--	--	--
			17	30,000	8.1	15.2		8.8	98	--	--	3.4	.1	.11	.04	.07	.12
Apr. 20	1450	2	1	1,600	8.3	24.7	34	9.2	110	--	--	--	--	--	--	--	--
			1	2,600	8.2	23.9		8.4	100	--	--	--	--	--	--	--	--
			13	4,200	8.2	24.0		8.3	99	--	--	--	--	--	--	--	--
			19	4,700	8.1	23.7		8.1	95	--	--	--	--	--	--	--	--
May 21	1050	2	1	8,000	7.4	23.5	43	6.6	79	--	--	--	--	--	--	--	--
			3	9,500	7.5	23.6		6.5	77	--	--	--	--	--	--	--	--
			10	12,000	7.3	23.7		6.3	76	--	--	--	--	--	--	--	--
			22	17,000	7.5	24.2		6.1	76	--	--	--	--	--	--	--	--
June 9	1525	2	1	3,800	7.4	28.0	37	7.7	99	2.0	9.0	8.2	.4	.09	.01	.06	.08
			5	4,200	7.5	27.5		7.3	92	--	--	--	--	--	--	--	--
			10	6,000	7.5	27.5		6.8	87	--	--	--	--	--	--	--	--
			19	6,000	7.2	27.5		7.0	90	2.2	11	6.6	.3	.08	.02	.04	.12
Line 32. Intracoastal Waterway																	
May 19	0945	2	1	32,000	7.8	23.2	61	6.2	81	2.0	--	2.1	.0	.15	.02	.03	.07
			5	32,000	7.8	23.1		6.2	81	--	--	--	--	--	--	--	--
			12.5	32,000	7.7	23.1		5.8	75	2.2	--	3.4	.1	.21	.02	.04	.14
Line 33. Matagorda Bay																	
May 19	1120	1	1	5,500	--	23.4	30	6.2	74	1.8	--	6.5	.6	.14	.05	.05	.23
			5	24,000	--	23.3		6.4	84	1.8	--			.07	.03	.04	.16
Do.	1150	3	1	23,000	--	24.1	89	6.6	84	--	--	--	--	--	--	--	--
			4.5	23,000	--	24.2		6.6	84	--	--	--	--	--	--	--	--
Line 34. Matagorda Bay																	
May 19	1235	1	1	20,000	--	24.0	5	7.2	91	--	--	--	--	--	--	--	--
			5	21,000	--	23.9		7.1	90	--	--	--	--	--	--	--	--
			8	27,000	--	23.7		6.7	86	--	--	--	--	--	--	--	--
Do.	1255	2	1	24,000	--	24.0	74	8.7	110	--	--	--	--	--	--	--	--
			5	23,000	--	24.0		8.5	108	--	--	--	--	--	--	--	--
			9	29,000	--	23.6		6.7	86	--	--	--	--	--	--	--	--
Do.	1310	3	1	26,000	--	24.4	46	7.5	96	--	--	--	--	--	--	--	--
			5.5	26,000	--	24.4		7.6	97	--	--	--	--	--	--	--	--

See footnote at end of table.

Table 5A.--Quality of water in the Lavaca-Tres Palacios estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni- trate nitrogen (N)	Ammo- nia nitrogen (N)	Ni- trite nitrogen (N)	Ortho- phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 35. Matagorda Bay</u>																	
May 19	1335	1	1 3.5	29,000 29,000	-- --	24.8 24.9	56	8.7 8.5	114 112	-- 2.0	-- --	1.7	0.0	0.04	0.01	0.02	0.07
Do.	1440	3	1 5 10	32,000 32,000 31,000	7.9 7.9 7.9	24.5 24.6 24.9	69	8.4 8.5 8.1	114 115 108	2.1 -- 3.0	-- -- --	.3 -- .7	.0 -- .0	.03 -- .03	.01 -- .01	.01 -- .03	.04 -- .09
<u>Line 36. Matagorda Bay</u>																	
May 20	1030	6	1 5 12.5	34,000 34,000 34,000	7.6 7.6 7.6	24.2 24.2 24.2	67	8.0 7.9 7.7	107 105 103	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
<u>Line 37. Matagorda Bay</u>																	
May 20	0840	1	1 5 15	36,000 36,000 36,000	7.8 7.9 7.9	23.9 23.9 24.0	79	7.2 7.2 6.9	96 96 92	1.9 -- 1.7	-- -- --	.6 -- 1.0	.1 -- .1	.07 -- .06	.03 -- .02	.02 -- .05	.04 -- .15
Do.	0900	2	1 5 14.5	36,000 36,000 36,000	7.6 7.5 7.9	23.7 23.8 23.8	89	7.4 7.4 6.8	99 99 91	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	0925	3	1 5 14	37,000 37,000 37,000	7.7 7.6 7.7	24.0 24.0 24.0	69	7.5 7.5 7.6	100 100 101	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	0950	4	1 5 10.5	31,000 32,000 32,000	7.6 7.5 7.6	24.2 24.1 24.2	--	7.9 7.8 7.2	104 103 96	2.9 -- 3.2	-- -- --	.1 -- .5	.0 -- .0	.04 -- .06	.01 -- .01	.04 -- .03	.04 -- .12
<u>Line 38. Matagorda Bay</u>																	
May 20	0800	4	1 5 11	37,000 37,000 37,000	8.0 7.9 7.9	23.8 23.8 23.8	69	7.2 7.2 7.3	96 96 97	1.9 -- 2.0	-- -- --	.5 -- .3	.0 -- .0	.02 -- .03	.02 -- .03	.02 -- .02	.04 -- .07
<u>Line 39. Matagorda Ship Channel</u>																	
May 19	1615	3	1 5 15 23	37,000 37,000 37,000 37,000	8.3 8.2 8.3 8.3	24.5 24.5 24.5 24.7	79	7.9 7.9 7.9 8.1	107 107 107 109	1.8 -- -- 2.2	-- -- -- --	.6 -- -- .4	.0 -- -- .0	.02 -- -- .06	.02 -- -- .02	.01 -- -- .02	.05 -- -- .10

1/ Determined at data-collection site.

Table 5B.--Quality of water in the Lavaca-Tres Palacios estuary, 1970 water year

Chemical analyses

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25°C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K) 1/	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃		Density (g/ml at 20°C)
													Calcium, magnesium	Non-carbonate	
<u>Line 1. Lavaca River</u>															
Feb. 24	1420	2	1 9	1,170 18,200	95 175	19 375	134 3,510	305 170	305 170	45 850	218 6,080	674 11,100	314 1,980	64 1,840	
Apr. 21	1710	2	14	980	74	14	92		254	30	144	493	244	36	
May 19	1350	2	12	533	46	6.8	53		154	22	66	295	143	4	
June 10	1115	2	11	614	74	6.7	41		226	15	59	377	212	10	
<u>Line 2. Navidad River</u>															
Feb. 24	1500	2	1	925	96	12	88		318	25	136	529	288	28	
Apr. 21	1650	2	1	--	--	--	--		--	16	65	--	--	--	
May 19	1330	2	6	388	--	--	--		--	14	50	--	--	--	
June 10	1100	2	11.5	471	55	3.6	36		173	14	42	265	152	0	
<u>Line 4. Lavaca River</u>															
Feb. 24	1525	2	1 10	6,570 25,300	105 220	133 630	1,060 4,780	214 156	214 156	266 1,220	1,890 8,600	3,570 15,500	810 3,140	634 3,010	
Apr. 21	1625	2	10.5	--	--	--	--		--	18	79	--	--	--	
May 19	1250	2	1 13.5	374 2,040	38 59	7.5 43	27 370	114 87	114 87	14 98	45 650	210 1,300	126 322	23 218	
June 10	1040	2	1 10	456 466	52 54	4 3.2	36 39	170 167	170 167	11 12	43 44	256 266	146 148	0 0	
<u>Line 9. Lavaca Bay</u>															
Feb. 24	1240	3	12	37,400	295	830	7,450	146	146	1,820	13,000	23,500	4,150	4,030	
May 19	1115	3	7	31,900	262	760	6,550	136	136	1,620	11,500	20,800	3,780	3,670	
<u>Line 10. Lavaca Bay</u>															
Feb. 24	1050	1	41	44,700	350	1,150	8,630	144	144	2,170	15,600	28,000	5,600	5,480	
May 20	1340	2	1	33,000	258	743	6,440	136	136	1,590	11,300	20,400	3,700	3,590	
<u>Line 11. Lavaca Bay</u>															
May 20	1425	2	16	26,500	215	691	5,110	138	138	1,340	9,200	16,600	3,380	3,270	
<u>Line 12. Chocolate Bay</u>															
Feb. 24	1130	2	3	33,200	258	755	6,410	133	133	1,570	11,300	20,400	3,750	3,640	
<u>Line 14. Cox Bay</u>															
Apr 21	0950	2	5	24,800	190	580	4,700	117	117	1,220	8,300	15,100	2,860	2,760	
May 20	0935	2	4.5	28,700	228	815	5,820	137	137	1,860	10,300	19,100	3,920	3,810	
<u>Line 19. Lavaca Bay</u>															
Feb. 24	1000	3	1 44	38,900 40,300	315 308	988 968	7,420 7,840	137 140	137 140	1,890 1,990	13,400 13,900	24,100 25,100	4,850 4,750	4,740 4,640	
May 20	1220	3	45	39,500	305	1,270	6,850	137	137	1,930	13,300	23,700	6,000	5,890	
<u>Line 25. Tres Palacios Bay</u>															
May 18	1245	2	3	17,800	150	463	3,090	150	150	828	5,680	10,300	2,280	2,160	
<u>Line 28. Tres Palacios Bay</u>															
May 18	1430	1	5	25,100	210	583	4,950	153	153	1,240	8,700	15,800	2,920	2,790	
Do.	1500	3	7	28,900	235	679	5,950	150	150	1,460	10,400	18,800	3,380	3,260	
June 9	0935	1	4	16,600	138	500	2,920	123	123	784	5,550	9,960	2,400	2,300	
Do.	1005	3	1	14,800	118	385	2,640	111	111	692	4,820	8,720	1,880	1,790	
<u>Line 31. Intraoastal Waterway</u>															
Feb. 24	1535	2	1 17	24,400 27,200	212 228	581 693	4,740 5,290	171 164	171 164	1,180 1,330	8,400 9,500	15,200 17,100	2,920 3,420	2,780 3,290	
<u>Line 33. Matagorda Bay</u>															
May 19	1120	1	1 5.5	6,270 23,300	72 192	125 618	1,020 4,600	121 142	121 142	276 1,150	1,790 8,300	3,350 14,900	695 3,020	596 2,900	

1/ Included in sodium-ion concentration.

Table 5C.--Quality of water in the Lavaca-Tres Palacios estuary, 1970 water year
Analyses for selected ions

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (microhmog. at 25°C)	Iron (Fe) (ppm)	Manganese (Mn)	Lithium (Li)	Fluoride (F) (ppm)	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Iodide (I) (ppm)	Strontium (Sr)	
<u>Line 1. Lavaca River</u>																			
Feb. 24	1420	2	1	1,170	--	--	--	0.4	180	--	--	--	--	--	--	--	0.70	0.043	--
			9	18,200	--	--	--	.5	1,200	--	--	--	--	--	--	--	20	.064	--
Apr. 21	1710	2	14	980	--	--	--	.3	90	--	--	--	--	--	--	--	1.9	.042	--
May 19	1350	2	12	533	--	--	--	.4	120	--	--	--	--	--	--	--	2.6	.037	--
June 10	1115	2	11	614	--	--	--	.2	100	--	--	--	--	--	--	--	2.0	.053	--
<u>Line 2. Navidad River</u>																			
Feb. 24	1500	2	1	925	--	--	--	.3	120	--	--	--	--	--	--	--	.46	.044	--
Apr. 21	1650	2	1	--	--	--	--	.2	120	--	--	--	--	--	--	--	.75	.032	--
May 19	1330	2	6	388	--	--	--	.3	200	--	--	--	--	--	--	--	2.1	.027	--
June 10	1100	2	11.5	471	--	--	--	.2	90	--	--	--	--	--	--	--	.38	.040	--
<u>Line 4. Lavaca River</u>																			
Feb. 24	1525	2	1	6,570	--	--	--	.4	600	--	--	--	--	--	--	--	6.3	.049	--
			10	25,300	--	--	--	.6	1,800	--	--	--	--	--	--	--	30	.055	--
Apr. 21	1625	2	10.5	--	--	--	--	.2	120	--	--	--	--	--	--	--	.56	.029	--
May 19	1250	2	1	374	--	--	--	.3	90	--	--	--	--	--	--	--	1.9	.022	--
			13.5	2,040	--	--	--	.4	300	--	--	--	--	--	--	--	3.1	.028	--
June 10	1040	2	1	456	--	--	--	.2	90	--	--	--	--	--	--	--	2.1	.040	--
			10	466	--	--	--	.2	100	--	--	--	--	--	--	--	5.3	.041	--
<u>Line 9. Lavaca Bay</u>																			
Feb. 24	1240	3	12	37,400	--	--	--	.9	3,300	--	--	--	--	--	--	--	44	.046	--
May 19	1115	3	7	31,900	--	--	--	.9	1,000	--	--	--	--	--	--	--	42	.039	--
<u>Line 10. Lavaca Bay</u>																			
Feb. 24	1050	1	41	44,700	--	--	--	.8	4,700	--	--	--	--	--	--	--	55	.028	--
May 20	1340	2	1	33,000	--	--	--	.8	1,700	--	--	--	--	--	--	--	39	.040	--
<u>Line 11. Lavaca Bay</u>																			
May 20	1425	2	16	26,500	--	--	--	.8	1,500	--	--	--	--	--	--	--	31	.043	--
<u>Line 12. Chocolate Bay</u>																			
Feb. 24	1130	2	3	33,200	--	--	--	.7	3,200	--	--	--	--	--	--	--	38	.050	--
<u>Line 14. Cox Bay</u>																			
Apr. 21	0950	2	5	24,800	--	--	--	.6	1,900	--	--	--	--	--	--	--	30	.032	--
May 20	0935	2	4.5	28,700	--	--	--	.7	500	--	--	--	--	--	--	--	33	.041	--
<u>Line 19. Lavaca Bay</u>																			
Feb. 24	1000	3	1	38,900	--	--	--	.7	3,800	--	--	--	--	--	--	--	45	.037	--
			44	40,300	--	--	--	.7	4,200	--	--	--	--	--	--	--	45	.033	--
May 20	1220	3	45	39,500	--	--	--	.8	1,900	--	--	--	--	--	--	--	47	.030	--
<u>Line 25. Tres Palacios Bay</u>																			
May 18	1245	2	3	17,800	--	--	--	.5	1,000	--	--	--	--	--	--	--	20	.034	--
<u>Line 28. Tres Palacios Bay</u>																			
May 18	1430	1	5	25,100	--	--	--	.6	1,800	--	--	--	--	--	--	--	30	.025	--
Do.	1500	3	7	28,900	--	--	--	.7	1,700	--	--	--	--	--	--	--	36	.032	--
June 9	0935	1	4	16,600	--	--	--	.4	1,500	--	--	--	--	--	--	--	22	.024	--
Do.	1005	3	1	14,800	--	--	--	.3	1,300	--	--	--	--	--	--	--	23	.021	--
<u>Line 31. Intracoastal Waterway</u>																			
Feb. 24	1535	2	1	24,400	--	--	--	.5	2,000	--	--	--	--	--	--	--	29	.027	--
			17	27,200	--	--	--	.6	2,200	--	--	--	--	--	--	--	33	.030	--
<u>Line 33. Matagorda Bay</u>																			
May 19	1120	1	1	6,270	--	--	--	.3	400	--	--	--	--	--	--	--	7.4	.015	--
			5.5	23,300	--	--	--	.6	1,200	--	--	--	--	--	--	--	28	.028	--

a/ Results in milligrams per liter.

Table 5D.--Quality of water in the Lavaca-Tres Palacios estuary, 1970 water year
Insecticide and herbicide analyses

Date of Collection	Time	Type of Sample	(Water analyses in micrograms per liter; sediment analyses in micrograms per kilogram sediment, dry weight)																	
			Insecticides										Herbicides							
			Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Heptachlor Epoxide	Lin-dane	Chlor-dane	Para-thion	Methyl Para-thion	Mala-thion	Diazinon	2,4-D	Silvex	2,4,5-T	
Line 11. Site 2. Lavaca Bay																				
May 20	1440	Sediment	a/	34	24	16	4.4	0.0	0.0	a/	a/	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--
Line 25. Site 2. Tres-Palacios Bay																				
May 21	0810	Sediment	0.0	7.3	20	11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--
Aug. 28	0945	Water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sediment	4.9	10	33.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
		0-2 inches	a/	6.8	25	2.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Line 26. Site 2. Tres Palacios Bay																				
Aug. 28	1015	Water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sediment	.0	8.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
		0-2 inches	.0	7.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
		3-5 inches	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Line 28. Site 2. Tres Palacios Bay																				
May 21	0735	Sediment	.0	.3	.6	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

a/ Undetermined due to interfering compounds.

Guadalupe Estuary

The Guadalupe estuary covers an area of almost 150 square miles and consists of the tidal parts of the Guadalupe River, Mission Lake, Guadalupe Bay, Hynes Bay, San Antonio Bay, Victoria Channel and parts of the Intracoastal Waterway (Figure 7).

At mlw, the Guadalupe River is about 10 feet deep; Mission Lake, Guadalupe Bay, and Hynes Bay are

less than 3 feet deep; San Antonio Bay is less than 6 feet deep; Victoria Channel is more than 8 feet deep; and the Intracoastal Waterway is about 15 feet deep.

Water-quality data for the Guadalupe estuary (Table 6) were collected in February, April, May, June, and August at the sites shown on Figure 7.

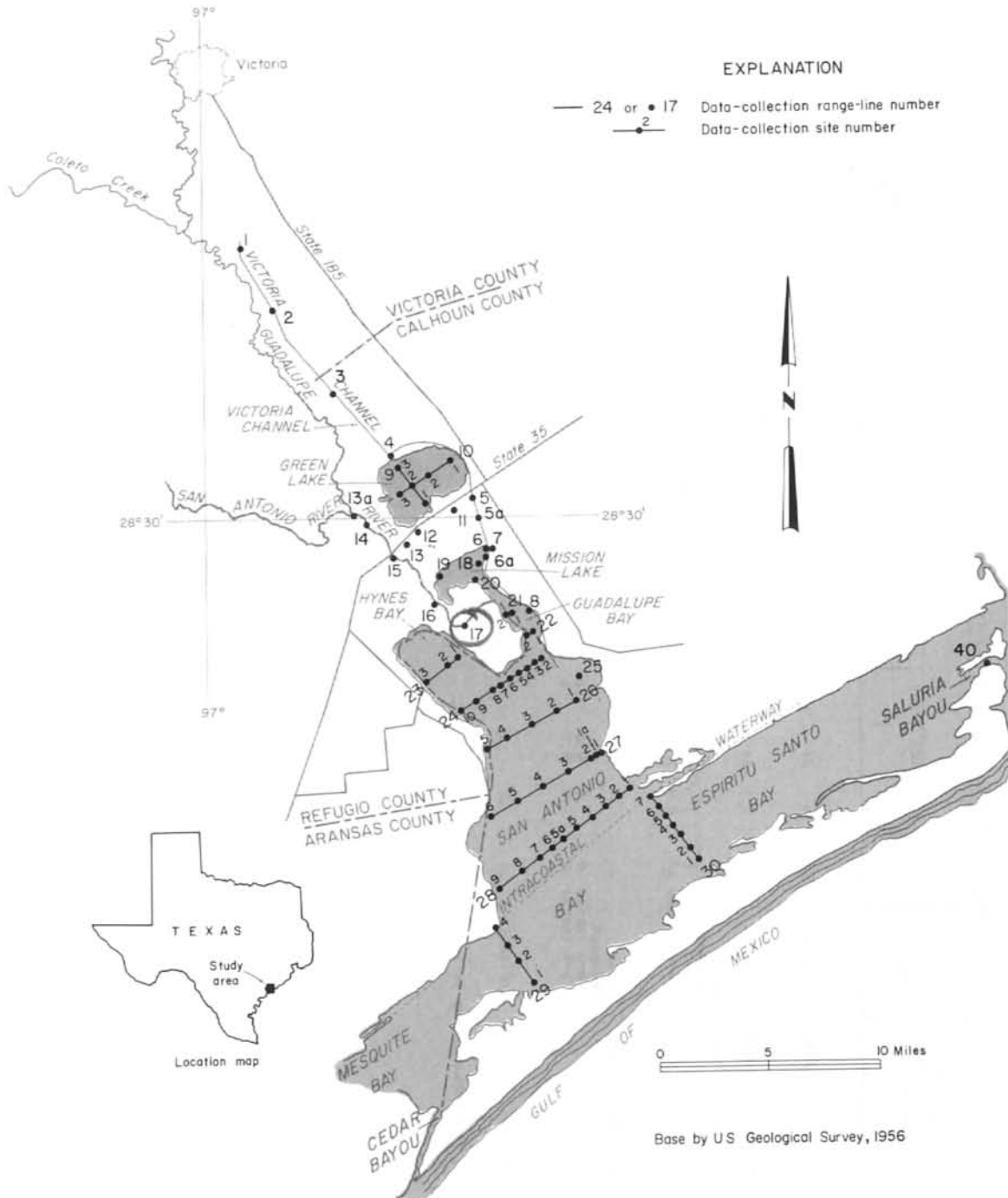


Figure 7.—Data-Collection Sites in the Guadalupe Estuary

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics

(Results in milligrams per liter except as indicated)

Date of collection	Time (24 hour)	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)						
								Concentration	Percent saturation														
<u>Line 1. Victoria Channel</u>																							
Feb. 12	1345	2	1	960	7.7	16	33	10.0	100	2.0	8.5	22	0.0	0.22	0.00	0.03	0.04						
			12	960	7.7	16		10.0	100	1.8								9.4	22	.1	.19	.00	.04
May 6	1005	2	1	850	7.4	23.2	46	9.1	105	1.8	--	20	.0	.13	.01	.00	.00						
			5	800	7.4	22.9		9.0	103	--								--	--	--	--	--	--
			12	850	7.2	22.5		7.3	83	1.8								1.7	20	.0	.05	.01	.00
June 2	1130	2	1	850	7.4	26.1	53	7.5	91	2.2	--	21	.0	.10	.01	.00	.03						
			5	850	7.3	26.1		7.2	88	--								--	--	--	--	--	--
			12	850	6.9	25.7		4.4	53	3.0								5.8	22	.0	.11	.00	.01
Aug. 12	1315	2	1	1,000	7.3	33.9	127	9.6	133	1.5	--	24	.0	.00	.00	.01	.03						
			5	1,000	7.1	32.4		8.7	118	--								--	--	--	--	--	--
			10	1,000	6.9	31.6		4.8	65	--								--	--	--	--	--	--
			13.5	1,000	6.5	28.3		.4	5	4.3								0	28	.0	.13	.00	.01
<u>Line 2. Victoria Channel</u>																							
Feb. 12	1324	2	1	1,200	7.7	16	28	10.2	102	--	--	--	--	--	--	--	--						
			12	1,100	7.5	15.5		10.0	99	--								--	--	--	--	--	--
May 6	--	2	1	1,000	7.4	22.6	33	8.7	100	--	--	--	--	--	--	--	--						
			5	1,000	7.4	22.4		8.5	97	--								--	--	--	--	--	
			13	1,100	7.4	22.4		8.1	92	--								--	--	--	--	--	
June 2	1110	2	1	940	7.4	25.7	36	7.4	89	--	--	--	--	--	--	--	--						
			5	920	7.4	25.7		7.4	89	--								--	--	--	--	--	
			12	1,200	7.1	25.6		6.6	80	--								--	--	--	--	--	
<u>Line 3. Victoria Channel</u>																							
Feb. 12	1305	2	1	1,400	7.8	15.5	28	10.6	105	--	--	--	--	--	--	--	--						
			10	1,400	7.8	15		10.8	106	--								--	--	--	--	--	
May 6	0940	2	1	1,400	7.7	22.5	33	8.7	99	--	--	--	--	--	--	--	--						
			5	1,400	7.6	22.3		8.5	97	--								--	--	--	--	--	
			11	1,600	7.6	22.4		8.5	97	--								--	--	--	--	--	
June 2	1055	2	1	1,300	7.6	26.2	51	7.0	85	--	--	--	--	--	--	--	--						
			5	1,300	7.6	26.2		7.0	85	--								--	--	--	--	--	
			10.5	1,300	7.6	26.2		7.0	85	--								--	--	--	--	--	
Aug. 12	1255	2	1	1,600	7.5	33.4	58	6.9	95	--	--	--	--	--	--	--	--						
			5	1,600	7.5	32.4		6.6	89	--								--	--	--	--	--	
			11	1,600	7.4	32.4		6.0	81	--								--	--	--	--	--	
<u>Line 4. Victoria Channel</u>																							
Feb. 12	1245	2	1	1,800	8.1	15	28	10.6	104	--	--	--	--	--	--	--	--						
			10	1,700	8.0	15		10.4	102	--								--	--	--	--	--	
Apr. 7	1910	2	1	1,400	7.9	15.8	19	11.4	114	2.1	20	13	.0	.04	.00	.02	.07						
			5	1,400	7.9	16.4		11.4	115	--								--	--	--	--	--	
			12	1,400	7.8	17.3		12.0	125	1.6								19	14	.0	.04	.00	.02
May 6	0925	2	1	1,200	8.0	22.3	28	9.6	109	--	--	--	--	--	--	--	--						
			5	1,200	8.0	22.1		9.3	106	--								--	--	--	--	--	
			11	1,200	7.9	22.1		9.2	105	--								--	--	--	--	--	
June 2	1025	2	1	1,300	7.6	25.8	25	5.9	72	--	--	--	--	--	--	--	--						
			5	1,400	7.6	25.8		6.0	73	--								--	--	--	--	--	
			11.5	1,300	7.4	25.5		4.8	58	--								--	--	--	--	--	
<u>Line 5. Victoria Channel</u>																							
Feb. 12	1150	2	1	3,600	8.2	15	25	10.9	108	--	--	--	--	--	--	--	--						
			10	3,800	8.2	14.5		10.9	107	--								--	--	--	--	--	
Do.	1435	2	1	5,500	8.2	15.5	28	10.4	105	4.2	--	10	.0	.18	.00	.05	.05						
			10	5,500	8.2	15		10.5	105	4.0								--	10	.1	.09	.00	.06
Apr. 7	1740	2	1	2,600	7.8	19.5	18	11.7	127	4.4	34	10	.1	.33	.01	.05	.06						
			5	2,600	7.8	19.6		9.3	101	--								--	--	--	--	--	
			12.5	2,500	7.8	19.7		9.5	103	3.9								36	10	.2	.33	.01	.06
May 6	0905	2	1	1,000	7.9	21.9	31	8.2	93	2.0	--	9.5	.4	.07	.04	.07	.09						
			5	1,000	7.9	21.7		8.0	90	--								--	--	--	--	--	
			12	1,100	7.9	22.2		8.0	91	2.1								--	10	.4	.09	.04	.08
June 2	1000	2	1	1,400	7.6	25.7	29	6.4	77	3.6	--	16	.0	.15	.00	.03	.07						
			5	1,600	7.6	25.7		6.3	76	--								--	--	--	--	--	
			11	1,600	7.6	25.8		6.4	78	2.8								--	16	.0	.09	.00	.03
Aug. 12	1235	2	10	1,800	7.5	33.2	28	8.0	110	--	--	--	--	--	--	--	--						
			5.	1,600	7.3	31.5		6.1	82	--								--	--	--	--	--	
			8.	1,600	7.3	31.4		5.8	77	--								--	--	--	--	--	
			12.	1,800	7.2	31.5		5.6	76	--								--	--	--	--	--	

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year

Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time (24 hour)	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)		
								Concentration	Percent saturation										
<u>Line 5a. Victoria Channel</u>																			
Feb. 11	1525	2	0.2	3,200	8.0	17.1	--	9.5	99	--	--	11	0.1	0.66	0.10	0.06	0.15		
Feb. 12	1130	2	.2	1,800	8.1	16	--	9.6	96	8.0	131	11	.1	.86	.08	.10	.17		
				2,200	8.2	16	--	9.5	96	8.0	133	11	.0	.72	.08	.10	.18		
Apr. 7	1730	2	1	2,500	8.0	22.7	16	10.5	122	7.9	132	9.2	.1	1.7	.01	.10	.29		
May 6	0900	2	1	1,100	8.0	28.2	18	5.8	73	6.9	40	8.0	.0	.15	.04	.06	.06		
June 2	0950	2	1	1,800	7.5	24.4	19	3.6	42	--	--	--	--	--	--	--	--		
<u>Line 6. Victoria Channel</u>																			
Feb. 12	1105	2	1	7,500	8.2	15	28	10.0	100	4.0	--	8.5	.0	.30	.01	.06	.06		
				9,000	8.1	15	--	9.9	100	4.0	--	--	--	--	--	--	--	--	--
				12,000	8.1	14.5	--	9.8	99	4.3	--	6.6	.1	.24	.00	.08	.09		
Apr. 7	1710	2	1	6,500	7.7	23.8	20	7.8	94	3.2	31	9.0	.2	.26	.01	.06	.08		
				6,500	7.7	22.9	--	8.0	94	--	--	--	--	--	--	--	--	--	
				7,000	7.4	22.4	--	6.9	80	7.8	36	9.7	.2	.29	.01	.09	.10		
May 6	0845	2	1	3,200	7.8	22.6	28	6.6	77	--	--	--	--	--	--	--	--		
				4,500	7.7	22.2	--	6.1	70	--	--	--	--	--	--	--	--	--	
June 2	0940	2	1	1,800	7.7	25.5	38	6.5	78	--	--	--	--	--	--	--	--		
				2,100	7.7	25.4	--	6.0	73	--	--	--	--	--	--	--	--		
				3,300	7.6	25.2	--	5.1	61	--	--	--	--	--	--	--	--		
<u>Line 6a. Victoria Channel</u>																			
Feb. 11	1510	2	.2	11,000	8.1	14.1	--	9.7	96	--	--	7.2	.1	.11	.03	.07	.07		
<u>Line 7. Victoria Channel</u>																			
Feb 12	1050	2	1	11,000	8.1	15	23	10.1	102	--	--	--	--	--	--	--	--		
				12,000	8.1	15	--	9.6	98	--	--	--	--	--	--	--	--		
Apr. 7	1750	2	1	5,500	7.5	16.1	19	6.4	65	3.6	29	9.7	.1	.18	.01	.11	.11		
				5,500	7.5	16.2	--	6.2	64	--	--	--	--	--	--	--	--		
				5,400	7.3	16.9	--	6.6	69	4.4	38	10	.2	.22	.01	.11	.17		
May 6	0840	2	1	3,300	8.1	21.7	31	8.5	97	--	--	--	--	--	--	--	--		
				5,000	7.9	21.9	--	7.4	85	--	--	--	--	--	--	--	--		
				13,000	7.5	20.1	--	4.2	48	--	--	--	--	--	--	--	--		
June 2	0930	2	1	4,200	7.7	25.6	46	5.8	71	--	--	--	--	--	--	--	--		
				4,200	7.7	25.6	--	5.9	72	--	--	--	--	--	--	--			
				4,400	7.6	25.6	--	5.7	70	--	--	--	--	--	--	--			
				4,400	7.6	25.6	--	5.4	66	--	--	--	--	--	--	--			
<u>Line 8. Victoria Channel</u>																			
Feb. 12	1020	2	1	11,000	8.1	14.5	15	9.1	91	4.3	39	7.1	.1	.32	.00	.05	.12		
				12,000	8.1	14.4	--	9.3	94	5.3	41	1.3	.2	.34	.00	.14	.14		
Apr. 7	1620	2	1	9,000	8.0	16.8	14	10.7	114	2.5	--	8.8	.4	.04	.01	.11	.12		
				9,000	8.0	16.9	--	10.6	113	--	--	--	--	--	--	--			
				10,000	7.8	16.8	--	9.3	99	3.4	49	9.6	.2	.15	.01	.08	.15		
May 6	0820	2	1	600	7.9	21.1	28	7.5	83	2.8	22	10	.3	.07	.14	.06	.12		
				630	7.9	21.1	--	7.4	82	--	--	--	--	--	--	--			
				750	7.8	20.8	--	7.5	83	3.2	23	9.9	.4	.11	.15	.10	.16		
June 2	0850	2	1	3,300	7.4	25.6	32	4.8	59	3.2	14	11	.0	.14	.00	.01	.06		
				3,300	7.4	25.6	--	4.8	59	--	--	--	--	--	--	--			
				3,200	7.4	25.6	--	4.5	55	3.3	15	11	.0	.25	.00	.02	.06		
Aug. 12	1210	2	1	4,400	8.1	32.6	28	8.8	122	3.8	20	14	.0	.05	.02	.05	.09		
				4,700	7.9	31.6	--	6.2	85	--	--	--	--	--	--	--			
				5,000	7.9	31.5	--	5.7	79	--	--	--	--	--	--	--			
				7,500	7.6	31.8	--	3.4	47	6.7	47	13	.1	.07	.04	.18	.82		
<u>Line 13a. Guadalupe River</u>																			
May 6	1235	2	1	490	7.8	24.1	25	7.4	87	--	--	--	--	--	--	--	--		
				490	7.8	24.1	--	7.4	87	--	--	--	--	--	--	--			
				450	7.8	24.1	--	7.4	87	--	--	--	--	--	--	--			
<u>Line 14. Guadalupe River</u>																			
Feb. 13	1100	2	1	560	2.7	15	--	8.4	82	2.5	31	13	1.1	.28	.00	.78	1.0		
				550	3.2	15	--	8.6	84	--	--	--	--	--	--	--			
				560	3.3	15.5	--	8.6	85	--	--	--	--	--	--	--			
				550	4.2	15.5	--	7.8	77	--	--	--	--	--	--	--			
				590	3.6	15	--	6.9	68	2.0	30	13	1.0	.19	.00	.74	1.0		

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time (24 hour)	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH		Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Biochemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Orthophosphate as phosphorus (P)	Total phosphorus (P)
					1/	1/			1/	1/								
<u>Line 14. Guadalupe River--continued</u>																		
Apr. 8	0950	2	1	510	7.6	19.2	25	--	--	1.4	--	12	1.7	0.10	0.00	0.41	0.52	
			5	510	7.6	19.2		10.7	114	--	--	--	--	--	--	--	--	--
			10	530	7.6	19.2		10.6	113	1.6	--	12	1.7	.04	.00	.40	.58	
May 6	1240	2	1	540	7.9	24.2	28	7.4	87	1.9	--	12	1.4	.08	.01	.55	.62	
			5	520	7.8	24.2		7.4	87	--	--	--	--	--	--	--		
			11.5	500	7.8	24.0		7.4	87	1.7	3.7	12	2.0	.08	.02	.58	.58	
<u>Line 15. Guadalupe River</u>																		
Feb. 13	1200	2	1	560	7.8	15.5	--	8.0	79	--	--	--	--	--	--	--	--	--
			5	560	7.9	15.5		8.0	79	--	--	--	--	--	--	--	--	
			10	550	7.9	15		8.0	78	--	--	--	--	--	--	--	--	
			15	540	7.8	15		8.1	80	--	--	--	--	--	--	--	--	
May 6	1215	2	1	540	7.8	24.0	28	7.5	88	--	--	--	--	--	--	--	--	--
			5	550	7.8	23.9		7.5	88	--	--	--	--	--	--	--	--	
			10	550	7.8	23.9		7.4	87	--	--	--	--	--	--	--	--	
			15	500	7.8	24.0		7.5	88	--	--	--	--	--	--	--	--	
<u>Line 16. Guadalupe River</u>																		
Feb. 13	1330	2	1	540	7.8	16	--	8.8	88	--	--	--	--	--	--	--	--	--
			5	550	7.9	16		8.8	88	--	--	--	--	--	--	--	--	
			10	520	7.9	17		8.8	91	--	--	--	--	--	--	--	--	
			13	520	7.9	17		9.0	93	--	--	--	--	--	--	--	--	
May 6	1200	2	1	500	7.9	24.5	31	7.4	88	--	--	--	--	--	--	--	--	--
			5	500	7.9	24.5		7.5	89	--	--	--	--	--	--	--	--	
			10	490	7.8	24.4		7.5	88	--	--	--	--	--	--	--	--	
			15	490	7.8	24.7		7.5	89	--	--	--	--	--	--	--	--	
June 2	1445	2	1	300	7.2	25.0	5	4.5	54	--	--	--	--	--	--	--	--	--
			5	300	7.2	25.0		4.5	54	--	--	--	--	--	--	--	--	
			10	290	7.2	25.2		4.5	54	--	--	--	--	--	--	--	--	
			16	280	7.1	25.3		4.5	54	--	--	--	--	--	--	--	--	
<u>Line 17. Guadalupe River</u>																		
Feb. 13	1300	2	1	540	7.9	16.5	--	8.2	84	1.8	32	13	.5	.20	.00	.75	.85	
			3.5	540	8.0	16		8.4	84	--	--	--	--	--	--	--	--	
			7	510	7.8	16		8.2	82	2.2	33	13	1.2	.24	.00	.72	.84	
Apr. 8	0915	2	1	560	7.7	20.1	22	9.7	105	1.6	--	12	2.2	.04	.00	.47	.58	
			5	560	7.7	20.1		10.0	109	--	--	--	--	--	--	--		
			9.5	560	7.6	20.1		10.3	112	1.6	--	12	2.1	.05	.00	.47	.62	
May 6	1145	2	1	500	7.8	25.2	20	7.6	90	1.7	--	12	1.4	.06	.02	.61	.64	
			5	500	7.8	25.1		7.7	92	--	--	--	--	--	--	--		
			9.5	500	7.8	25.1		7.1	85	1.6	--	12	1.3	.15	.02	.58	.88	
June 2	1500	2	1	300	7.1	25.1	10	4.5	54	2.5	--	13	.7	.10	.04	.26	.60	
			5	300	7.1	25.1		4.5	54	--	--	--	--	--	--	--		
			10.5	300	7.1	25.1		4.5	54	2.7	--	14	.7	.09	.04	.30	.65	
Aug. 11	1510	2	1	670	7.7	33.5	33	6.4	89	1.9	--	13	.9	.04	.04	.36	.36	
			7	640	7.7	33.4		6.4	88	2.5	--	14	1.0	.00	.05	.42	.37	
<u>Line 19. Mission Lake</u>																		
Aug. 11	1445	2	1	730	8.1	34.4	31	9.1	126	--	--	--	--	--	--	--	--	--
			2	730	8.1	34.4		9.0	125	--	--	--	--	--	--	--	--	
<u>Line 20. Guadalupe Bay</u>																		
Feb. 12	1600	2	.5	670	8.2	17	--	10.4	107	1.5	--	12	1.4	.07	.02	.50	.50	
			2	750	8.3	17		10.8	111	1.5	15	12	1.8	.55	.03	.46	.50	
Apr. 8	0845	2	1	550	7.8	19.8	33	10.0	109	--	--	--	--	--	--	--	--	
			2.5	550	7.7	19.6		10.0	108	1.5	19	12	1.8	.19	.00	.50	.70	
May 5	1740	2	1	570	8.1	24.7	36	9.6	114	2.0	--	12	1.4	.05	.02	.58	.67	
			3.5	600	8.1	24.6		9.8	117	1.8	--	12	1.6	.05	.01	.58	.58	
June 2	1525	2	1	400	7.5	25.8	22	6.8	83	2.2	--	14	.2	.09	.02	.16	.29	
			3.5	400	7.4	25.8		6.8	83	2.4	--	14	.1	.08	.03	.16	.26	
Aug. 11	1435	2	1	600	8.6	33.0	31	14.3	196	--	--	--	--	--	--	--	--	
			3	600	8.3	32.3		10.4	141	--	--	--	--	--	--	--	--	
<u>Line 21. Guadalupe Bay</u>																		
Feb. 12	1615	1	.5	620	8.2	17	--	10.2	105	--	--	--	--	--	--	--	--	
			2	650	8.1	16.5		10.4	106	--	--	--	--	--	--	--	--	
Do.	1620	2	.5	610	8.0	17	--	9.6	99	--	--	--	--	--	--	--	--	
			1.5	670	8.0	17		9.6	99	--	--	--	--	--	--	--	--	

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time (24 hour)	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH		Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
					1/	1/		Concentration	Percent saturation								
					1/	1/		1/	1/								
Line 21. Guadalupe Bay--continued																	
Apr. 8	0835	1	1 3	530 530	7.6 7.5	19.5 19.6	27	10.0 10.4	108 112	--	--	--	--	--	--	--	--
Do.	0830	2	1 2.5	560 560	7.9 7.9	19.4 19.4	33	10.4 10.2	112 110	--	--	--	--	--	--	--	--
May 5	1800	2	1 2	590 610	8.1 8.0	24.6 24.6	25	10.0 9.7	119 115	--	--	--	--	--	--	--	--
Do.	1805	1	1 3.5	550 570	8.0 7.9	24.1 24.2	25	9.9 9.8	116 115	--	--	--	--	--	--	--	--
June 2	1405	1	1 4.5	380 380	7.7 7.7	26.3 26.3	20	7.1 7.1	87 87	--	--	--	--	--	--	--	--
Do.	1410	2	1 3	400 380	7.3 7.3	25.7 25.7	8	6.0 6.1	72 73	--	--	--	--	--	--	--	--
Line 22. Guadalupe Bay																	
Feb. 12	1640	1	.5 3	500 460	8.2 8.2	16 16	25	10.4 10.5	104 105	2.3 2.6	--	5.4 5.8	0.3 .3	0.32 .19	0.00 .00	0.10 .11	0.11 .14
Do.	1635	2	.5 2	670 700	8.3 8.2	17 17	--	10.0 10.4	103 107	1.8 1.6	--	12 12	1.0 .8	.29 .18	.02 .03	.50 .57	.55 .58
Apr. 8	0825	1	1 2.5	450 430	7.8 7.7	19.1 19.1	25	10.4 10.0	111 106	--	--	--	--	--	--	.29	.35
Do.	0815	2	1 3	560 560	7.9 7.7	19.4 19.3	25	13.0 11.1	140 119	-- 1.2	--	14 12	1.8	.04	.00	.48	.60
May 5	1725	1	1 3	600 630	8.3 8.4	24.4 24.3	31	11.8 11.8	139 139	--	--	--	--	--	--	--	--
Do.	1715	2	1 4	600 650	8.3 8.3	24.3 24.2	33	11.8 11.5	139 135	3.0 3.0	--	12 12	1.2 1.1	.04 .03	.01 .02	.41 .44	.50 .54
June 2	1345	1	1 3	380 420	7.3 7.3	25.2 25.2	27	6.5 6.5	77 77	-- 2.3	--	--	.1	.08	.02	.05	.13
Do.	1330	2	1 4	330 360	7.5 7.3	25.1 25.1	9	7.2 7.2	86 86	2.8 3.3	--	13 13	.9 .8	.21 .10	.02 .02	.24 .24	.88 1.2
Aug. 11	1425	1	1 2.5	950 1,200	8.4 8.4	32.9 32.7	37	9.4 8.9	129 122	-- 2.8	--	--	--	.00	.06	.22	.22
Do.	1420	2	1 3	750 810	8.4 8.4	32.4 32.0	42	9.7 9.1	131 123	-- 3.0	--	14	.2	.01	.03	.29	.28
Line 23. Hynes Bay																	
Feb. 12	1725	1	.5 2	4,200 4,000	8.9 8.9	16.5 16.5	--	10.9 10.7	111 109	5.5 6.9	--	5.6 5.9	.2 .2	.16 .25	.01 .00	.29 .31	.31 .30
Do.	1715	2	.5 3	3,200 3,200	8.8 8.8	16.5 16.5	--	10.4 11.1	106 113	5.2 4.8	--	7.9 7.5	.6 .3	.12 .07	.00 .00	.30 .33	.32 .33
Do.	1705	3	.5 2.5	2,900 2,900	8.6 8.6	17 17	--	10.3 10.5	107 109	3.6 3.7	--	8.5 8.9	.8 .8	.19 .12	.03 .04	.30 .24	.30 .30
Apr. 6	1520	1	1 2.5	1,200 1,200	8.6 8.6	19.2 19.2	18	14.0 13.8	149 147	--	--	--	--	--	--	--	--
Do.	1530	2	1 2.5	1,600 1,600	8.9 8.8	19.0 17.3	19	15.4 15.6	164 162	-- 2.9	--	--	.6	.08	.01	.27	.28
Do.	--	3	1 3	1,700 1,700	8.9 8.8	17.9 17.3	15	16.4 15.0	173 156	--	--	--	--	--	--	--	--
May 5	1655	1	1 2.5	2,800 2,800	8.5 8.5	24.5 24.3	33	13.6 13.4	162 160	--	--	--	--	--	--	--	--
Do.	1650	2	1 3	4,000 4,500	8.5 8.5	24.4 24.2	33	13.1 12.5	156 149	--	--	--	--	--	--	--	--
Do.	1645	3	1 3	4,500 4,500	8.6 8.5	24.5 24.4	31	13.8 13.5	164 161	--	--	--	--	--	--	--	--
June 3	0950	1	1 2.5	9,000 9,000	8.0 8.0	23.9 23.9	25	7.1 7.1	86 86	--	--	--	--	--	--	--	--
Do.	0945	2	1 3	2,000 2,000	8.3 8.2	23.9 23.7	25	7.6 7.1	90 84	--	--	--	--	--	--	--	--
Do.	0940	3	1 3	2,800 2,900	8.4 8.3	23.8 23.7	23	8.2 7.4	98 87	--	--	--	--	--	--	--	--

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH		Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
					1/	1/			Concentration	Percent saturation								
<u>Line 23. Hynes Bay--Continued</u>																		
Aug. 11	1405	1	1	2,100	8.4	32.4	33	9.1	125	--	--	--	--	--	--	--	--	--
			2	2,200	8.3	31.9		8.7	119									
Do.	--	2	1	4,600	8.4	32.5	36	8.6	119	--	--	--	--	--	--	--	--	--
			2.5	5,000	8.2	31.6		6.6	92									
Do.	1355	3	1	3,800	8.4	32.6	34	7.8	108	--	--	--	--	--	--	--	--	--
			2.5	4,200	8.3	32.5		7.1	99									
<u>Line 24. San Antonio Bay</u>																		
Feb. 24	0955	2	1	12,000	8.3	14.6	--	9.6	97	--	--	--	--	--	--	--	--	--
			11	18,000	8.5	14.9		10.8	112									
Apr. 6	1720	2	1	2,800	8.6	19.8	--	12.7	140	--	--	--	--	--	--	--	--	--
			5	5,100	8.5	20.5		12.4	139									
			8	14,000	8.3	18.8		10.9	121									
			11	16,000	8.1	18.1		11.5	126									
Do.	1710	3	1	2,200	8.5	19.0	31	13.8	148	--	--	--	--	--	--	--	--	--
			2	2,000	8.5	19.1		13.9	149									
			3.5	8,000	8.2	18.2		9.3	100									
Do.	1700	4	1	2,100	8.7	15.2	16	13.7	136	2.7	16	12	1.2	0.08	0.02	0.42	0.48	
			2.5	2,000	8.5	15.0		13.9	138									
			4	12,000	8.1	16.2		9.4	99									3.6
Do.	--	6	1	2,500	8.7	19.2	20	15.9	171	--	--	--	--	--	--	--	--	
			4	2,500	8.7	19.0		15.9	171									
Do.	1630	8	1	2,800	8.8	17.6	20	15.2	160	4.0	--	9.4	.04	.09	.02	.27	.29	
			4	2,900	8.8	17.2		15.8	166									4.5
Do.	1615	9	1	2,200	8.7	17.1	18	14.3	149	--	--	--	--	--	--	--	--	
			4	2,200	8.7	17.3		14.5	153									
Do.	1600	10	1	2,500	8.8	17.7	18	13.3	140	--	--	--	--	--	--	--	--	
			3.5	2,500	8.7	17.7		13.7	144									2.0
Apr. 7	1605	2	1	7,000	8.3	18.1	14	12.6	135	--	--	--	--	--	--	--	--	
			5	7,000	8.4	18.0		12.8	138									
			9	7,000	8.4	18.1		13.6	146									
Apr. 8	0800	4	1	410	7.8	19.2	24	11.4	121	--	--	--	--	--	--	--		
			3.5	410	7.7	19.1		11.2	119									
May 5	1510	1	1	3,800	8.3	26.9	31	11.4	142	--	--	--	--	--	--	--		
			2.5	3,800	8.2	26.9		11.1	139									
Do.	1515	2	1	4,200	8.4	25.8	33	11.5	142	3.0	12	10	.4	.09	.05	.14	.20	
			5	7,000	8.2	25.7		10.2	126									
			10	12,000	7.8	24.0		7.3	89									2.2
Do.	1535	3	1	6,000	8.3	25.2	33	12.0	146	--	--	--	--	--	--	--		
			3	7,500	8.3	24.9		11.4	139									
Do.	1550	4	1	4,500	8.4	25.3	46	12.7	155	--	--	--	--	--	--	--		
			3.5	12,000	7.9	23.4		7.3	88									
Do.	1600	5	1	5,500	8.4	24.6	46	12.0	146	3.5	--	10	.7	.06	.03	.25	.32	
			3.5	11,000	7.9	23.0		6.8	80									2.3
Do.	1605	6	1	5,500	8.4	24.9	38	13.5	165	--	--	--	--	--	--	--		
			3.5	6,000	8.4	24.2		10.4	125									
Do.	1610	7	1	5,000	8.5	24.7	41	13.5	163	--	--	--	--	--	--			
			3.5	5,500	8.5	24.7		12.8	156									
Do.	1620	8	1	5,000	8.5	24.4	36	12.9	154	4.4	--	9.8	.6	.04	.03	.28	.34	
			3.5	5,000	8.5	24.3		12.9	154									3.7
Do.	1625	9	1	6,000	8.5	24.5	38	13.7	167	--	--	--	--	--	--			
			3.5	6,500	8.5	24.5		13.4	163									
Do.	1630	10	1	5,500	8.4	24.5	36	13.3	162	3.3	--	9.2	.5	.05	.02	.27	.32	
			3.5	7,000	8.2	23.6		9.8	117									2.8

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 24. San Antonio Bay--Continued</u>																	
June 3	0830	1	1 2	700 3,800	6.8 7.2	23.4 23.6	23	6.9 6.2	80 73	--	--	--	--	--	--	--	--
Do.	0835	2	1 5 10	640 5,200 8,500	7.0 7.3 7.3	23.6 24.2 24.4	25	6.9 6.0 5.2	80 72 63	2.6 7.4	7.4 11	0.0 9.5	0.04 .1	0.00 .18	0.03 .02	0.07 .07	0.10 1.8
Do.	0825	3	1 3.5	440 480	6.8 6.9	23.9 23.9	--	6.8 6.8	80 80	--	--	--	--	--	--	--	--
Do.	0850	4	1 4	400 400	5.9 6.2	24.5 24.4	28	5.4 5.5	64 65	--	--	--	--	--	--	--	--
Do.	0900	5	1 4	320 320	6.5 6.4	24.1 24.2	18	4.6 4.7	54 55	1.9 2.2	-- 13	.4 13	.11 .4	.03 .15	.16 .02	.16 .16	.31 .23
Do.	0905	6	1 3.5	340 330	6.3 6.4	23.5 23.2	--	5.5 5.5	64 63	--	--	--	--	--	--	--	--
Do.	0910	7	1 3.5	480 9,000	6.9 7.2	23.8 23.5	--	6.5 6.4	76 76	--	--	--	--	--	--	--	--
Do.	0915	8	1 3.5	600 700	7.8 7.8	23.6 23.6	18	7.4 7.2	86 84	1.7 1.9	-- 13	.6 12	.08 .6	.02 .12	.23 .03	.23 .22	.35 .32
Do.	0925	9	1 4	400 440	8.0 7.9	23.7 23.6	15	7.5 7.4	87 86	--	--	--	--	--	--	--	--
Do.	0930	10	1 4	2,000 3,200	8.2 8.2	23.8 23.8	23	7.7 6.9	92 82	1.5 2.0	-- 10	8.8 .6	.6 .6	.07 .12	.03 .02	.20 .21	.28 .31
Aug. 11	1310	2	1 5 8	4,000 14,000 16,000	8.4 8.0 8.0	32.6 31.1 31.7	36	7.0 5.5 5.5	97 76 77	1.9 -- 1.5	7.9 -- 19	12 -- 10	.1 -- .1	.00 -- .01	.04 -- .08	.16 -- .23	.16 -- .23
Do.	1325	5	1 3	3,500 5,600	8.5 8.3	32.3 31.6	38	9.3 7.7	127 107	--	--	--	--	--	--	--	--
Do.	1330	7	1 3.5	5,000 6,800	8.3 8.1	32.0 31.0	38	7.8 6.2	108 85	--	--	--	--	--	--	--	--
Do.	1340	9	1 4	6,100 6,100	8.2 8.1	32.5 31.1	38	7.5 5.6	104 77	--	--	--	--	--	--	--	--
<u>Line 25. San Antonio Bay</u>																	
Apr. 6	1740	2	1 5 10	8,000 10,000 11,000	8.6 8.4 7.5	19.1 18.7 18.0	18	13.8 11.7 1.5	150 129 16	--	--	--	--	--	--	--	--
Apr. 7	1545	2	1 5 8	8,000 8,000 8,000	8.3 8.2 8.2	16.3 17.3 16.9	18	11.5 11.4 9.9	120 121 104	2.3 -- 2.2	-- -- 19	8.4 -- 8.0	.4 -- .7	.06 -- .10	.01 -- .01	.14 -- .14	.14 -- .14
May 4	1705	2	1 3 6	14,000 14,000 15,000	8.4 8.5 8.4	21.6 21.4 20.6	46	8.2 8.2 7.1	96 95 83	--	--	--	--	--	--	--	--
June 3	0800	2	1 5 8	3,000 3,800 9,500	7.4 7.4 7.4	23.4 23.7 24.0	--	7.3 6.9 4.8	86 81 58	--	--	--	--	--	--	--	--
Aug. 11	1535	2	1 5 8.5	13,000 14,000 14,000	8.1 8.0 8.0	33.1 31.3 31.3	64	7.6 5.8 5.6	109 81 78	2.0 -- 8.0	-- -- --	10 -- 10	.0 -- .2	.00 -- .04	.00 -- .13	.10 -- .34	.12 -- 1.9
<u>Line 26. San Antonio Bay</u>																	
Apr. 6	1455	1	1 3 5 13.5	4,800 7,000 18,000 23,000	8.8 8.7 8.2 8.2	18.8 18.1 17.2 17.2	37	13.5 11.9 9.3 8.3	145 128 101 92	--	--	--	--	--	--	--	--
Do.	1445	2	1 3 4.5	3,800 5,300 12,000	8.8 8.7 8.4	19.0 18.4 17.8	41	14.7 13.8 9.2	158 148 101	2.7 -- 2.5	-- -- --	9.2 -- 7.7	.5 -- .4	.07 -- .12	.01 -- .03	.25 -- .13	.26 -- .13
Do.	1430	3	1 3 4	5,100 5,300 8,500	8.9 8.9 8.5	19.8 19.1 17.9	41	16.4 15.6 10.0	182 170 109	--	--	--	--	--	--	--	--
Do.	1420	4	1 2 3 4	7,000 7,500 10,000 12,000	8.8 8.8 8.5 8.4	19.9 19.2 17.9 18.3	37	15.6 13.8 8.9 9.4	173 150 97 103	3.3 -- -- 2.3	-- -- -- --	7.0 -- -- 7.7	.5 -- -- .6	.09 -- -- .11	.02 -- -- .03	.13 -- -- .14	.14 -- -- .14
Do.	1410	5	1 2 3.5	4,500 4,900 9,500	8.7 8.7 8.2	19.8 18.6 18.3	33	12.7 12.6 6.3	140 135 68	--	--	--	--	--	--	--	--

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni- trate nitrogen (N)	Ammo- nia nitrogen (N)	Ni- trite nitrogen (N)	Ortho- phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 26. San Antonio Bay--Continued</u>																	
May 4	1305	1	1	9,500	8.0	22.0	60	8.9	103	--	--	--	--	--	--	--	--
			4	14,000	7.6	20.6		7.6	87	--	--	--	--	--	--	--	--
Do.	1320	2	1	5,200	7.9	22.2	71	9.1	106	1.9	--	9.4	0.7	0.05	0.08	0.20	0.24
			4.5	14,000	7.6	20.4		7.4	85	1.8	--	7.3	.4	.15	.17	.18	.18
Do.	1338	3	1	7,000	7.9	22.8	81	9.0	106	--	--	--	--	--	--	--	--
			5	14,000	7.7	20.4		7.4	85	--	--	--	--	--	--	--	--
Do.	1345	4	1	8,500	8.0	22.3	79	9.1	106	1.8	--	9.1	.6	.07	.07	.15	.17
			5	14,000	7.8	20.3		7.4	85	1.4	--	7.4	.4	.20	.09	.13	.16
Do.	1410	5	1	9,500	8.0	22.1	76	9.0	105	--	--	--	--	--	--	--	--
			4	14,000	7.9	21.1		8.0	93	--	--	--	--	--	--	--	--
June 3	1045	1	1	1,200	8.4	25.7	30	8.1	98	--	--	--	--	--	--	--	--
			5	7,500	8.1	25.5		6.4	79	--	--	--	--	--	--	--	--
			10	9,500	8.1	25.8		5.9	74	--	--	--	--	--	--	--	--
Do.	1035	2	1	480	7.9	25.1	20	6.9	82	1.7	--	13	.4	.15	.02	.15	.27
			4.5	500	7.8	24.8		6.5	77	1.7	--	13	.4	.16	.02	.14	.28
Do.	1025	3	1	1,800	8.3	24.9	28	7.7	92	--	--	--	--	--	--	--	--
			4	1,800	8.2	24.6		7.0	83	--	--	--	--	--	--	--	--
Do.	1110	4	1	1,400	8.2	24.5	25	7.6	90	1.6	--	12	.6	.10	.02	.17	.26
			4	1,600	8.2	24.1		7.3	86	1.6	--	11	.6	.14	.02	.17	.27
Do.	1005	5	1	2,600	8.4	24.2	20	8.2	98	--	--	--	--	--	--	--	--
			4	3,200	8.3	24.0		7.2	86	--	--	--	--	--	--	--	--
Aug. 11	1245	2	1	12,000	8.2	31.9	--	6.9	97	2.1	--	10	.0	.00	.04	.16	.16
			4.5	15,000	8.0	31.2		5.8	79	2.4	--	9.9	.0	.01	.03	.13	.29
Do.	1230	4	1	7,000	8.2	31.0	--	7.5	103	1.5	--	10	.1	.00	.10	.15	.15
			4.5	12,000	8.0	30.4		5.7	78	2.0	--	10	.1	.00	.02	.24	.80
<u>Line 27. San Antonio Bay</u>																	
Apr. 6	1155	1	1	10,000	8.5	18.4	--	11.6	126	--	--	--	--	--	--	--	--
			3	20,000	8.4	17.7		11.0	122	--	--	--	--	--	--	--	--
			5	29,000	8.2	18.1		9.1	106	--	--	--	--	--	--	--	--
			12.5	34,000	8.0	18.3		8.7	104	--	--	--	--	--	--	--	--
Do.	1205	1a	1	7,500	8.6	18.3	51	13.3	143	--	--	--	--	--	--	--	--
			2.5	17,000	8.3	18.3		9.5	106	--	--	--	--	--	--	--	--
			4	24,000	8.2	18.2		10.1	115	--	--	--	--	--	--	--	--
Do.	1225	2	1	7,000	8.7	18.4	43	13.4	144	--	--	--	--	--	--	--	--
			3	8,000	8.6	17.7		13.4	143	--	--	--	--	--	--	--	--
Do.	1230	3	1	7,500	8.7	18.8	--	12.9	140	1.8	--	7.0	.4	.05	.02	.14	.14
			3	8,500	8.7	17.4		13.2	142	--	--	--	--	--	--	--	--
			4	14,000	8.2	17.6		11.2	122	--	--	--	--	--	--	--	--
			5	22,000	8.2	18.0		8.1	92	1.4	--	5.4	.1	.11	.02	.08	.08
Do.	1245	4	1	8,000	8.8	19.2	42	10.1	110	--	--	--	--	--	--	--	--
			3	10,000	8.7	17.5		13.6	146	--	--	--	--	--	--	--	--
			4	20,000	8.4	17.8		10.2	115	--	--	--	--	--	--	--	--
			5.5	24,000	8.2	17.8		9.0	102	--	--	--	--	--	--	--	--
Do.	1300	5	1	7,000	8.8	19.0	46	13.9	151	2.3	--	7.2	.5	.09	.03	.17	.18
			2	7,500	8.8	17.5		14.0	149	--	--	--	--	--	--	--	--
			3	14,000	8.5	17.4		9.8	107	--	--	--	--	--	--	--	--
			4	18,000	8.4	17.9		8.5	94	--	--	--	--	--	--	--	--
			5	20,000	8.3	18.0		8.6	97	1.7	--	5.2	.2	.13	.03	.09	.10
Do.	1310	6	1	9,500	8.5	18.8	47	11.1	122	--	--	--	--	--	--	--	--
			3	11,000	8.5	17.8		10.3	112	--	--	--	--	--	--	--	--
			4.5	20,000	8.2	18.0		8.8	99	--	--	--	--	--	--	--	--
Apr. 7	1530	1	1	18,000	8.2	17.4	37	11.6	127	1.9	--	5.0	.1	.05	.01	.06	.06
			3	20,000	8.2	17.4		11.6	129	--	--	--	--	--	--	--	--
			5	20,000	8.2	17.6		11.4	127	--	--	--	--	--	--	--	--
			14	20,000	8.2	17.4		11.6	129	1.7	--	4.8	.1	.06	.01	.05	.05
May 4	1650	1	1	16,000	8.3	24.4	43	8.3	104	--	--	--	--	--	--	--	--
			5	18,000	8.3	24.4		8.3	104	--	--	--	--	--	--	--	--
			10	21,000	8.3	24.1		7.4	94	--	--	--	--	--	--	--	--
			15.5	24,000	8.2	24.0		7.1	90	--	--	--	--	--	--	--	--

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
								1/	1/								
<u>Line 27. San Antonio Bay--continued</u>																	
May 4	1540	2	1 4	16,000 16,000	8.1 8.0	21.8 21.8	76	8.7 8.7	104 104	--	--	--	--	--	--	--	--
Do.	1520	3	1 5	16,000 17,000	7.5 7.8	21.0 20.9	98	8.3 7.8	98 92	--	--	--	--	--	--	--	--
Do.	1455	4	1 5	14,000 20,000	8.5 --	21.6 20.6	80	9.0 7.7	106 91	--	--	--	--	--	--	--	--
Do.	1445	5	1 4.5	13,000 15,000	7.1 7.4	21.4 21.0	76	9.4 8.8	109 102	--	--	--	--	--	--	--	--
Do.	1435	6	1 4	12,000 12,000	8.1 8.0	21.5 21.4	81	8.7 8.3	101 97	--	--	--	--	--	--	--	--
Aug. 11	1150	2	1 3	16,000 15,000	8.1 8.0	31.1 30.8	38	6.6 6.4	92 89	--	--	--	--	--	--	--	--
Do.	1205	3	1 5.5	12,000 14,000	8.2 8.0	30.4 29.8	46	7.6 5.7	104 78	--	--	--	--	--	--	--	--
Do.	1220	5	1 6.5	11,000 14,000	8.2 8.1	30.6 30.2	45	7.5 5.5	103 75	--	--	--	--	--	--	--	--
Aug. 12	0835	1	1 5 10 13.5	17,000 17,000 17,000 18,000	8.8 8.8 8.2 8.1	29.4 29.4 29.3 29.3	--	6.8 6.7 6.6 6.5	93 92 90 89	--	--	--	--	--	--	--	--
<u>Line 28. San Antonio Bay</u>																	
Apr. 7	1230	1	1 3 5 14	23,000 23,000 26,000 28,000	8.1 8.1 8.0 8.0	16.2 16.2 19.2 19.0	33	11.4 11.4 11.0 12.1	124 124 128 142	2.1 -- -- 2.2	32 -- -- 34	4.2 -- -- 4.7	0.1 -- -- .0	0.07 -- -- .09	0.00 -- -- .01	0.05 -- -- .06	0.07 -- -- .08
Do.	1220	2	1 3 4.5	17,000 17,000 24,000	8.2 8.2 8.0	19.5 19.5 19.7	76	12.7 13.3 13.1	144 151 152	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	1205	3	1 3 4	14,000 17,000 22,000	8.4 8.3 8.0	19.3 18.7 18.9	65	14.9 13.9 11.8	167 156 134	3.1 -- 2.6	-- -- --	4.5 -- 4.2	.0 -- .0	.07 -- .05	.00 -- .00	.06 -- .05	.08 -- .07
Do.	1145	4	1 3 5	12,000 23,000 26,000	8.4 8.1 8.0	19.5 18.6 18.7	66	14.3 12.1 11.0	161 139 128	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	1135	5	1 3 6.5	12,000 18,000 22,000	8.4 8.3 7.9	19.4 18.2 18.4	77	14.2 12.9 9.7	160 143 110	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	1120	6	1 3 4	14,000 18,000 20,000	8.4 8.2 8.0	19.2 18.5 18.8	66	13.8 12.5 10.8	153 139 123	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	1110	7	1 3 4	14,000 20,000 24,000	8.3 8.2 7.9	19.1 18.7 18.9	66	12.5 11.2 7.9	140 127 91	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	1050	8	1 3 4 5	16,000 22,000 23,000 26,000	8.3 8.1 8.1 7.9	19.1 18.5 18.3 18.7	66	12.4 10.9 10.7 8.1	139 124 122 94	3.2 -- -- 2.6	-- -- -- 33	5.0 -- -- 4.2	.0 -- -- .0	.07 -- -- .06	.00 -- -- .00	.06 -- -- .04	.09 -- -- .08
Do.	1040	9	1 2	12,000 14,000	8.3 8.2	18.9 18.8	64	12.0 12.1	133 136	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
May 4	1630	1	1 5 10	27,000 28,000 30,000	8.2 8.2 8.1	24.3 23.7 23.6	33	7.4 6.9 6.5	96 88 84	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
May 5	--	2	1 4.5	16,000 32,000	8.0 7.8	20.8 21.4	64	8.3 6.4	98 80	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	1010	3	1 5	18,000 28,000	8.1 7.8	20.7 21.2	76	8.7 6.1	101 75	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	0945	4	1 5.5	16,000 28,000	8.0 7.7	20.3 20.9	64	8.4 6.0	97 74	2.1 1.4	-- --	7.6 5.3	.3 .2	.05 .08	.08 .04	.10 .06	.12 .08
Do.	0940	5	1 5	14,000 25,000	8.1 7.8	20.3 23.7	66	8.6 7.5	99 95	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 28. San Antonio Bay--continued</u>																	
May 5	0930	5a	1 6	15,000 22,000	8.1 7.8	20.4 20.8	66	9.0 7.2	103 86	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	0915	6	1 5	14,000 21,000	8.1 7.8	20.1 20.3	61	8.8 6.8	100 80	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	0905	7	1 6	13,000 21,000	8.1 7.7	19.4 20.2	61	8.4 4.8	94 56	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	0845	8	1 6	15,000 20,000	8.0 7.9	20.3 21.0	61	8.2 7.9	94 94	1.7 1.6	-- --	8.0 8.0	0.4 .2	0.06 .07	0.06 .07	0.13 .08	0.14 .11
Do.	0840	9	1 5.5	16,000 18,000	8.0 7.9	20.1 20.5	51	8.7 8.4	100 98	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
June 3	1340	2	1 3.5	4,800 14,000	8.4 8.2	27.2 26.9	28	8.1 6.2	101 79	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	1315	3	1 6	7,000 10,000	8.4 8.2	26.5 26.1	33	8.1 5.2	101 65	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	1305	4	1 5	11,000 14,000	8.3 8.2	26.4 26.2	33	7.6 5.4	95 68	2.2 2.5	-- --	6.8 6.5	.1 .1	.13 .14	.02 .02	.12 .10	.18 .20
Do.	1300	5	1 5 7	12,000 12,000 12,000	8.4 8.4 8.2	26.4 26.3 26.1	33	8.5 8.1 5.9	108 103 75	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	1245	6	1 5.5	12,000 19,000	8.6 8.2	26.3 26.3	38	9.3 5.8	118 75	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	1240	7	1 5	12,000 19,000	8.6 8.2	26.1 26.1	36	9.8 6.6	124 86	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	1230	8	1 6	14,000 21,000	8.4 8.2	25.7 26.0	46	9.1 6.1	114 80	2.6 2.6	-- --	5.9 4.8	.0 .0	.04 .08	.00 .02	.08 .08	.14 .60
Do.	1225	9	1 5	16,000 21,000	8.3 8.1	25.8 26.1	53	8.2 5.6	106 74	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Aug. 12	0850	1	1 5 8	16,000 18,000 20,000	9.1 8.9 8.8	29.3 29.5 29.5	--	6.7 5.9 5.4	91 82 75	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	0905	4	1 5	16,000 16,000	8.1 8.1	29.6 29.6	--	6.8 6.4	93 88	2.2 5.0	-- --	9.4 9.2	.0 .1	.00 .05	.02 .11	.11 .36	.19 2.6
Do.	0925	8	1 5	21,000 23,000	8.2 8.4	29.8 29.8	74	6.8 6.0	96 86	2.1 2.4	-- --	8.6 8.0	.0 .0	.00 .00	.01 .01	.08 .08	.11 .12
<u>Line 29. San Antonio Bay</u>																	
Feb. 11	1545	1	1 6	24,000 24,000	8.4 8.4	16.1 16.1	--	8.8 8.7	96 95	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	1500	2	1 6	21,000 19,000	8.4 8.4	15.6 15.6	--	9.1 9.0	97 95	1.7 1.6	-- --	1.3 1.1	.0 .0	.17 .11	.00 .00	.03 .03	.06 .06
Do.	1455	3	1 3	20,000 21,000	8.7 8.6	16.8 16.6	--	9.2 8.8	101 96	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Apr. 7	1000	1	1 3 6	23,000 23,000 30,000	8.1 8.1 7.8	17.6 17.6 18.1	108	10.9 10.7 8.4	122 120 99	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	0945	2	1 3 6	23,000 23,000 29,000	8.1 8.2 7.9	18.0 18.0 18.2	104	10.8 10.7 8.5	123 122 99	1.6 -- 1.8	-- -- --	4.4 -- 3.8	.0 -- .1	.08 -- .09	.00 -- .08	.04 -- .03	.05 -- .07
Do.	0930	3	1 3 5	23,000 23,000 28,000	8.1 8.1 7.8	18.1 18.1 18.3	88	10.0 10.1 7.0	114 115 81	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Do.	1015	4	1 3 5 8 10 14	23,000 23,000 26,000 26,000 28,000 30,000	8.1 8.0 7.9 7.9 7.9 7.8	18.8 18.2 18.2 18.3 18.3 18.4	41	9.1 8.5 8.1 8.4 8.1 7.7	105 97 93 97 94 91	1.7 -- -- -- -- 2.0	-- -- -- -- -- 33	4.6 -- -- -- -- 5.4	.1 -- -- -- -- .2	.06 -- -- -- -- .10	.01 -- -- -- -- .01	.05 -- -- -- -- .06	.10 -- -- -- -- .14
May 5	1255	1	1 7	21,000 26,000	8.1 8.0	22.1 21.4	102	10.4 9.7	127 118	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	1250	2	1 7	19,000 24,000	8.1 8.0	22.6 21.3	89	10.7 9.9	130 119	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Do.	1240	2a	1 6	18,000 24,000	8.2 8.0	22.9 21.6	84	10.7 9.0	130 111	3.0 2.2	-- --	5.7 4.6	.1 .0	.06 .08	.04 .02	.07 .03	.10 .04

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni- trate nitrogen (N)	Ammo- nia nitrogen (N)	Ni- trite nitrogen (N)	Ortho- phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 29. San Antonio Bay--continued</u>																	
May 5	1230	3	1 3.5	18,000 21,000	8.2 8.0	23.2 22.3	76	11.3 8.2	138 100	--	--	--	--	--	--	--	--
Do.	1315	4	1 7	17,000 19,000	8.1 8.0	22.6 20.8	61	9.5 7.8	116 92	2.4 1.5	22 27	6.8 6.3	0.2 .2	0.05 .07	0.04 .05	0.09 .08	0.12 .12
Aug. 12	1015	2	1 5.5	36,000 36,000	8.1 8.1	30.4 30.3	56	6.2 6.0	94 91	1.6 1.5	--	5.6 5.1	.0 .0	.00 .00	.02 .00	.03 .04	.06 .06
Do.	0955	4	1 5 10 13	34,000 34,000 34,000 34,000	8.1 8.0 8.0 8.0	30.0 30.0 29.9 30.0	--	5.5 5.5 5.4 5.2	83 83 82 79	1.5 -- -- 2.2	24 -- -- 29	5.7 -- -- 5.7	.0 -- -- .0	.00 -- -- .04	.01 -- -- .02	.03 -- -- .05	.08 -- -- .11
<u>Line 30. San Antonio Bay</u>																	
Feb. 11	1300	1	1 3 6	27,000 27,000 26,000	8.3 8.2 8.2	15.0 15.1 15.7	--	8.7 8.7 8.9	96 96 97	--	--	--	--	--	--	--	--
Do.	1310	2	1 3 6	27,000 31,000 30,000	8.4 8.3 8.3	15.1 15.1 15.7	--	8.9 8.8 8.8	98 98 99	1.4 -- 1.5	--	.9 .7	.0 .0	.07 .19	.00 .00	.03 .02	.04 .05
Do.	1330	3	1 3 6	27,000 31,000 32,000	8.3 8.4 8.3	15.1 15.1 15.7	--	8.9 8.8 8.8	98 98 99	--	--	--	--	--	--	--	--
Do.	--	4	1 3 6	24,000 32,000 27,000	8.4 8.4 8.2	15.2 14.6 15.3	--	9.4 9.0 9.3	100 99 102	--	--	--	--	--	--	--	--
Do.	1130	5	1 2.5 3 4 5	30,000 27,000 30,000 37,000 37,000	8.5 8.5 8.5 8.3 8.2	14.7 15.2 14.5 15.3 14.8	--	9.0 9.1 9.0 8.5 7.4	99 100 99 97 84	--	--	--	--	--	--	--	--
Do.	1115	6	1 4.5	27,000 26,000	8.5 8.4	16.1 15.0	--	9.2 8.1	102 87	--	--	--	--	--	--	--	--
Apr. 7	1335	1	1 3 6	32,000 32,000 41,000	8.0 8.1 7.8	19.0 19.0 19.3	135	11.6 11.5 10.9	140 139 136	--	--	--	--	--	--	--	--
Do.	1320	3	1 3 6	32,000 32,000 40,000	8.1 8.1 7.8	19.4 19.3 19.3	128	11.8 11.8 10.5	142 142 131	2.1 -- 1.1	--	2.9 2.3	.0 .0	.05 .04	.00 .00	.03 .02	.04 .02
Do.	1300	6	1 3 5	26,000 26,000 32,000	8.1 8.0 8.0	21.0 21.0 20.7	97	13.0 13.0 11.2	159 159 140	--	--	--	--	--	--	--	--
Do.	1420	7	1 3 5 13.5	30,000 29,000 30,000 29,000	8.1 8.0 8.0 8.0	22.0 21.9 21.8 21.7	62	10.4 10.3 9.9 9.5	132 129 125 119	1.8 -- -- 1.2	--	3.3 -- -- 3.5	.0 -- -- .0	.01 -- -- .05	.00 -- -- .01	.04 -- -- .04	.05 -- -- .06
May 5	1120	1	1 6	34,000 35,000	8.1 8.0	20.9 21.0	109	10.0 8.6	128 110	--	--	--	--	--	--	--	--
Do.	1115	2	1 6.5	33,000 36,000	8.1 7.9	21.1 21.2	97	10.0 8.0	127 103	--	--	--	--	--	--	--	--
Do.	1105	3	1 6	32,000 36,000	8.1 7.9	21.2 21.0	89	10.4 8.2	130 105	3.0 1.4	--	3.5 3.7	.0 .0	.08 .11	.01 .01	.01 .00	.03 .01
Do.	1100	4	1 7	32,000 35,000	8.1 7.9	21.1 21.2	91	10.0 7.9	125 101	--	--	--	--	--	--	--	--
Do.	1055	5	1 6.5	32,000 35,000	8.1 7.9	21.2 21.3	81	10.0 8.0	125 103	--	--	--	--	--	--	--	--
Do.	1050	6	1 6	33,000 35,000	8.1 7.9	21.8 21.9	84	9.8 7.8	126 100	--	--	--	--	--	--	--	--
Do.	1135	7	1 5 13.5	24,000 28,000 32,000	8.0 8.0 7.9	22.5 21.0 21.2	36	8.1 7.2 7.1	101 89 89	2.0 -- 1.9	30 -- 31	5.4 -- 3.6	.1 -- .0	.15 -- .15	.05 -- .02	.04 -- .02	.05 -- .05
Aug. 12	1045	3	1 6	26,000 26,000	8.1 8.1	30.3 30.3	84	6.8 6.7	97 96	1.7 1.9	--	7.5 7.6	.0 .0	.00 .00	.00 .00	.06 .07	.10 .24
Do.	1100	7	1 5 10 12.5	20,000 18,000 20,000 20,000	8.1 8.0 7.9 7.5	30.8 30.6 30.4 30.4	--	5.9 5.9 5.5 5.4	84 83 77 76	1.7 -- -- 2.6	23 -- -- 29	8.3 -- -- 9.6	.0 -- -- .0	.00 -- -- .00	.01 -- -- .02	.08 -- -- .09	.10 -- -- .15

See footnote at end of table.

Table 6A.--Quality of water in the Guadalupe estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time (24 hour)	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C) 1/	pH 1/	Temperature (°C) 1/	Secchi disk transparency (cm) 1/	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammo-nia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)			
								Concentration 1/	Percent saturation											
Line 40. Saluria Bayou																				
Aug. 26	1630	3	1	54,000	7.8	31.7	122	5.6	97	--	--	--	--	--	--	--	--			
			5	54,000	7.8	31.7		5.6	97	--	--	--	--	--	--	--	--	--		
			10	54,000	7.8	31.3		5.6	95	--	--	--	--	--	--	--	--	--	--	
			15	52,000	7.8	31.0		5.3	88	--	--	--	--	--	--	--	--	--	--	--
			20	50,000	7.8	31.0		5.5	90	--	--	--	--	--	--	--	--	--	--	--
Do.	1820	3	1	51,000	7.9	31.4	--	6.5	107	--	--	--	--	--	--	--	--			
			5	52,000	7.9	31.3		6.4	107	--	--	--	--	--	--	--	--	--		
			10	52,000	7.9	31.3		6.5	108	--	--	--	--	--	--	--	--	--		
			20	50,000	7.9	31.3		6.7	110	--	--	--	--	--	--	--	--	--	--	
Do.	1935	3	1	51,000	8.0	29.0	--	7.0	111	2.0	--	1.0	0.0	0.06	0.01	0.00	0.01			
			5	51,000	8.0	29.1		6.7	106	--	--	--	--	--	--	--	--	--		
			10	51,000	8.0	29.3		6.6	105	--	--	--	--	--	--	--	--	--		
			19.5	51,000	8.0	29.4		6.6	105	2.7	--	--	.8	.0	.10	.00	.02	.02		
Aug. 27	0730	3	1	52,000	8.0	27.0	--	6.0	92	1.4	--	.8	.0	.03	.00	.00	.01			
			5	52,000	8.0	27.0		6.0	92	--	--	--	--	--	--	--	--	--		
			10	54,000	8.0	27.0		5.9	92	--	--	--	--	--	--	--	--	--		
			19	54,000	8.0	27.2		6.0	94	1.4	--	--	.6	.0	.22	.00	.01	.02		
Do.	1030	3	1	54,000	7.9	28.0	221	6.2	98	--	--	--	--	--	--	--	--			
			5	54,000	7.9	28.0		6.0	95	--	--	--	--	--	--	--	--	--		
			10	52,000	7.9	28.5		5.9	92	--	--	--	--	--	--	--	--	--		
			19	54,000	7.9	28.8		6.2	100	--	--	--	--	--	--	--	--	--		
Do.	1415	3	1	52,000	7.9	32.9	196	7.4	128	--	--	--	--	--	--	--	--			
			5	52,000	7.8	32.3		6.9	117	--	--	--	--	--	--	--	--	--		
			10	52,000	7.8	32.1		6.6	112	--	--	--	--	--	--	--	--	--		
			19	52,000	7.8	32.2		6.4	108	--	--	--	--	--	--	--	--	--		

1/ Determined at data-collection site.

Table 6B.---Quality of water in the Guadalupe estuary, 1970 water year
Chemical analyses

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (microhosms at 25° C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness		Density (g/ml at 20° C)
													Calcium, mg/l	Non-carbonate, mg/l	
<u>Line 1. Victoria Channel</u>															
Feb. 12	1345	2	12	1,000	84	16	89		246	48	153	534	274	72	
May 6	1005	2	12	948	86	14	89		250	47	150	529	274	69	
June 2	1130	2	12	995	100	22	70		292	42	148	548	340	100	
Aug. 12	1315	2	13.5	833	115	22	31		176	43	182	508	376	232	
<u>Line 4. Victoria Channel</u>															
Apr. 7	1810	2	12	1,600	44	55	189		218	82	342	834	338	160	
<u>Line 5. Victoria Channel</u>															
Apr. 7	1740	2	1	2,920	87	54	434		229	133	750	1,580	440	252	
<u>Line 5a. Victoria Channel</u>															
Apr. 7	1730	2	1	2,260	52	27	326		205	69	505	1,090	242	74	
<u>Line 6. Victoria Channel</u>															
Apr. 7	1710	2	11	7,020	108	148	1,150		232	318	2,030	3,880	880	690	
<u>Line 8. Victoria Channel</u>															
Apr. 7	1620	2	12	10,400	120	229	1,810		209	466	3,200	5,950	1,240	1,070	
<u>Line 14. Guadalupe River</u>															
Apr. 8	0950	2	10	707	82	19	42		274	49	64	412	282	58	
May 6	1240	2	11.5	--	--	--	--		--	43	61	--	--	--	
<u>Line 17. Guadalupe River</u>															
Aug. 11	1510	2	7	606	76	3.5	59		186	52	84	386	204	52	
<u>Line 20. Guadalupe Bay</u>															
Feb. 12	1600	2	2	720	78	17	45		260	50	64	405	266	53	
<u>Line 22. Guadalupe Bay</u>															
Apr. 8	0815	2	3	759	82	20	43		254	50	69	419	288	66	
<u>Line 23. Hyres Bay</u>															
Apr. 6	1330	2	2.5	1,510	53	30	204		185	77	322	797	254	92	
<u>Line 24. San Antonio Bay</u>															
Apr. 6	1700	4	1	1,850	83	40	234		247	94	395	996	370	151	
Do.	1600	10	3.5	2,420	133	286	2,230		201	586	3,950	7,300	1,510	1,350	
May 5	1515	2	1	4,030	62	94	651		124	116	615	1,310	370	211	
June 3	0835	2	1	11,800	119	278	1,980		169	200	1,180	2,280	540	408	
Aug. 11	1310	2	9	16,200	108	192	1,440		206	168	1,178	4,740	1,060	891	
<u>Line 25. San Antonio Bay</u>															
Apr. 7	1545	2	8	8,350	100	187	1,380		214	376	2,440	4,610	1,020	844	
<u>Line 26. San Antonio Bay</u>															
May 4	1320	2	4.5	15,400	143	404	2,540		172	724	4,700	8,610	2,020	1,870	
Do.	1345	4	5	14,000	131	329	2,390		148	656	4,280	7,880	1,680	1,540	
June 3	1035	2	4.5	523	--	--	--		--	25	60	--	--	--	
Do.	1110	4	4	1,830	--	--	--		--	81	445	--	--	--	
<u>Line 28. San Antonio Bay</u>															
Apr. 7	1230	1	1	22,100	186	529	4,220		180	1,040	7,350	13,300	2,640	2,490	
Do.	1050	8	5	24,600	215	660	4,990		172	1,280	8,950	16,200	3,250	3,110	

See footnote at end of table.

Table 6B.--Quality of water in the Guadalupe estuary, 1970 water year

Chemical analyses--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25° C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K) ^{1/}	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃		Density (g/ml at 20°C)
													Calcium, magnesium	Non-carbonate	
<u>Line 29. San Antonio Bay</u>															
Feb. 11	1500	2	1	29,500	255	745	5,550	167	1,460	10,000	18,100	3,700	3,560		
Apr. 7	1015	4	14	28,400	232	698	5,410	166	1,400	9,650	17,500	3,450	3,310		
May 5	1315	4	7	20,000	180	528	3,650	154	1,050	6,600	12,100	2,620	2,470		
Aug. 12	0955	4	13	35,700	280	827	6,800	154	1,770	12,000	21,800	4,100	3,980		
<u>Line 30. San Antonio Bay</u>															
Feb. 11	1310	2	1	34,200	285	824	6,360	160	1,660	11,400	20,600	4,100	3,970		
Apr. 7	1320	3	6	39,900	315	1,010	7,940	154	1,970	14,200	25,500	4,950	4,820		
May 5	1135	7	13.5	34,200	272	832	6,350	166	1,630	11,400	20,600	4,100	3,960		
Aug. 12	1100	7	12.5	18,700	164	474	3,290	176	868	6,000	10,900	2,360	2,220		
<u>Line 40. Saluria Bayou</u>															
Aug. 26	1935	3	1	51,900	--	--	--	--	--	--	--	--	--	--	--
			19.5	51,900	400	1,460	10,400	154	2,600	19,000	33,900	7,000	6,870		
Aug. 27	0730	3	1	53,000	--	--	--	--	--	--	--	--	--	--	--
			19	53,000	--	--	--	--	--	--	--	--	--	--	--

^{1/} Included in sodium-ion concentration.

Table 6C.--Quality of water in the Guadalupe estuary, 1970 water year

Analyses for selected ions

(Results in micrograms per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25°C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Fluoride (F) a/	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Bromide (Br) a/	Iodide (I) a/	Strontium (Sr)
<u>Line 1. Victoria Channel</u>																			
Feb. 12	1345	2	12	1,000	--	--	--	0.2	140	--	--	--	--	--	--	--	0.6	0.072	--
May 6	1005	2	12	948	--	--	--	.2	160	--	--	--	--	--	--	--	1.3	.079	--
June 2	1130	2	12	995	--	--	--	.2	130	--	--	--	--	--	--	--	1.1	.065	--
Aug. 12	1315	2	13.5	833	--	--	--	.2	130	--	--	--	--	--	--	--	.0	.066	--
<u>Line 4. Victoria Channel</u>																			
Apr. 7	1810	2	12	1,600	--	--	--	.2	230	--	--	--	--	--	--	--	1.7	.085	--
<u>Line 5. Victoria Channel</u>																			
Apr. 7	1740	2	1	2,920	--	--	--	.2	390	--	--	--	--	--	--	--	3.7	.080	--
<u>Line 5a. Victoria Channel</u>																			
Apr. 7	1730	2	1	2,260	--	--	--	.3	470	--	--	--	--	--	--	--	1.7	.065	--
<u>Line 6. Victoria Channel</u>																			
Apr. 7	1710	2	11	7,020	--	--	--	.3	700	--	--	--	--	--	--	--	7.1	.067	--
<u>Line 8. Victoria Channel</u>																			
Apr. 7	1620	2	12	10,400	--	--	--	.4	980	--	--	--	--	--	--	--	11	.054	--
<u>Line 14. Guadalupe River</u>																			
Apr. 8	0950	2	10	707	--	--	--	.2	150	--	--	--	--	--	--	--	1.8	.032	--
May 6	1240	2	11.5	--	--	--	--	.2	150	--	--	--	--	--	--	--	1.1	.027	--
<u>Line 17. Guadalupe River</u>																			
Aug. 11	1510	2	7	606	--	--	--	.5	270	--	--	--	--	--	--	--	.4	.036	--
<u>Line 20. Guadalupe Bay</u>																			
Feb. 12	1600	2	2	720	--	--	--	.3	150	--	--	--	--	--	--	--	.2	.027	--
<u>Line 22. Guadalupe Bay</u>																			
Apr. 8	0815	2	3	759	--	--	--	.2	120	--	--	--	--	--	--	--	1.6	.035	--
<u>Line 23. Hynes Bay</u>																			
Apr. 6	1530	2	2.5	1,510	--	--	--	.2	230	--	--	--	--	--	--	--	1.2	.028	--
<u>Line 24. San Antonio Bay</u>																			
Apr. 6	1700	4	1	1,850	--	--	--	.3	250	--	--	--	--	--	--	--	1.8	.030	--
			4	12,600	--	--	--	.4	1,100	--	--	--	--	--	--	--	14	.037	--
Do.	1600	10	3.5	2,420	--	--	--	.3	290	--	--	--	--	--	--	--	2.3	.029	--
May 5	1515	2	1	4,030	--	--	--	.3	450	--	--	--	--	--	--	--	4.8	.037	--
			10	11,800	--	--	--	.4	910	--	--	--	--	--	--	--	13	.031	--
June 3	0835	2	1	622	--	--	--	.2	110	--	--	--	--	--	--	--	4.0	.025	--
			10	8,670	--	--	--	.3	730	--	--	--	--	--	--	--	11	.016	--
Aug. 11	1310	2	9	16,200	--	--	--	.5	1,600	--	--	--	--	--	--	--	15	.046	--
<u>Line 25. San Antonio Bay</u>																			
Apr. 7	1545	2	8	8,350	--	--	--	.4	8,350	--	--	--	--	--	--	--	9.1	.036	--
<u>Line 26. San Antonio Bay</u>																			
May 4	1320	2	4.5	15,400	--	--	--	.5	1,100	--	--	--	--	--	--	--	17	.039	--
Do.	1345	4	5	14,000	--	--	--	.5	1,000	--	--	--	--	--	--	--	15	.046	--
June 3	1035	2	4.5	523	--	--	--	.2	80	--	--	--	--	--	--	--	1.3	.025	--
Do.	1110	4	4	1,830	--	--	--	.2	200	--	--	--	--	--	--	--	2.0	.019	--
<u>Line 28. San Antonio Bay</u>																			
Apr. 7	1230	1	1	22,100	--	--	--	.5	2,200	--	--	--	--	--	--	--	27	.030	--
			14	26,300	--	--	--	.5	2,200	--	--	--	--	--	--	--	32	.033	--
Do.	1050	8	5	24,600	--	--	--	.5	1,600	--	--	--	--	--	--	--	28	.033	--

See footnote at end of table.

Table 6C.--Quality of water in the Guadalupe estuary, 1970 water year

Analyses for selected ions--Continued

(Results in micrograms per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25° C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Fluoride (F) a/	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Bromide (Br) a/	Iodide (I) a/	Strontium (Sr)
<u>Line 29. San Antonio Bay</u>																			
Feb. 11	1500	2	1	29,500	--	--	--	0.6	2,500	--	--	--	--	--	--	--	32	0.033	--
Apr. 7	1015	4	14	28,400	--	--	--	.5	2,400	--	--	--	--	--	--	--	34	.033	--
May 5	1315	4	7	20,000	--	--	--	.5	1,300	--	--	--	--	--	--	--	23	.034	--
Aug. 12	0955	4	13	35,700	--	--	--	.7	3,100	--	--	--	--	--	--	--	18	.071	--
<u>Line 30. San Antonio Bay</u>																			
Feb. 11	1310	2	1	34,200	--	--	--	.6	2,600	--	--	--	--	--	--	--	39	.034	--
Apr. 7	1320	3	6	39,900	--	--	--	.7	2,800	--	--	--	--	--	--	--	49	.044	--
May 5	1135	7	13.5	34,200	--	--	--	.7	3,100	--	--	--	--	--	--	--	33	.033	--
Aug. 12	1100	7	12.5	18,700	--	--	--	.5	1,400	--	--	--	--	--	--	--	19	.051	--
<u>Line 40. Saluria Bayou</u>																			
Aug. 26	1935	3	19.5	51,900	--	--	--	.8	4,100	--	--	--	--	--	--	--	58	.046	--

a/ Results in milligrams per liter.

Mission-Aransas Estuary

The Mission-Aransas estuary covers an area of about 140 square miles and consists of the tidal parts of Mission River, Aransas River, Copano Creek and other tributaries, Mission Bay, Copano Bay, Aransas Bay, St. Charles Bay, parts of the Intracoastal Waterway, Lydia Ann Channel, and Aransas Pass (Figure 8).

Water depth at mlw is less than 2 feet in Mission Bay, less than 8 feet in Copano Bay, less than 13 feet in

Aransas Bay, less than 5 feet in St. Charles Bay, about 15 feet in the Intracoastal Waterway, about 20 feet in the Lydia Ann Channel, and more than 40 feet in Aransas Pass.

Water-quality data (Table 7) for the Mission-Aransas estuary were collected during June, July, and August at many of the data-collection sites shown on Figure 8.

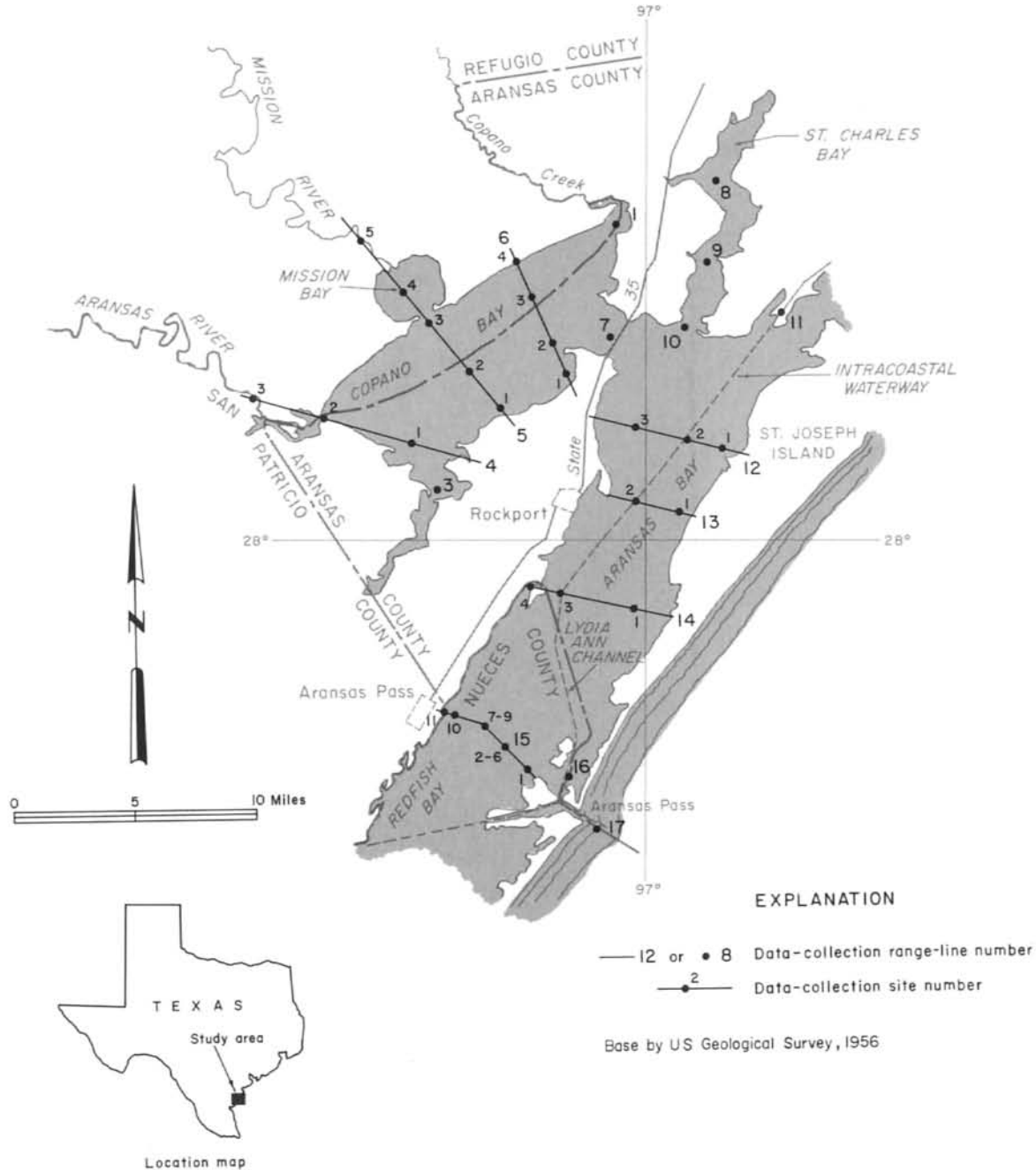


Figure 8.—Data-Collection Sites in the Mission-Aransas Estuary

Table 7A.--Quality of water in the Mission-Aransas estuary, 1970 water year
Nutrient and other environmental characteristics

(Results in milligrams per liter except as indicated)

Date of collection	Time (24 hour)	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH		Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni- trate nitrogen (N)	Ammo- nia nitrogen (N)	Ni- trite nitrogen (N)	Ortho- phosphate as phosphorus (P)	Total phosphorus (P)		
					1/	1/			Concentration	Percent saturation										
<u>Line 1. Copano Bay</u>																				
Aug. 5	1150	2	1	26,000	7.9	29.7	98	8.3	119	1.5	--	22	8.6	0.0	0.02	0.01	0.03	0.05		
			6	34,000	8.0	29.6			6.9	103									1.7	
<u>Line 4. Copano Bay</u>																				
Aug. 5	1015	1	1	22,000	7.9	29.1	51	8.0	111	--	--	--	--	--	--	--	--	--	--	
			7.5	22,000	7.8	29.0			7.3	101										--
Do.	1050	2	1	24,000	7.5	29.7	70	7.2	101	3.8	--	32	11	.1	.63	.03	.07	.08	.08	
			4.5	24,000	7.4	29.8			5.1	73										3.4
<u>Line 5. Copano Bay</u>																				
Aug. 5	0945	1	1	24,000	8.2	28.5	56	7.3	101	--	--	--	--	--	--	--	--	--	--	
			7.5	24,000	7.9	28.4			7.3	100										--
Do.	0925	2	1	26,000	8.0	28.2	74	8.6	119	--	--	--	--	--	--	--	--	--	--	
			8	28,000	8.0	28.2			7.8	110										--
Do.	0915	3	1	22,000	7.8	28.3	45	7.4	101	--	--	--	--	--	--	--	--	--	--	
			4	24,000	7.8	28.4			7.6	106										--
<u>Line 6. Copano Bay</u>																				
Aug. 5	0835	1	1	26,000	7.9	28.2	71	8.5	118	--	--	--	--	--	--	--	--	--	--	
			4.5	28,000	7.9	28.2			8.3	117										--
Do.	0845	2	1	24,000	8.0	28.4	90	8.6	119	--	--	--	--	--	--	--	--	--	--	
			5	24,000	7.9	28.6			8.5	120										--
Do.	0850	3	1	28,000	8.0	28.6	94	8.4	120	--	--	--	--	--	--	--	--	--	--	
			4	30,000	8.0	28.6			8.3	120										--
Do.	0900	4	1	32,000	8.1	28.4	66	8.3	119	--	--	--	--	--	--	--	--	--	--	
			7.5	36,000	8.0	28.5			7.8	115										--
<u>Line 7. Copano Bay</u>																				
Aug. 5	1220	2	1	30,000	7.9	30.0	104	8.9	131	3.2	--	--	8.2	.0	.00	.02	.03	.06	.06	
			5	32,000	7.9	30.0			8.4	124										--
			10	42,000	7.8	29.8			5.7	89										2.5
<u>Line 8. St. Charles Bay</u>																				
July 16	1520	2	1	14,000	8.0	29.5	48	8.2	111	--	--	--	--	--	--	--	--	--	--	
			4	14,000	8.0	30.0			8.0	110										2.2
Aug. 5	--	2	1	21,000	8.3	30.6	79	10.1	144	--	--	--	--	--	--	--	--	--	--	
			5	27,000	8.2	30.4			5.9	86										--
<u>Line 9. St. Charles Bay</u>																				
July 16	1620	2	1	23,000	7.9	30.0	58	9.8	140	--	--	--	--	--	--	--	--	--	--	
			4.5	23,000	7.8	30.0			9.0	129										--
Aug. 5	1555	2	1	40,000	7.8	30.5	46	8.2	128	--	--	--	--	--	--	--	--	--	--	
			4	40,000	7.6	30.4			8.3	128										--
<u>Line 10. St. Charles Bay</u>																				
July 16	1635	2	1	29,000	7.9	29.7	51	8.4	122	--	--	--	--	--	--	--	--	--	--	
			4	29,000	7.9	29.8			8.5	123										2.4
Aug. 5	1540	2	1	37,000	8.2	30.5	36	8.8	133	--	--	--	--	--	--	--	--	--	--	
			5	34,000	8.2	30.4			8.6	130										--
<u>Line 11. Intracoastal Waterway</u>																				
Aug. 5	1510	2	1	24,000	8.2	30.3	--	9.0	129	2.4	18	--	8.6	.0	.00	.00	.09	.09	.09	
			5	28,000	8.2	30.0			7.9	114										--
			10	48,000	8.1	29.7			6.2	100										--
			15	56,000	8.1	29.7			5.4	89										2.0
<u>Line 12. Aransas Bay</u>																				
Aug. 5	1440	1	1	44,000	7.6	30.4	102	8.9	141	--	--	--	--	--	--	--	--	--	--	
			4	44,000	7.7	30.4			9.1	142										--
			7	54,000	7.4	29.6			5.0	82										--
Do.	--	3	1	32,000	8.0	30.0	86	9.2	135	--	--	--	--	--	--	--	--	--	--	
			5	34,000	7.9	30.0			8.6	128										--
			10	47,000	7.8	30.2			5.5	89										--

See footnote at end of table.

Table 7A.--Quality of water in the Mission-Aransas estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time (24 hour)	Site	Depth below water surface (ft)	Specific Conductance (micromhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Biochemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Orthophosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 13. Aransas Bay</u>																	
Aug. 5	1400	2	1	37,000	8.0	30.4	107	9.3	141	2.1	--	6.0	0.0	0.00	0.01	0.02	0.05
			5	37,000	8.0	30.0		8.9	135	--							
			11.5	56,000	7.9	30.4		4.7	78	2.8							
<u>Line 14. Aransas Bay</u>																	
Aug. 6	1000	1	1	36,000	8.2	28.8	120	7.4	109	--	--	--	--	--	--	--	--
			5	42,000	8.1	28.7		6.7	102	--							
			9.5	47,000	8.0	28.7		5.0	77	--							
Do.	1110	1	1	57,000	8.0	30.7	61	6.6	114	--	--	--	--	--	--	--	--
			5	57,000	8.0	30.5		5.2	90	--							
			10.5	58,000	8.0	30.5		4.4	76	--							
Do.	0945	3	1	34,000	8.2	29.5	114	7.3	109	--	--	--	--	--	--	--	--
			5	37,000	8.2	29.5		7.1	106	--							
			10	44,000	7.9	29.1		2.1	32	--							
			13	46,000	7.8	28.8		.6	9	--							
Do.	0910	4	1	46,000	8.0	29.5	84	4.9	77	1.7	34	2.8	.0	.05	.01	.01	.03
			5	47,000	8.0	29.5		4.7	75	--							
			10	47,000	8.0	29.2		4.6	72	--							
			16	47,000	8.0	29.2		4.6	72	2.4							
<u>Line 16. Lydia Ann Channel</u>																	
July 14	1435	2	1	50,000	8.1	26.7	160	6.7	102	1.4	--	.6	.0	.04	.00	.00	.10
			5	50,000	8.2	26.6		6.7	102	--							
			10	50,000	8.2	26.6		6.8	103	--							
			20	52,000	8.3	26.6		6.5	100	1.5							
Aug. 6	1015	2	1	42,000	8.2	29.5	145	7.1	111	1.3	28	4.0	.0	.00	.00	.00	.00
			5	42,000	8.2	29.2		6.7	103	--							
			10	46,000	8.1	29.2		6.0	94	--							
			15	44,000	8.1	29.3		6.1	95	--							
			20	46,000	8.1	29.2		5.9	92	1.7							
Do.	1035	2	1	46,000	8.1	29.9	137	6.9	110	--	--	--	--	--	--	--	--
			5	48,000	8.1	29.7		6.3	102	--							
			10	50,000	8.1	29.6		5.5	89	--							
			15	50,000	8.0	29.5		5.3	85	--							
			20	50,000	8.0	29.5		5.3	85	--							
			25	50,000	8.0	29.6		5.3	85	--							

1/ Determined at data-collection site.

Table 7B.--Quality of water in the Mission-Aransas estuary, 1970 water year
Chemical analyses

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25° C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃		Density (g/ml at 20°C)
													Calcium	Non-carbonate	
<u>Line 1. Copano Bay</u>															
Aug. 5	1150	2	6	28,300	238	731	5,570	160	1,410	10,000	18,000	3,600	3,470		
<u>Line 4. Copano Bay</u>															
Aug. 5	1050	2	4.5	22,000	395	368	4,030	112	436	7,600	12,900	2,500	2,410		
<u>Line 8. St. Charles Bay</u>															
July 16	1520	2	4	12,200	102	308	1,950	166	516	3,600	6,570	1,520	1,380		
<u>Line 10. St. Charles Bay</u>															
July 16	1635	2	4	29,000	238	634	5,200	160	1,340	9,200	16,700	3,200	3,070		
<u>Line 11. Intracoastal Waterway</u>															
Aug. 5	1510	2	15	47,700	365	1,290	9,020	162	2,470	16,400	29,600	6,200	6,070		
<u>Line 14. Aransas Bay</u>															
Aug. 6	0910	2	16	47,800	385	1,290	9,250	154	2,460	16,800	30,300	6,250	6,120		
<u>Line 16. Lydia Ann Channel</u>															
Aug. 6	1015	2	20	44,900	345	1,140	8,700	150	2,250	15,600	28,100	5,550	5,430		

1/ Included in sodium-ion concentration.

Table 7C.--Quality of water in the Mission-Aransas estuary, 1970 water year

Analyses for selected ions

(Results in micrograms per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25°C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Fluoride (F) _{a/}	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Bromide (Br) _{a/}	Iodide (I) _{a/}	Strontium (Sr)
<u>Line 1. Copano Bay</u>																			
Aug. 5	1150	2	6	28,300	--	--	--	0.7	2,800	--	--	--	--	--	--	--	33	0.080	--
<u>Line 4. Copano Bay</u>																			
Aug. 5	1050	2	4.5	22,000	--	--	--	.5	6,100	--	--	--	--	--	--	--	33	.13	--
<u>Line 8. St. Charles Bay</u>																			
July 16	1520	2	4	12,200	0	0	50	.5	1,500	0	2	0	0	<10	<0.5	0	12	.048	2,280
<u>Line 10. St. Charles Bay</u>																			
July 16	1635	2	4	29,000	--	--	--	.6	2,200	--	--	--	--	--	--	--	30	.077	--
<u>Line 11. Intracoastal Waterway</u>																			
Aug. 5	1510	2	15	47,700	--	--	--	.8	3,900	--	--	--	--	--	--	--	56	.040	--
<u>Line 14. Aransas Bay</u>																			
Aug. 6	0910	2	16	47,800	--	--	--	.9	2,000	--	--	--	--	--	--	--	57	.050	--
<u>Line 16. Lydia Ann Channel</u>																			
Aug. 6	1015	2	20	44,900	--	--	--	.8	3,700	--	--	--	--	--	--	--	54	.092	--

a/ Results in milligrams per liter.

Table 7D.--Quality of water in the Mission-Aransas estuary, 1970 water year

Insecticide and herbicide analyses

Date of Collection	Time	Type of Sample	(Water analyses in micrograms per liter; sediment analyses in micrograms per kilogram sediment, dry weight)															
			Insecticides						Herbicides									
			Aldrin	DDD	DDE	DDT	Diel-drin	Endrin	Heptachlor	Heptachlor Epoxide	Lindane	Chlordane	Parathion	Methyl Parathion	Diazinon	2,4-D	Silvex	2,4,5-T
Jul. 16	1520	Water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00	0.13
		Sediment	.0	.0	.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	<11	<1.4	<1.7

Line 8, Site 2, St. Charles Bay

Nueces Estuary

The Nueces estuary covers an area of about 180 square miles and consists of the tidal parts of the Nueces River and other tributaries, Nueces Bay, Tule Lake Channel, Corpus Christi Bay, Aransas Pass, and parts of the Intracoastal Waterway (Figure 9).

Water depth at mlw is less than 13 feet in Corpus Christi Bay; less than 3 feet in Nueces Bay; more than 40

feet in Aransas Pass, Corpus Christi Ship Channel, and Tule Lake Channel; and about 15 feet in the Intracoastal Waterway.

Water-quality data for the estuary (Table 8) were collected during July and August at most of the sites shown on Figure 9.

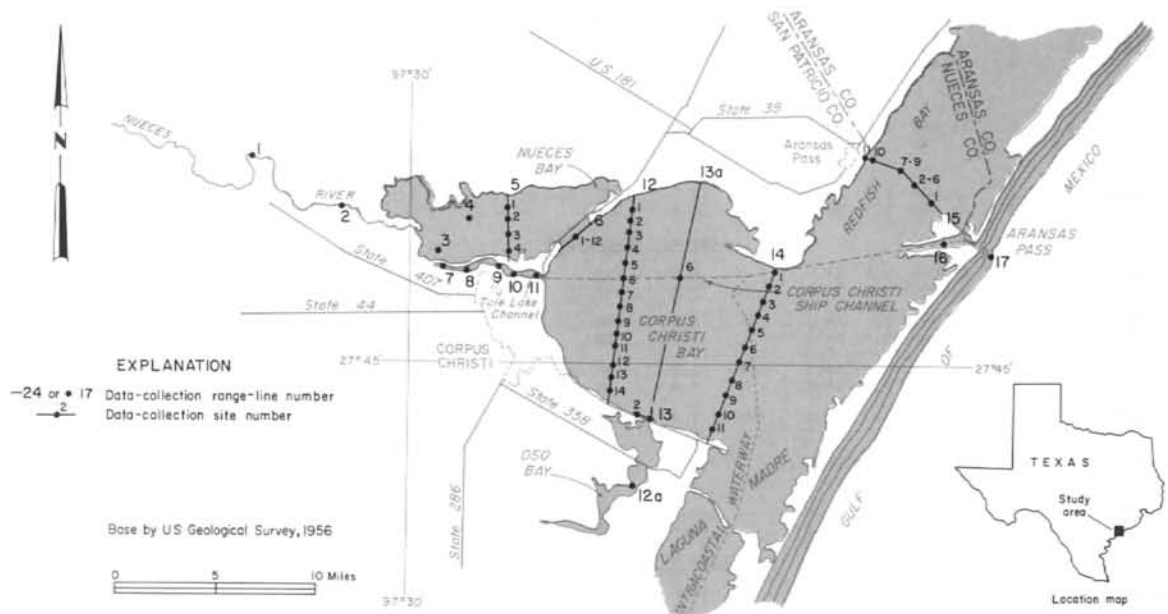


Figure 9.—Data-Collection Sites in the Nueces Estuary

Table 8A.--Quality of water in the Nueces estuary, 1970 water year

Nutrient and other environmental characteristics

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH		Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Orthophosphate as phosphorus (P)	Total phosphorus (P)
					1/	1/			Concentration	Percent saturation								
<u>Line 1. Nueces River</u>																		
July 13	1535	2	1	1,000	7.7	32.2	42	7.9	107	3.3	--	16	0.0	0.01	0.02	0.09	0.10	
			5	1,200	7.6	32.1		7.3	99	--								
			8	1,100	7.6	31.8		7.1	96	--								
			9	3,200	6.7	31.0		1.0	14	--								
			11	6,500	6.5	30.8		.4	5	2.2								
<u>Line 2. Nueces River</u>																		
July 13	1650	2	1	3,700	8.2	31.0	33	8.3	112	--	--	--	--	--	--	--	--	
			5	3,500	8.2	31.0		7.9	107	--								
<u>Line 3. Nueces River</u>																		
July 13	1740	2	1.5	14,000	8.2	30.7	8	7.4	103	5.2	--	8.2	.0	.07	.03	.09	.37	
<u>Line 4. Nueces Bay</u>																		
Aug. 5	1540	2	1	18,000	8.2	30	--	10.1	140	--	--	--	--	--	--	--	--	
			4	18,000	8.1	30		8.4	117	--								
<u>Line 5. Nueces Bay</u>																		
July 14	0900	1	1	22,000	8.5	28.2	9	9.0	123	--	--	--	--	--	--	--	--	
			4	21,000	8.0	28.3		10.7	147	2.9								30
Do.	0925	2	1	23,000	8.9	28.3	--	6.3	86	--	--	--	--	--	--	--	--	
			4	23,000	8.7	28.3		6.7	92	--								
Do.	0930	3	1	25,000	8.7	28.7	18	5.9	83	--	--	--	--	--	--	--	--	
			3.5	25,000	8.7	28.7		5.9	83	--								
Do.	1010	4	1	33,000	--	28.0	20	7.0	101	--	--	--	--	--	--	--	--	
			3	33,000	--	28.1		4.5	65	4.4								36
Aug. 5	1435	1	1	32,000	8.5	29.5	--	10.3	151	--	--	--	--	--	--	--	--	
			5	34,000	8.3	29		8.6	126	--								
Do.	1500	4	1	42,000	8.5	30.5	--	10.8	169	--	--	--	--	--	--	--	--	
			4	40,000	8.5	30.5		10.8	169	--								
<u>Line 6. Nueces Bay</u>																		
July 14	1115	6	1	39,000	--	30.4	33	10.6	161	--	--	--	--	--	--	--	--	
			5	39,000	--	30.4		10.4	158	--								
Do.	1130	9	1	39,000	--	30.0	28	6.2	94	2.6	--	4.6	.0	.10	.03	.10	.09	
			10	39,000	--	29.8		6.0	91	--								
			15	39,000	--	29.7		5.8	88	2.5								--
Do.	1145	12	1	39,000	--	30.1	22	6.0	91	--	--	--	--	--	--	--	--	
			7	39,000	--	30.2		6.2	94	--								
Aug. 5	--	6	1	40,000	8.5	30	--	8.2	126	--	--	--	--	--	--	--	--	
			6	42,000	8.3	29		4.7	72	--								
Do.	1405	12	1	40,000	8.3	30.5	--	10.0	156	--	--	--	--	--	--	--	--	
			6	42,000	8.2	29		6.4	98	--								
<u>Line 7. Tule Lake Channel</u>																		
July 14	0855	2	1	40,000	7.8	30	121	4.0	62	--	--	--	--	--	--	--	--	
			5	41,000	7.8	30		3.7	57	--								
			10	41,000	7.8	30		3.1	48	--								
			20	41,000	7.6	30		1.5	23	--								
			25	48,000	7.3	28		.0	0	--								
			30	48,000	7.3	28		.0	0	--								
Aug. 6	1300	2	1	32,000	6.9	29.5	--	9.0	132	--	--	--	--	--	--	--	--	
			5	34,000	6.6	28.5		4.3	63	--								
			10	38,000	6.2	28		1.8	26	--								
			20	42,000	6.2	27.5		.0	0	--								
			30	47,000	6.1	27.5		.0	0	--								
			41	47,000	6.1	27.5		.0	0	--								

See footnote at end of table.

Table 8A.--Quality of water in the Nueces estuary, 1970 water year
Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)	
								Concentration	Percent saturation									
<u>Line 8. Tule Lake Channel</u>																		
July 14	0915	2	1	41,000	7.2	30	130	1.5	23	--	--	--	--	--	--	--	--	
			5	41,000	7.3	30		1.5	23	--	--	--	--	--	--	--	--	--
			10	41,000	7.2	30		1.1	17	--	--	--	--	--	--	--	--	--
			20	45,000	7.3	29.5		.0	0	--	--	--	--	--	--	--	--	--
			25	48,000	7.2	28.5		.0	0	--	--	--	--	--	--	--	--	--
			34	45,000	7.2	28		.0	0	--	--	--	--	--	--	--	--	--
<u>Line 9. Tule Lake Channel</u>																		
July 14	0935	2	1	42,000	7.6	30.5	117	4.2	66	2.0	--	4.1	0.0	0.36	0.00	0.06	0.12	
			5	44,000	7.6	30.5		4.2	66	--	--	--	--	--	--	--	--	
			10	42,000	7.4	30.5		4.2	66	--	--	--	--	--	--	--	--	
			20	42,000	7.2	30.5		3.2	50	--	--	--	--	--	--	--	--	
			25	46,000	7.6	30		2.1	33	--	--	--	--	--	--	--	--	
			30	50,000	7.3	28		.0	0	--	--	--	--	--	--	--	--	--
Aug. 6	1320	2	1	36,000	6.8	30	--	7.8	118	--	--	--	--	--	--	--	--	
			5	38,000	6.7	29		5.1	76	--	--	--	--	--	--	--		
			10	42,000	6.8	29		4.1	63	--	--	--	--	--	--	--		
			15	42,000	6.7	28.5		3.2	48	--	--	--	--	--	--	--		
			20	44,000	6.5	28		.0	0	--	--	1.7	--	--	--	--		
			30	47,000	6.8	28		1.4	21	--	--	--	--	--	--	--		
42	47,000	6.8	27.5	1.8	27	--	--	--	--	--	--	--						
<u>Line 10. Tule Lake Channel</u>																		
July 14	1000	2	1	42,000	7.9	29.5	64	5.5	86	--	--	--	--	--	--	--	--	
			5	42,000	7.9	29.5		5.3	83	--	--	--	--	--	--	--		
			10	42,000	7.9	29.5		4.7	73	--	--	--	--	--	--	--		
			20	45,000	7.8	30		3.9	62	--	--	--	--	--	--	--		
			25	45,000	7.7	29.5		3.5	55	--	--	--	--	--	--	--		
			30	45,000	7.4	29.5		3.1	48	--	--	--	--	--	--	--		
Aug. 6	1330	2	1	40,000	6.9	30	--	8.5	131	--	--	--	--	--	--	--	--	
			5	40,000	6.9	30		7.9	122	--	--	--	--	--	--			
			10	40,000	6.8	29		4.0	61	--	--	--	--	--	--			
			15	42,000	6.8	29		3.3	51	--	--	--	--	--	--			
			20	44,000	6.6	28.5		.3	5	--	--	--	--	--	--			
			25	47,000	6.8	28		1.7	26	--	--	--	--	--	--			
July 14	1020	2	1	42,000	7.9	29.5	79	5.0	78	2.7	28	1.8	.0	.01	.02	.04	.08	
			5	42,000	7.8	29.5		4.5	70	--	--	--	--	--	--	--		
			10	42,000	7.9	29.5		4.3	67	--	--	--	--	--	--	--		
			15	44,000	7.7	29.5		2.9	45	--	--	--	--	--	--	--		
			20	46,000	7.6	29		.4	6	--	--	--	--	--	--	--		
			25	45,000	7.5	29		.0	0	--	--	--	--	--	--	--		
Aug. 6	1350	2	1	42,000	7.1	29.5	--	6.8	106	--	--	--	--	--	--	--	--	
			5	42,000	6.9	29		4.8	74	--	--	--	--	--	--			
			10	42,000	6.7	29		3.0	46	--	--	--	--	--	--			
			15	47,000	7.0	29		5.6	88	--	--	--	--	--	--			
			20	47,000	7.0	29		5.0	78	--	--	--	--	--	--			
			25	47,000	6.9	28.5		3.3	51	--	--	--	--	--	--			
Aug. 6	1350	2	30	47,000	6.8	28	1.9	29	--	--	--	--	--	--	--			
			43	50,000	6.8	28	2.0	31	--	--	--	--	--	--				

See footnote at end of table.

Table 8A.--Quality of water in the Nueces estuary, 1970 water year

Nutrient and other environmental characteristics--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 12. Corpus Christi Bay</u>																	
Aug. 6	0930	2	1	31,000	7.8	29	--	8.0	116	--	--	--	--	--	--	--	--
			5	31,000	7.7	29	--	7.6	110	--	--	--	--	--	--	--	--
			10	31,000	7.7	29	--	6.6	96	--	--	--	--	--	--	--	--
			12	31,000	7.6	29	--	6.1	88	--	--	--	--	--	--	--	--
Do.	1005	5	1	40,000	7.4	29	--	7.6	115	--	--	--	--	--	--	--	--
			5	40,000	7.4	29	--	6.8	103	--	--	--	--	--	--	--	
			10	40,000	7.4	29	--	6.2	94	--	--	--	--	--	--	--	
			13	42,000	7.3	29	--	4.6	71	--	--	--	--	--	--	--	
Do.	0945	6	1	38,000	7.6	29	--	7.5	112	--	--	2.0	--	--	--	--	--
			5	42,000	7.6	29	--	7.2	111	--	--	--	--	--	--	--	
			10	42,000	7.6	29	--	6.8	105	--	--	--	--	--	--	--	
			20	44,000	7.6	29	--	6.4	100	--	--	--	--	--	--	--	
			30	47,000	7.4	28.5	--	3.9	60	--	--	--	--	--	--	--	
			40	47,000	7.4	28.5	--	3.6	55	--	--	4.7	--	--	--	--	
Do.	1015	14	1	38,000	7.3	29	--	6.9	103	--	--	--	--	--	--	--	--
			5	40,000	7.3	28.5	--	6.7	100	--	--	--	--	--	--	--	
			10	40,000	7.3	28.5	--	6.2	93	--	--	--	--	--	--	--	
			12	40,000	7.4	28.5	--	5.7	85	--	--	--	--	--	--	--	
<u>Line 12a. Oso Bay</u>																	
July 14	1350	2	.25	42,000	8.8	34.5	--	18.8	313	8.0	43	4.1	0.1	0.02	0.06	0.68	0.85
<u>Line 13. Oso Bay</u>																	
Aug. 6	1040	2	1	22,000	7.1	28	--	4.6	63	--	--	--	--	--	--	--	--
			6	42,000	7.1	28	--	3.6	54	--	--	--	--	--	--	--	
<u>Line 14. Corpus Christi Bay</u>																	
Aug. 6	1220	2	1	47,000	7.2	30	--	7.6	123	--	--	--	--	--	--	--	--
			5	47,000	7.1	29	--	7.5	117	--	--	--	--	--	--	--	
			10	47,000	7.1	29	--	5.6	88	--	--	--	--	--	--	--	
			14	47,000	7.0	29	--	2.8	44	--	--	--	--	--	--	--	
Do.	1050	10	1	40,000	7.1	29	--	7.2	109	--	--	--	--	--	--	--	--
			5	44,000	7.1	28	--	6.9	105	--	--	--	--	--	--	--	
			10	44,000	7.0	28	--	4.7	71	--	--	--	--	--	--	--	
			14	44,000	6.9	28	--	2.7	41	--	--	--	--	--	--		
Do.	1200	10	1	40,000	7.2	29.5	--	8.2	124	--	--	--	--	--	--	--	--
			5	47,000	7.1	28.5	--	7.5	115	--	--	--	--	--	--	--	
			10	47,000	7.1	28.5	--	6.4	98	--	--	--	--	--	--		
			13	47,000	7.1	28.5	--	6.1	94	--	--	--	--	--	--		
			14	47,000	6.8	28.5	--	.9	14	--	--	--	--	--	--		
<u>Line 15. Redfish Bay</u>																	
July 14	1545	8	1	75,000	8.3	29.6	58	6.5	120	--	--	--	--	--	--	--	--
			8	75,000	8.2	29.0	--	5.6	102	3.3	--	1.1	.0	.02	.00	.03	.11
Do.	1525	10	1	68,000	8.3	30.5	--	6.1	113	3.3	29	1.8	.0	.02	.01	.00	.04
			5	70,000	8.3	30.4	--	5.9	107	--	--	--	--	--	--	--	
			12	70,000	8.2	29.8	--	5.5	100	2.6	33	1.7	.0	.04	.01	.04	.04
Do.	1515	11	1	49,000	8.3	31.6	91	6.8	113	--	--	--	--	--	--	--	--
			5	49,000	8.3	31.3	--	6.7	110	--	--	--	--	--	--	--	
			10	50,000	8.3	31.3	--	5.8	95	--	--	--	--	--	--	--	
Aug. 6	0850	8	1	41,000	8.1	29.1	74	6.0	91	--	--	--	--	--	--	--	--
			5	42,000	8.1	29.4	--	5.6	86	--	--	--	--	--	--	--	
Do.	0900	10	1	47,000	7.9	29.2	81	4.4	69	--	--	--	--	--	--	--	--
			5	47,000	7.9	29.2	--	4.5	70	--	--	--	--	--	--	--	
			10	47,000	8.0	29.2	--	4.4	69	--	--	--	--	--	--	--	
			17	44,000	8.0	29.2	--	4.4	69	--	--	--	--	--	--	--	
<u>Line 16. Corpus Christi Ship Channel</u>																	
July 14	1340	2	1	62,000	8.1	28.1	194	7.0	115	1.5	33	.4	.0	.02	.00	.02	.02
			5	62,000	8.1	27.1	--	6.9	111	--	--	--	--	--	--	--	
			15	62,000	8.1	26.8	--	6.2	100	--	--	--	--	--	--	--	
			20	62,000	8.1	26.8	--	6.2	102	--	--	--	--	--	--	--	
			30	62,000	8.1	27.5	--	6.2	103	--	--	--	--	--	--	--	
			46	62,000	8.1	28.2	--	6.0	98	1.1	34	.6	.0	.03	.00	.02	.02

1/ Determined at data-collection site.

Table 8B.--Quality of water in the Nueces estuary, 1970 water year

Chemical analyses

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25° C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K) 1/	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃ Calcium, magnesium	Non-carbonate	Density (g/ml at 20°C)
<u>Line 1. Nueces River</u>															
July 13	1535	2	1 11	952 7,160	64 244	17 136	94 969		186 224	52 328	160 1,950	495 3,760	228 1,170	76 987	
<u>Line 3. Nueces River</u>															
July 13	1740	2	1.5	14,400	220	324	2,500		238	608	4,600	8,380	1,880	1,680	
<u>Line 5. Nueces Bay</u>															
July 14	0900	1	4	22,100	310	56	3,790		172	1,010	7,200	13,000	3,100	2,960	
Do.	1010	4	3	38,700	325	970	7,340		200	1,900	13,200	23,800	4,800	4,640	
<u>Line 6. Nueces Bay</u>															
July 14	1130	9	15	40,900	345	994	7,790		170	1,920	14,000	25,100	4,950	4,810	
<u>Line 9. Tule Lake Channel</u>															
Aug. 6	1320	2	20	46,900	395	1,370	8,970		155	1,940	17,000	29,800	6,620	6,490	
<u>Line 11. Tule Lake Channel</u>															
July 14	1020	2	1 40	41,600 53,100	345 400	1,090 1,520	8,310 10,600		164 152	2,040 2,680	15,000 19,400	26,900 34,700	5,350 7,250	5,220 7,130	
<u>Line 12. Corpus Christi Bay</u>															
Aug. 6	0945	6	1 40	41,600 48,800	375 440	952 1,250	8,130 9,760		154 151	2,020 2,140	14,400 17,800	26,000 31,500	4,850 6,250	4,720 6,130	
<u>Line 12a. Oso Bay</u>															
July 14	1350	2	.25	43,800	435	1,120	8,450		191	2,110	15,400	27,600	5,700	5,540	
<u>Line 16. Corpus Christi Ship Channel</u>															
July 14	1340	2	46	56,000	375	1,670	10,700		150	2,800	19,800	35,400	7,800	7,680	

1/ Included in sodium-ion concentration.

Table 8C.--Quality of water in the Nueces estuary, 1970 water year

Analyses for selected ions

(Results in micrograms per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micromhos at 25° C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Fluoride (F) a/	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Bromide (Br) a/	Iodide (I) a/	Strontium (Sr)
<u>Line 1. Nueces River</u>																			
July 13	1535	2	1 11	952 7,160	0 0	0 1,500	30 60	0.2 .2	150 760	0 0	6 8	2 0	0 70	<10 <10	0.8 <.5	4 0	0.38 6.0	0.060 .060	560 2,960
Aug. 6	1450	3	1	539	--	--	--	.2	190	--	--	--	--	--	--	--	.02	.051	--
<u>Line 3. Nueces River</u>																			
July 13	1740	2	1.5	14,400	--	--	--	.4	1,400	--	--	--	--	--	--	--	14	.13	--
<u>Line 5. Nueces Bay</u>																			
July 14	0900	1	4	22,100	0	0	90	.5	2,300	0	5	0	20	<10	<.5	0	22	.084	4,600
Do.	1010	4	3	38,700	60	30	140	.7	4,500	0	11	0	50	<10	<.5	1	40	.048	6,200
<u>Line 6. Nueces Bay</u>																			
July 14	1130	9	15	40,900	--	--	--	.7	3,800	--	--	--	--	--	--	--	46	.060	--
<u>Line 9. Tule Lake Channel</u>																			
Aug. 6	1320	2	20	46,900	--	--	--	.9	4,300	--	--	--	--	--	--	--	48	.073	--
<u>Line 11. Tule Lake Channel</u>																			
July 14	1020	2	1 40	41,600 53,100	-- --	-- --	-- --	.8 .8	3,800 5,000	-- --	-- --	-- --	-- --	-- --	-- --	-- --	48 62	.063 .041	-- --
<u>Line 12. Corpus Christi Bay</u>																			
Aug. 6	0945	6	1 40	41,600 48,000	-- --	-- --	-- --	.8 .8	2,400 2,500	-- --	-- --	-- --	-- --	-- --	-- --	-- --	43 51	.12 .056	-- --
<u>Line 12a. Oso Bay</u>																			
July 14	1350	2	.25	43,800	--	--	--	.9	4,200	--	--	--	--	--	--	--	51	.30	--
<u>Line 16. Corpus Christi Ship Channel</u>																			
July 14	1340	2	46	56,000	0	40	200	.8	5,300	0	7	0	30	<10	<.5	0	65	.050	9,400

a/ Results in milligrams per liter.

Table 8D.--Quality of water in the Nueces estuary, 1970 water year
Insecticide and herbicide analyses

Date of Collection	Time	Type of Sample	(Water analyses in micrograms per liter; sediment analyses in micrograms per kilogram sediment, dry weight)																		
			Insecticides						Herbicides												
			Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Heptachlor Epoxide	Lin-dane	Chlor-dane	Para-thion	Methyl Para-thion	Malathion	Diazinon	2,4-D	Silvex	2,4,5-T		
July 14	1020	Water Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			<u>a/</u>	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	<6.4	<.8
Line 5. Site 4. Nueces Bay																					
July 14	1415	Water Sediment	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
			<u>a/</u>	1.8	6.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Line 12a. Site 2. Osco Bay																					
			.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
			<u>a/</u>	1.8	6.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

a/ Undetermined due to interfering compounds.

Laguna Madre Estuary

The Laguna Madre estuary covers an area of about 640 square miles and consists of the tidal parts of the Arroyo Colorado and other tributaries, upper Laguna Madre, Baffin Bay, lower Laguna Madre, Brownsville Ship Channel, part of the Intracoastal Waterway, Port Mansfield Channel, and Brazos Santiago Pass (Figure 10).

At mhw, upper and lower Laguna Madre and Baffin Bay are generally less than 4 feet deep, but in a few areas

are as much as 10 feet deep. The Intracoastal Waterway, Port Mansfield Channel, and Arroyo Colorado are about 15 feet deep; the Brownsville Ship Channel is about 40 feet deep.

Water-quality data for the estuary (Table 9) were collected only in upper Laguna Madre during July and August in conjunction with a water-quality survey of the Nueces estuary.

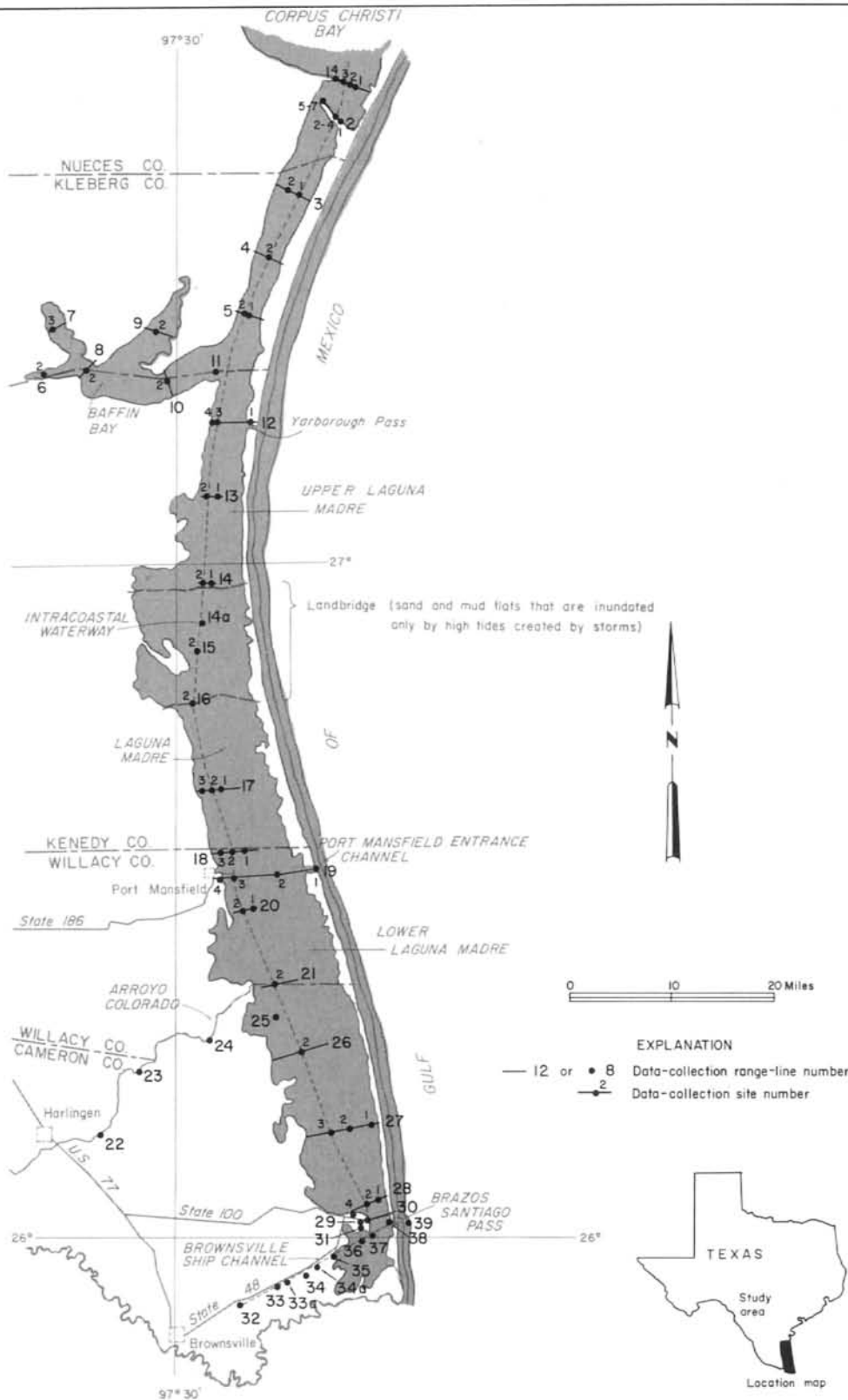


Figure 10
Data-Collection Sites in the Laguna Madre Estuary

Base by US Geological Survey, 1956

Table 9A.--Quality of water in the Laguna Madre estuary, 1970 water year
Nutrient and other environmental characteristics

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific Conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Secchi disk transparency (cm)	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
								Concentration	Percent saturation								
<u>Line 1. Upper Laguna Madre</u>																	
July 16	1150	3	1	52,000	8.9	28.9	89	5.6	89	3.2	--	5.1	0.0	0.07	0.00	0.03	0.06
			5	52,000	9.0	28.9		5.6	89								
			10	52,000	9.0	28.9		5.7	90								
Do.	1210	4	1	52,000	9.4	29.1	94	5.6	89	--	--	4.9	.0	.07	.01	.03	.10
			5	52,000	9.4	29.1		6.2	98								
Aug. 6	1120	3	1	44,000	7.5	29.5	--	6.5	102	--	--	--	--	--	--	--	--
			5	47,000	7.4	29.0		6.2	97								
			10	47,000	7.4	29.0		5.7	89								
			16	47,000	7.4	29.0		5.6	88								
Do.	1100	4	1	42,000	7.2	29.0	--	6.7	103	--	--	--	--	--	--	--	--
			6	42,000	7.2	28.0		6.0	90								
<u>Line 2. Upper Laguna Madre</u>																	
July 16	1045	3	1	50,000	8.8	28.7	99	5.2	81	--	--	--	--	--	--	--	--
			5	55,000	8.8	28.7		5.1	82								
			10	55,000	8.8	28.6		5.0	81								
			15	56,000	8.7	28.5		5.1	82								
			20	56,000	8.7	28.4		5.0	79								
Do.	1115	2	1	55,000	8.8	28.3	74	5.4	86	--	--	--	--	--	--	--	--
			5	55,000	8.8	28.3		5.5	87								
			10	55,000	8.9	28.3		5.8	92								
			14	55,000	8.8	28.8		5.4	87								
			20	56,000	8.8	28.2		4.5	71								
Aug. 6	1140	4	1	47,000	7.3	29.5	--	5.2	83	--	--	--	--	--	--	--	--
			5	47,000	7.3	29.5		5.2	83								
			10	47,000	7.3	29.5		5.2	83								
			16	47,000	7.3	29.5		5.2	83								
			20	47,000	7.3	29.5		5.2	83								

1/ Determined at data in collection site.

Table 9B.--Quality of water in the Laguna Madre estuary, 1970 water year
Chemical analyses

(Results in milligrams per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25°C)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids (calculated)	Hardness as CaCO ₃		Density (g/ml at 20°C)
													Calcium	Non-carbonate	
<u>Line 1. Upper Laguna Madre</u>															
July 16	1210	4	5	49,300	425	1,500	9,310	160	2,420	17,600	31,300	7,250	7,120		

1/ Included in sodium-ion concentration.

Table 9C.--Quality of water in the Laguna Madre estuary, 1970 water year
Analyses for selected ions

(Results in micrograms per liter except as indicated)

Date of collection	Time	Site	Depth below water surface (ft)	Specific conductance (micro-mhos at 25°C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Fluoride (F)	Boron (B)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Mercury (Hg)	Cadmium (Cd)	Bromide (Br)	Iodide (I)	Strontium (Sr)
<u>Line 1. Upper Laguna Madre</u>																			
July 16	1210	4	5	49,300	80	40	160	0.9	5,500	0	2	0	40	<10	0.5	0	56	0.120	10,000

a/ Results in milligrams per liter.

Table 12D.--Water stages in the Lavaca-Tres Palacios estuary, 1970 water year

1-8. Lavaca Bay at Six Mile County Park near Port Lavaca, Texas

LOCATION.--Lat 28°41'38" long 96°39'45", on bulkhead at Six Mile County Park, about 5.5 miles north northwest of Port Lavaca, Calhoun Co.

RECORDS AVAILABLE.--August 1968 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.--Excluding hurricane tides.--1970 water year: maximum elevation 3.9 feet Sept. 1; minimum -0.3 feet (estimated) Dec. 14 and Apr. 2.
1969-70 water year: maximum elevation 4.9 feet Feb. 13, 1969; minimum -0.3 feet Dec. 14 and Apr. 2, 1970.
Hurricane tides.--Celia: maximum elevation 5.7 feet Aug. 3, 1970.

REMARKS.--Gage operated by U.S. Army Corps of Engineers prior to July 1970; records computed by U.S. Geological Survey.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1969 to September 1970.

October		November		December		January		February		March		April		May		June		July		August		September																
Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage															
1	0600	2.0	1	0800	1.7	1	a	a	1	0200	0.1	1	1100	-0.1	1	0900	0.2	1	1000	0.7	1	1600	0.8	1	1200	2.4	1	0200	0.2	1	0500	0.7	1	0100	2.5			
1	0600	1.3	2	0000	.8	2	a	a	2	0200	s	2	a	a	2	0900	.6	2	1300	e-	3	2400	.8	2	0600	1.0	3	0200	.3	2	0200	1.4	2	0400	1.8	2	0500	1.6
2	0800	2.5	3	1300	1.0	3	a	1.5	3	0200	-0.1	3	0200	-1.3	3	1200	.3	3	1100	.0	3	1100	.5	3	0900	1.0	3	0500	.3	3	0400	1.3	3	0400	1.7	3	0400	2.3
2	0800	1.6	3	2300	.3	3	1300	1.1	3	1000	e-	4	1400	-1.1	4	1500	-1.1	4	1500	-1.1	4	2300	1.1	4	2400	1.4	4	1100	1.3	4	0400	1.0	4	0900	2.9	4	0900	2.9
4	1000	2.7	4	0700	1.2	4	0900	1.5	4	0300	0.0	4	0300	-1.4	4	0300	-1.4	4	0300	-1.4	4	0300	-1.4	4	0300	-1.4	4	0300	-1.4	4	0300	-1.4	4	0300	-1.4	4	0300	-1.4
5	0200	1.9	5	0200	1.3	5	0200	1.1	5	0200	1.1	5	0200	1.1	5	0200	1.1	5	0200	1.1	5	0200	1.1	5	0200	1.1	5	0200	1.1	5	0200	1.1	5	0200	1.1	5	0200	1.1
5	0800	2.2	5	0700	1.2	5	0400	2.1	5	0300	1.6	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0
6	1000	1.6	6	1500	.7	6	1500	.7	6	1500	.7	6	1500	.7	6	1500	.7	6	1500	.7	6	1500	.7	6	1500	.7	6	1500	.7	6	1500	.7	6	1500	.7	6	1500	.7
7	0100	1.7	6	0100	.9	6	0100	.9	6	0100	.9	6	0100	.9	6	0100	.9	6	0100	.9	6	0100	.9	6	0100	.9	6	0100	.9	6	0100	.9	6	0100	.9	6	0100	.9
7	0100	1.3	7	0100	1.4	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e
8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9	8	0100	.9
8	0100	1.6	8	0100	1.5	8	0100	1.4	8	0100	1.4	8	0100	1.4	8	0100	1.4	8	0100	1.4	8	0100	1.4	8	0100	1.4	8	0100	1.4	8	0100	1.4	8	0100	1.4	8	0100	1.4
12	1000	1.4	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e	7	0200	e
13	0200	1.8	5	0700	1.2	5	0400	2.1	5	0300	1.6	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0	5	0100	1.0
24	0000	2.4	11	0300	1.3	11	0400	2.0	11	0700	1.4	11	0900	1.4	11	0900	1.4	11	0900	1.4	11	0900	1.4	11	0900	1.4	11	0900	1.4	11	0900	1.4	11	0900	1.4	11	0900	1.4
25	0200	1.3	15	0400	e	15	0400	e	15	0400	e	15	0400	e	15	0400	e	15	0400	e	15	0400	e	15	0400	e	15	0400	e	15	0400	e	15	0400	e	15	0400	e
26	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6	16	0200	1.6
27	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8
28	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8
29	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8
30	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8
31	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8
31	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8
31	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8	16	0200	1.8

a No usable record.
e Estimated.

Table 121.--Water stages in the Lavaca-Trees Palacios estuary, 1970 water year

L-13. Intracoastal Waterway at Port O'Connor, Texas

LOCATION.--Lat 28°20'14" Long 96°25'02", on USAF dock at southwest edge of Port O'Connor, Calhoun Co.

RECORDS AVAILABLE.--April 1970 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.-- Not determined.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1969 to September 1970.																																						
October			November			December			January			February			March			April			May			June			July			August			September					
Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage
		1	0800	1.1	1	1000	2.0	1	1000	1.0	1	1100	0.2	1	1500	2.2																						
		1500	1.3		2200	.8		2200	1.1		2400	.5	2		8																							
		2000	1.2	2	0700	1.6	2	1300	1.0	2	1300	1.3	3	0100	1.4																							
		2	0100	1.5	2200	.4	2300	.1	2	2400	.9	0600	1.6																									
		2000	1.0	3	1100	1.3	3	1900	.9	3	1400	3.0	1300	1.3																								
		3	0700	1.5	2300	.5	2400	.0	3	1900	2.6	1800	1.4																									
		2200	.9	4	0800	1.2	4	1300	.8	2000	3.1	2400	1.2																									
		4	0700	1.4	5	0100	.2	2400	-.3	4	0100	2.1	4	0700	1.3																							
		2200	.7	1200	.9	5	1000	.7	0800	2.3	1400	1.0																										
		5	0800	1.3	6	0100	1.1	2400	-.2	5	0200	1.6	5	0400	1.3																							
		2200	.3	1400	.9	6	1200	.5	1100	1.8	1500	.8																										
		6	1200	1.2	7	0200	.1	7	0100	-.1	6	0100	1.2	6	0400	1.4																						
		2300	.3	1500	.9	1100	.5	0800	1.5	1600	.7																											
		7	1000	1.3	8	0200	.1	8	0200	-.1	7	1600	.8	7	0500	1.4																						
		2300	.3	1300	.9	1100	.5	8	0700	1.3	1600	.5																										
		8	1200	1.3	9	0200	.2	9	0300	-.1	1500	.7	8	0600	1.3																							
		2400	.5	1300	.9	1100	.3	9	0500	1.3	1800	.4																										
		9	1300	1.6	10	0300	.3	10	0100	.0	1600	.7	9	0500	1.3																							
		2300	.8	1300	1.0	0900	.3	10	0600	1.4	1900	.5																										
		10	1300	1.7	11	0300	.7	1900	-.1	1800	.6	10	0800	1.4																								
		11	0100	1.0	1200	1.2	11	0700	.4	11	0600	1.4	1900	.4																								
		1400	1.7	2300	1.2	1700	-.1	1800	.5	11	0900	1.5	11	0900	1.5																							
		12	0200	1.1	12	1800	1.6	12	0800	.5	12	0600	1.2	1600	.8																							
		1300	1.7	2300	1.1	1700	-.1	2000	.2	12	1000	2.1																										
		13	0300	1.2	13	0800	1.3	13	0800	1.0	13	0900	1.3	2200	1.0																							
		1400	1.7	2100	.7	1900	.1	2000	.4	13	1100	2.0																										
		14	0500	1.2	14	0600	1.1	14	1000	1.1	14	0900	1.4	2300	1.2																							
		1300	1.7	2100	.4	2000	.3	2100	.4	14	1400	1.7																										
		2200	1.5	15	0700	1.0	15	0900	1.4	15	1100	1.4	2300	1.1																								
		21	2400	.7	15	1200	1.8	2100	.2	2000	.5	2400	.3	15	1500	1.7																						
		22	1300	1.3	1100	1.4	2100	.2	2000	.3	2300	.2	2100	1.7																								
		23	0100	.9	1900	1.0	17	1000	1.2	17	1100	1.2	17	1500	1.1	17	1300	1.1																				
		1300	1.6	17	0900	1.6	2200	.3	2300	.2	18	0100	.3	2300	1.6																							
		24	0100	.8	1800	1.3	18	1000	1.2	18	1100	1.2	1500	1.1	18	1300	.9																					
		1200	1.6	18	0900	2.0	2200	.2	2300	.1	19	0100	.6	19	0400	1.7																						
		2400	.6	1900	1.6	19	1200	1.3	19	1200	1.1	0700	.8	1400	1.0																							
		25	1600	1.7	19	0600	2.3	2400	.2	2400	.1	1300	.7	20	0700	2.1																						
		26	0300	.8	2200	1.1	20	1200	1.3	20	1400	1.1	2000	.9	1500	1.5																						
		1400	1.8	20	1300	2.0	21	0100	.3	21	0200	.3	20	0300	.7	21	0300	2.1																				
		27	0300	.8	2400	1.2	1400	1.3	1900	.9	0600	.9	1600	1.2																								
		1700	1.8	21	1100	2.0	22	0200	.3	1800	.8	1300	.4	22	0500	2.2																						
		28	0500	1.1	22	0100	.9	1500	1.1	1900	1.1	21	0500	1.1	1800	1.4																						
		1600	1.8	1300	1.9	23	0300	.3	22	0200	.3	1500	.5	23	0600	2.1																						
		29	0500	1.0	2400	.9	1200	1.1	2000	1.1	22	0600	1.1	2000	1.1																							
		1900	1.7	23	1400	1.9	24	0200	.3	23	0300	.7	1600	.4	24	0700	1.7																					
		30	0700	1.3	24	0100	1.0	1900	1.1	0800	.9	23	0600	1.2	1900	1.1																						
		1700	1.9	1200	1.9	25	0400	.7	1600	.7	1700	.2	25	1100	2.0																							
		25	0300	.9	1100	1.0	24	0700	1.3	24	0600	1.0	2200	1.4																								
		1500	1.7	2000	.8	1700	.6	1600	.0	26	0900	.9	26	0900	1.9																							
		26	0400	.7	26	0900	.9	25	0500	1.4	25	0800	.9	2300	1.1																							
		1600	1.4	1800	.3	1900	.6	1900	.0	27	1400	1.6																										
		27	0500	.7	27	0600	.9	26	0800	1.4	26	0900	1.0	2300	1.3																							
		1500	1.2	1800	.1	1900	.5	2000	.2	28	1500	1.9																										
		28	0500	.7	28	0500	.9	27	0800	1.4	27	0800	1.1	2200	1.6																							
		2300	1.1	1900	.0	2100	.5	2100	.3	29	0400	1.8																										
		29	0500	.9	29	0800	1.0	28	0700	1.4	28	1000	1.2	1100	1.6																							
		1100	1.1	2000	-.1	2000	.5	2200	.5	1800	1.8																											
		1800	.9	30	0800	1.0	29	0900	1.3	29	1300	1.5	30	1100	1.5																							
		30	1300	2.0	2100	.0	2200	.4	2200	.9																												
		2000	1.0					30	1100	1.2	30	1000	1.5																									
		31	0400	2.1				2300	.4	2300	.8																											
		2100	.9					31	1100	1.2	31	1800	1.6																									
								2300	.4	2300	1.2																											

Table 12J.--Water stages in the Lavaca-Tres Palacios estuary, 1970 water year

L-12. Saluria Bayou at Pass Cavallo near Port O'Connor, Texas

LOCATION.--Lat 28°23'58" long 96°24'26", at old U.S. Coast Guard Station 3.3 miles south of Port O'Connor, Calhoun Co.

RECORDS AVAILABLE.--November 1963 to April 1970, discontinued.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.--Excluding hurricane tides.--1970 water year: maximum elevation 2.3 feet Oct. 26, minimum -1.8 feet Jan. 7.
1968 water year: maximum elevation 2.6 feet June 24, minimum -1.9 feet Mar. 13.
Hurricane tides.--Beulah: maximum elevation 5.2 feet Sept. 20, 1967.

REMARKS.--Gage operated by U.S. Army Corps of Engineers; records since August 1967 computed by U.S. Geological Survey.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1969 to September 1970.

Month	Day	Time	Stage	Month	Day	Time	Stage	Month	Day	Time	Stage	Month	Day	Time	Stage	Month	Day	Time	Stage				
October	1	0200	1.4	October	1	0200	0.5	January	1	0300	-0.5	February	1	0600	0.6	March	1	0500	-0.4	April	1	0500	0.3
	1	1400	.8		1	1800	.6		1	2200	-.2		1	1700	1.2		1	1800	.8		1	1600	1.3
	2	0300	1.6		2	0200	1.3		2	0400	-.0		2	0700	-.7		2	0600	-.2		2	0600	-.2
	3	0400	1.6		3	0200	.9		3	0200	-.4		3	0800	-1.7		3	0800	.0		3	0800	-.3
	4	0300	1.8		4	0300	.8		4	0300	-.3		4	0800	-1.4		4	0700	-.3		4	0700	-.9
	5	0300	1.4		5	0200	.6		5	0400	.5		5	1000	-.4		5	0900	-.3		5	0900	.5
	6	0600	1.1		6	0200	.8		6	0400	.3		6	1100	-.8		6	1100	.8		6	1100	.8
	7	0400	1.2		7	0200	.8		7	0400	.9		7	0300	-.5		7	0100	1.5		7	0100	.0
	8	0400	1.4		8	0200	.9		8	0400	.9		8	0300	-.4		8	0100	1.5		8	0100	.0
	9	0400	1.0		9	0200	.8		9	0400	.9		9	0300	-.2		9	0100	1.5		9	0100	.0
	10	0400	1.4		10	0200	.5		10	0400	.9		10	0300	-.2		10	0100	1.5		10	0100	.0
	11	0300	1.5		11	0200	.9		11	0200	-.5		11	0300	-.1		11	0100	1.0		11	0100	.0
	12	0100	1.6		12	0100	.6		12	0100	-.3		12	0400	-.7		12	0100	1.0		12	0100	.0
	13	1100	1.0		13	0200	.8		13	0200	-.8		13	0400	-.6		13	0100	1.0		13	0100	.0
	14	0400	1.9		14	0200	.2		14	0200	-.1		14	0600	-.4		14	0500	-.1		14	0500	.0
	15	0100	1.2		15	0200	.2		15	0200	-.2		15	0600	-.3		15	0500	-.2		15	0500	-.5
	16	0400	1.4		16	0200	.8		16	0200	-.1		16	0600	-.3		16	0500	-.2		16	0500	-.2
	17	0300	1.2		17	0200	.8		17	0200	-.2		17	0600	-.3		17	0500	-.2		17	0500	-.2
	18	0500	1.4		18	0200	.8		18	0200	-.2		18	0600	-.3		18	0500	-.2		18	0500	-.2
	19	0500	1.8		19	0200	.8		19	0200	-.2		19	0600	-.3		19	0500	-.2		19	0500	-.2
	20	0700	1.9		20	0200	.8		20	0200	-.2		20	0600	-.3		20	0500	-.2		20	0500	-.2
	21	0100	1.9		21	0100	.2		21	0100	-.2		21	0600	-.3		21	0500	-.2		21	0500	-.2
	22	0200	2.1		22	0100	.5		22	0100	.5		22	0600	-.3		22	0500	-.2		22	0500	-.2
	23	0300	2.0		23	0100	.6		23	0100	.6		23	0600	-.3		23	0500	-.2		23	0500	-.2
	24	0100	1.8		24	0100	.4		24	0100	.4		24	0600	-.3		24	0500	-.2		24	0500	-.2
	25	0200	1.8		25	0100	.4		25	0100	.4		25	0600	-.3		25	0500	-.2		25	0500	-.2
	26	0300	2.0		26	0100	.6		26	0100	.6		26	0600	-.3		26	0500	-.2		26	0500	-.2
	27	1200	1.0		27	0100	.6		27	0100	.6		27	0600	-.3		27	0500	-.2		27	0500	-.2
	28	2000	2.0		28	0100	.6		28	0100	.6		28	0600	-.3		28	0500	-.2		28	0500	-.2
	29	0300	1.9		29	0100	.6		29	0100	.6		29	0600	-.3		29	0500	-.2		29	0500	-.2
	30	1400	1.2		30	0100	.6		30	0100	.6		30	0600	-.3		30	0500	-.2		30	0500	-.2
	31	1500	.7		31	0100	.6		31	0100	.6		31	0600	-.3		31	0500	-.2		31	0500	-.2

a No usable record.
b Water stage continuously falling.
c Estimated.

Table 13C.--Water stages in the Guadalupe estuary, 1970 water year

E-2. Espiritu Santo Bay near Port O'Connor, Texas

LOCATION.--Lat 28°23'36" long 96°28'59", on ferry channel marker 11 in Espiritu Santo Bay, about 6 miles southwest of Port O'Connor, Calhoun Co.

RECORDS AVAILABLE.--August 1966 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.--Excluding hurricane tides.--1970 water year: maximum elevation 2.1 feet Oct. 30; minimum -0.8 feet Jan. 8 and Feb. 19.
 1968-70 water year: maximum elevation 2.5 feet Feb. 15, 1969; minimum -1.1 feet Mar. 13, 1968.
 Hurricane tides.--Beulah: maximum elevation 4.4 feet Sept. 21, 1967.
 Colia: maximum elevation 2.4 feet Aug. 3, 1970.

REMARKS.--Gage operated by U.S. Army Corps of Engineers prior to July 1970; records since August 1967 computed by U.S. Geological Survey.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1969 to September 1970.

October		November		December		January		February		March		April		May		June		July		August		September			
Day	Time Stage	Day	Time Stage	Day	Time Stage	Day	Time Stage	Day	Time Stage	Day	Time Stage	Day	Time Stage	Day	Time Stage	Day	Time Stage	Day	Time Stage	Day	Time Stage	Day	Time Stage		
1	0900 1.1	1	0500 1.3	1	0700 0.3	1	0100 -0.2	1	1500 0.8	1	0800 0.9	1	0800 e 1.0	1	0900 0.6	1	1000 1.6	1	1200 0.5	1	0100 0.5	1	1500 1.7		
2	1900 1.0	2	2400 1.0	2	2400 1.1	2	2400 0.1	2	0100 -0.2	2	1400 -1.1	2	2200 1.4	2	e 1600 1.0	2	2300 1.0	2	0100 1.2	2	2400 1.2	2	1500 1.4		
3	0700 1.3	3	0900 1.1	3	1200 -0.2	3	2400 0.1	3	1300 -0.3	3	1700 -1.1	3	0900 2.2	3	2	2300 1.8	3	2300 1.3	3	2300 1.5	3	2	0100 1.7		
4	0900 1.4	4	2400 e 1.5	4	0400 -0.7	4	0400 -1.3	4	0900 -1.1	4	2000 -0.4	4	3	1000 1.4	3	1200 1.1	3	2400 1.8	3	3	1400 1.1	3	2300 1.0		
5	0400 1.3	5	2400 e 1.4	5	1100 -0.2	5	2400 0.2	5	1000 -0.6	5	2300 0.8	5	4	0500 1.5	4	0600 0.9	4	0200 0.8	4	0300 1.2	4	3	1200 1.1		
6	1200 1.0	6	2400 e 1.5	6	1600 1.6	6	5	0200 -0.4	6	1300 -0.2	6	2000 0.8	6	5	0300 1.7	5	0300 0.8	5	0500 1.7	5	9	1100 1.2	5	2100 1.8	
7	1500 1.9	7	2400 e 1.5	7	1100 0.3	7	6	0300 0.2	7	1600 0.3	7	6	0300 1.3	6	0100 0.8	6	1200 0.7	6	1200 1.2	6	2400 1.8	6	1900 0.6		
8	1900 1.0	8	1500 1.3	8	2400 0.3	8	2400 0.2	8	2100 0.8	8	1400 -1.1	8	6	0300 0.6	6	0800 0.4	8	6	0400 0.4	8	6	0400 2.1	8	0400 0.9	
9	2200 0.8	9	1400 1.1	9	1000 1.1	9	1300 -0.8	9	1500 -1.1	9	1800 1.3	9	8	1300 0.5	8	1300 0.7	8	8	0200 0.3	8	8	0200 2.1	8	0700 0.8	
10	1900 1.0	10	1500 1.2	10	1000 1.1	10	1300 -0.8	10	1500 -1.1	10	1800 1.3	10	8	1300 0.5	8	1300 0.7	10	8	0200 0.3	10	8	0200 2.1	10	0700 0.8	
11	0500 1.3	11	0900 0.5	11	0500 0.5	11	0500 0.5	11	0500 0.5	11	0500 0.5	11	0500 0.5	11	0500 0.5	11	0500 0.5	11	0500 0.5	11	0500 0.5	11	0500 0.5	11	0500 0.5

Table 14A.--Water stages in the Mission-Aransas estuary, 1970 water year

N-1. Copano Bay near Bayside, Texas

LOCATION.--Lat 28°04'20" long 97°12'30", on bulkhead at Cities Service Oil Company Pump Station; about 1.7 miles south southeast of Bayside, Aransas Co.

RECORDS AVAILABLE.--October 1966 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.--Excluding hurricane tides.--1970 water year: maximum elevation 2.5 feet Oct. 22, 23, and 27; minimum -0.5 feet Feb. 4.
1968-70 water year: maximum elevation 3.1 feet May 11, 1968; minimum -0.8 feet Mar. 12 and 13, 1968.

Hurricane tides.--Beulah: maximum elevation 6.8 feet Sept. 20, 1967.
Celia: maximum elevation 5.1 feet (estimated) Aug. 3, 1970.

REMARKS.--Gage operated by U.S. Army Corps of Engineers prior to July 1970; records since August 1967 computed by U.S. Geological Survey.
Water stage, in feet, above or below (-) mean sea level; Time in Central Standard; Water Year October 1969 to September 1970.

October	November	December	January	February	March	April	May	June	July	August	September
Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage
1 a 2200 1.5	1 1000 1.8	1 1000 0.8	1 0400 -0.1	1 0300 0.8	1 0900 0.5	1 1100 1.0	1 0300 1.5	1 0200 1.6	1 0300 0.7	1 0400 1.1	1 0400 1.0
2 a 2200 1.5	2 1000 1.8	2 1000 0.8	2 0400 -0.1	2 0300 0.8	2 0900 0.5	2 1100 1.0	2 0300 1.5	2 0200 1.6	2 0300 0.7	2 0400 1.1	2 0400 1.0
3 a 0900 1.7	3 0900 1.7	3 0500 1.5	3 0400 -0.3	3 2300 1.0	3 2100 1.0	3 2100 1.0	3 2100 1.0	3 2100 1.0	3 2100 1.0	3 2100 1.0	3 2100 1.0
4 a 0800 1.1	4 0800 1.1	4 2100 -0.2	4 0900 -0.2	4 1200 -0.2	4 1200 -0.2	4 1200 -0.2	4 1200 -0.2	4 1200 -0.2	4 1200 -0.2	4 1200 -0.2	4 1200 -0.2
5 a 1500 1.2	5 1000 2	5 1000 2	5 1100 -0.3	5 3100 1.2	5 1100 -0.3	5 1100 -0.3	5 1100 -0.3	5 1100 -0.3	5 1100 -0.3	5 1100 -0.3	5 1100 -0.3
6 a 2200 -0.8	6 0400 -0.5	6 2000 -0.2	6 4200 -0.4	6 0200 -0.2	6 0200 -0.2	6 0200 -0.2	6 0200 -0.2	6 0200 -0.2	6 0200 -0.2	6 0200 -0.2	6 0200 -0.2
7 a 0700 2.1	7 1200 -0.4	7 2400 -0.5	7 1200 -0.5	7 1200 -0.5	7 1200 -0.5	7 1200 -0.5	7 1200 -0.5	7 1200 -0.5	7 1200 -0.5	7 1200 -0.5	7 1200 -0.5
8 a 2300 -0.8	8 0500 1.0	8 0500 1.0	8 0500 1.0	8 0500 1.0	8 0500 1.0	8 0500 1.0	8 0500 1.0	8 0500 1.0	8 0500 1.0	8 0500 1.0	8 0500 1.0
9 a 0700 2.0	9 1100 1.7	9 1100 1.7	9 1100 1.7	9 1100 1.7	9 1100 1.7	9 1100 1.7	9 1100 1.7	9 1100 1.7	9 1100 1.7	9 1100 1.7	9 1100 1.7
10 a 1500 1.9	10 0400 1.5	10 1200 -0.3	10 0400 e	10 0400 e	10 0400 e	10 0400 e	10 0400 e	10 0400 e	10 0400 e	10 0400 e	10 0400 e
11 a 0600 2.1	11 1500 -0.5	11 0400 1.0	11 0400 1.0	11 0400 1.0	11 0400 1.0	11 0400 1.0	11 0400 1.0	11 0400 1.0	11 0400 1.0	11 0400 1.0	11 0400 1.0
12 a 1100 -0.9	12 1400 e	12 1400 e	12 1400 e	12 1400 e	12 1400 e	12 1400 e	12 1400 e	12 1400 e	12 1400 e	12 1400 e	12 1400 e
13 a 0500 1.3	13 0200 0.6	13 1500 -0.1	13 0700 -0.7	13 1200 1.2	13 1900 1.2	13 1900 1.2	13 1900 1.2	13 1900 1.2	13 1900 1.2	13 1900 1.2	13 1900 1.2
14 1800 0.9	14 1300 -0.1	14 2200 -0.1	14 1800 -0.4	14 1800 -0.4	14 1800 -0.4	14 1800 -0.4	14 1800 -0.4	14 1800 -0.4	14 1800 -0.4	14 1800 -0.4	14 1800 -0.4
15 1800 1.1	15 1300 -0.6	15 0600 -0.9	15 1500 -0.4	15 2300 -0.5	15 0900 -0.6	15 0900 -0.6	15 0900 -0.6	15 0900 -0.6	15 0900 -0.6	15 0900 -0.6	15 0900 -0.6
16 0900 1.3	16 0300 e	16 1400 1.0	16 0400 1.2	16 1500 -0.2	16 2100 -0.3	16 2100 -0.3	16 2100 -0.3	16 2100 -0.3	16 2100 -0.3	16 2100 -0.3	16 2100 -0.3
17 0800 1.4	17 0900 1.6	17 0900 1.6	17 0800 1.3	17 1800 -0.2	17 1800 -0.2	17 1800 -0.2	17 1800 -0.2	17 1800 -0.2	17 1800 -0.2	17 1800 -0.2	17 1800 -0.2
18 1300 1.7	18 1100 -0.5	18 0600 1.0	18 1000 1.3	18 2000 1.4	18 2000 1.4	18 2000 1.4	18 2000 1.4	18 2000 1.4	18 2000 1.4	18 2000 1.4	18 2000 1.4
19 1500 1.9	19 1200 -0.9	19 0600 1.0	19 0600 1.0	19 0600 1.0	19 0600 1.0	19 0600 1.0	19 0600 1.0	19 0600 1.0	19 0600 1.0	19 0600 1.0	19 0600 1.0
20 1400 1.7	20 1300 -0.4	20 0800 -0.8	20 1800 -0.4	20 2400 -0.4	20 2400 -0.4	20 2400 -0.4	20 2400 -0.4	20 2400 -0.4	20 2400 -0.4	20 2400 -0.4	20 2400 -0.4
21 1700 1.8	21 1800 -0.9	21 0900 -0.5	21 0200 -0.6	21 1300 -0.6	21 1300 -0.6	21 1300 -0.6	21 1300 -0.6	21 1300 -0.6	21 1300 -0.6	21 1300 -0.6	21 1300 -0.6
22 1700 2.2	22 2400 1.0	22 2000 -0.5	22 1800 -0.5	22 1800 -0.5	22 1800 -0.5	22 1800 -0.5	22 1800 -0.5	22 1800 -0.5	22 1800 -0.5	22 1800 -0.5	22 1800 -0.5
23 0200 2.3	23 2000 -0.6	23 1600 -1.0	23 0300 -0.3	23 0300 -0.3	23 0300 -0.3	23 0300 -0.3	23 0300 -0.3	23 0300 -0.3	23 0300 -0.3	23 0300 -0.3	23 0300 -0.3
24 0800 2.5	24 1200 1.1	24 1800 -0.4	24 2200 -0.5	24 2200 -0.5	24 2200 -0.5	24 2200 -0.5	24 2200 -0.5	24 2200 -0.5	24 2200 -0.5	24 2200 -0.5	24 2200 -0.5
25 1400 1.9	25 1800 1.3	25 1100 -0.8	25 0100 -0.8	25 0100 -0.8	25 0100 -0.8	25 0100 -0.8	25 0100 -0.8	25 0100 -0.8	25 0100 -0.8	25 0100 -0.8	25 0100 -0.8
26 0600 2.2	26 1200 1.7	26 1200 1.7	26 1200 1.7	26 1200 1.7	26 1200 1.7	26 1200 1.7	26 1200 1.7	26 1200 1.7	26 1200 1.7	26 1200 1.7	26 1200 1.7
27 0600 3.5	27 1200 -0.2	27 1200 -0.2	27 1200 -0.2	27 1200 -0.2	27 1200 -0.2	27 1200 -0.2	27 1200 -0.2	27 1200 -0.2	27 1200 -0.2	27 1200 -0.2	27 1200 -0.2
28 0900 2.3	28 0900 1.3	28 0900 1.3	28 0900 1.3	28 0900 1.3	28 0900 1.3	28 0900 1.3	28 0900 1.3	28 0900 1.3	28 0900 1.3	28 0900 1.3	28 0900 1.3
29 0900 2.4	29 0900 1.3	29 0900 1.3	29 0900 1.3	29 0900 1.3	29 0900 1.3	29 0900 1.3	29 0900 1.3	29 0900 1.3	29 0900 1.3	29 0900 1.3	29 0900 1.3
30 0200 2.4	30 0200 1.9	30 0200 1.9	30 0200 1.9	30 0200 1.9	30 0200 1.9	30 0200 1.9	30 0200 1.9	30 0200 1.9	30 0200 1.9	30 0200 1.9	30 0200 1.9
31 0400 2.0	31 0400 1.6	31 0400 1.6	31 0400 1.6	31 0400 1.6	31 0400 1.6	31 0400 1.6	31 0400 1.6	31 0400 1.6	31 0400 1.6	31 0400 1.6	31 0400 1.6

a No usable record.
b Water stage continuously falling.
c Water stage continuously rising.
e Estimated.

Table 15A.--Water stages in the Nueces estuary

N-1. Nueces Bay at Whites Point near Corpus Christi, Texas

LOCATION.--Lat 27°31'37" long 97°28'57", in harbor on Whites Point 1.2 miles southwest of Rosita Ranch and 6.8 miles northwest of Corpus Christi and 10 miles southwest of Taft, San Patricio Co.

RECORDS AVAILABLE.--November 1969 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.--Excluding hurricane tides.--1970 water year: maximum elevation 2.7 feet Sept. 13; minimum -0.5 feet Feb. 2. Hurricane tides.--Cells: No record available.

REMARKS.--Gage operated by U.S. Army Corps of Engineers; records computed by U.S. Geological Survey.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1969 to September 1970.

October	November	December	January	February	March	April	May	June	July	August	September																	
Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage																	
1	a	a	1	a	1	0400	1.2	1	1000	0.7	1	1200	1.3	1	0100	1.4	1	a	a	1	a	a	1	0500	1.5			
2	a	a	2	0400	0.5	1400	-0.4	2300	1.3	1700	1.5	0400	1.6	1000	1.9	2	a	a	2	a	a	2	a	a	1300	2.4		
3	a	a	3	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
4	a	a	4	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	3	2000	2.1	
5	a	a	5	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
6	a	a	6	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
7	a	a	7	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
8	a	a	8	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
9	a	a	9	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
10	a	a	10	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
11	a	a	11	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
12	a	a	12	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
13	a	a	13	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
14	a	a	14	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
15	a	a	15	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
16	a	a	16	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
17	a	a	17	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
18	1100	0.4	10	0600	1.1	1300	-0.6	19	0500	1.1	8	0700	-0.7	1600	2.0	9	0900	1.2	1600	1.6	19	a	a	11	0100	-0.9		
19	1400	-0.9	14	0700	-0.5	7	0800	-0.9	8	1000	1.2	1600	1.2	6	0500	-0.8	1700	1.4	6	0800	1.0	13	a	a	13	a	7	b
20	0100	-0.8	16	0500	-0.3	10	0900	-2.1	11	0800	-0.6	11	1000	-0.11	1000	1.7	7	0900	1.0	15	1600	2.0	15	a	a	14	0400	1.8
21	a	a	21	0200	-0.8	0800	-0.4	11	0800	-0.6	11	1000	-0.11	1000	1.7	7	0900	1.0	15	1600	2.0	15	a	a	14	0400	1.8	
22	a	a	22	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
23	a	a	23	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
24	a	a	24	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
25	a	a	25	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
26	a	a	26	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
27	a	a	27	0400	1.3	1700	0.5	5	0300	1.1	0900	1.4	3	0200	1.3	0100	1.0	0	0	0	0	0	0	0	0	3	0700	1.5
28	0400	1.3	20	0300	-0.9	2300	-1.0	3	0800	1.0	2	1300	1.0	0800	1.8	3	a	a	3	a	a	3	a	a	2	1200	1.7	
29	0500	1.2	21	0800	-0.8	1800	-0.1	1900	-0.8	1200	1.8	19	0200	2.4	1600	2.5	0500	1.6	20	0500	1.0	27	0100	1.2	21	0300	2.2	
30	0800	-1.2	22	0600	-0.9	1600	-0.5	20	0100	-0.8	19	1300	-2.2	20	0200	1.6	20	0500	1.0	27	0100	1.2	21	0300	2.2			
31	0200	-0.3	23	0300	-0.9	21	1100	-0.7	1700	-0.8	0400	-0.9	21	0400	1.7	21	0600	1.8	1400	1.8	22	0100	1.2	22	0100	1.2		

a No usable record.
c Water stage continuously rising.
e Estimated.

Table 15C.--Water stages in the Nueces estuary

N-3, Corpus Christi Bay at 4660 Ocean Drive, at Corpus Christi, Texas

LOCATION.--Lat 27°44'08" long 97°21'33", on private pier at 4660 Ocean Drive, in Corpus Christi, Nueces Co.

RECORDS AVAILABLE.--November 1969 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.--Excluding hurricane tides.--1970 water year; maximum elevation 2.2 feet May 21; minimum -0.8 feet Feb. 4. Hurricane tides.--Celia; No record available.

REMARKS.--Gage operated by U.S. Army Corps of Engineers; records computed by U.S. Geological Survey.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1969 to September 1970.

October		November		December		January		February		March		April		May		June		July		August		September							
Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage						
1	0700	e .7	1	0200	-0.1	1	0100	0.8	1	0800	e 0.2	1	a	1	0300	1.5	1	1300	1.9	1	1300	1.0	1	0200	0.7	1	0100	1.3	

a No usable record.
e Estimated.

Table 15D.--Water stages in the Nueces estuary

N-4. Corpus Christi Bay at U.S. Naval Air Station at Corpus Christi, Texas
Oct. 1966 - Sept. 1970

LOCATION.--Lat 27°42'19" long 97°16'49", on pier about 900 yards east northeast of west gate at U.S. Naval Air Station, Corpus Christi, Nueces Co.

RECORDS AVAILABLE.--October 1966 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.--Excluding hurricane tides.--1966 water year: maximum elevation 2.5 feet, Oct. 30; minimum -0.8 feet March 13.
1969 water year: maximum elevation 2.1 feet, Feb. 14; minimum -0.6 feet July 23, 24, 25, and 27.
1970 water year: maximum elevation 2.2 feet, Oct. 28; minimum -1.0 feet Feb. 4.

Hurricane tides.--Beulah: maximum elevation 5.4 feet Sept. 20, 1967.
Celia: maximum elevation not determined.

REMARKS.--Gage operated by U.S. Army Corps of Engineers; records since August 1967 computed by U.S. Geological Survey.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1966 to September 1967.

October	November	December	January	February	March	April	May	June	July	August	September
Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage
											1 1400 1.1
											2300 .5
											2 1300 1.1
											2400 .6
											3 1500 1.5
											4 0200 .9
											1700 1.5
											2200 1.1
										5 0900 2.1	2400 1.0
										6 1500 1.4	2000 1.5
										7 1600 .9	1700 .5
										8 1600 .4	2400 1.0
										9 0700 1.1	1800 .5
										10 0700 1.1	1700 1.1
										11 0800 1.1	2000 1.0
										12 0900 1.0	2200 .4
										13 1100 1.1	2200 .6
										24 1600 1.0	25 0900 1.3 14 1300 1.3
										1700 1.0	2300 .8
										26 0900 1.5 15 1400 1.5	1800 1.0 2300 1.2
										27 0800 1.4 16 1800 1.7	2000 .9 17 0100 1.3
										28 0800 1.3 1700 1.8	2000 .7 18 0200 1.4
										29 0800 1.2 19 1300 2.2	2200 .6 20 2300 5.4
										30 0900 1.0 21 1500 4.8	2400 .5 2000 5.1
										31 1200 .8 22 b	2300 .3 23 1300 3.8
										24 b	25 b
										26 b	26 2100 3.0
										27 1300 3.2	28 2100 2.3
										28 2100 2.3	29 0700 2.4
										29 0700 2.4	2300 2.0
										30 2300 2.0	30 0700 2.2
										2400 1.8	

b Water stage continuously falling.

Table 10D.--Water stages in the Nueces estuary
 S-4. Corpus Christi Bay at U.S. Naval Air Station at Corpus Christi, Texas
 Oct. 1966 - Sept. 1970--Continued

Water stages, in feet, above or below (-) mean sea level; Tide is Central Standard; Water Year October 1968 to September 1969.

Day	October		November		December		January		February		March		April		May		June		July		August		September		
	Time	Stage	Time	Stage	Time	Stage	Time	Stage	Time	Stage	Time	Stage	Time	Stage	Time	Stage	Time	Stage	Time	Stage	Time	Stage	Time	Stage	
1	2400	1.2	1200	0.4	1200	0.6	1200	-0.2	1400	0.2	0100	0.2	0100	0.2	0100	0.2	0100	0.2	0100	0.2	0100	0.2	0100	0.2	
2	1600	1.1	1200	0.4	1200	0.6	1200	-0.2	1400	0.2	0100	0.2	0100	0.2	0100	0.2	0100	0.2	0100	0.2	0100	0.2	0100	0.2	
3	0100	1.1	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
4	0600	1.1	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
5	1300	1.2	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
6	1400	1.0	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
7	1500	1.4	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
8	0600	1.4	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
9	1600	1.0	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
10	0900	1.7	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
11	1800	1.2	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
12	0600	1.3	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
13	1900	1.0	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
14	0900	1.5	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
15	0100	1.2	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
16	1200	1.7	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
17	0200	2.4	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
18	1200	1.7	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
19	0100	1.4	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
20	0100	1.4	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
21	0600	1.3	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
22	1300	1.4	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
23	0400	1.3	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
24	0900	1.3	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
25	0800	1.3	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
26	2200	1.5	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	
27	8	8	26	0800	1.2	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2
28	2200	1.0	28	0800	1.2	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2
29	2200	1.0	28	0800	1.2	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2
30	2200	1.0	28	0800	1.2	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2
31	1600	1.3	20	0800	1.2	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2
32	2300	1.3	20	0800	1.2	0100	0.4	0100	0.6	0100	-0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2	1200	0.2

a No usable record.
 b Water stage continuously falling.
 c Water stage continuously rising.
 d Estimate.

Table 16A.--Water stages in the Laguna Madre estuary, 1970 water year

P-8. Port Mansfield Entrance Channel near Port Mansfield, Texas

LOCATION.--Lat 26°33'52" long 97°16'28", on concrete pile near landward end of north jetty, about 9.3 miles east of Port Mansfield, Willacy Co.

RECORDS AVAILABLE.--February 1965 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers). Gage moved to present location about 100 feet off north jetty Sept. 17, 1968.

EXTREMES.--Excluding hurricane tides.--1970 water year: maximum elevation 2.2 feet Oct. 26; minimum -2.2 feet (estimated) Jan. 8. 1969-70 water year: maximum elevation 3.1 feet (estimated) Feb. 14, 1969; minimum -2.2 feet (estimated) Jan. 8, 1970.

REMARKS.--Gage operated by U.S. Army Corps of Engineers; records since July 1968 computed by U.S. Geological Survey.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1969 to September 1970.

October	November	December	January	February	March	April	May	June	July	August	September
Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage	Day Time Stage
1 1200 e-0.7	1 1400 e-0.2	1 1400 -0.9	1 0400 -1.3	1 0400 -1.2	1 0300 -1.5	1 0500 -1.1	1 0600 -0.4	1 0500 1.3	1 0500 0.7	1 0500 0.8	1 0300 1.0
2 1200 e-1.1	2 1400 1.2	2 2200 -0.1	2 0400 -1.1	2 0400 -1.9	2 0400 -1.5	2 0500 -1.0	2 0600 0.2	2 0400 1.4	2 0500 0.6	2 0700 0.8	2 1300 -1.0
3 1500 -0.8	3 1600 -2.3	3 0500 -0.8	3 0400 -1.1	3 0400 -1.9	3 0500 -1.6	3 0600 -1.2	3 0600 -1.1	3 0600 1.2	3 0400 1.2	3 0400 1.2	3 0400 -0.6
4 1500 -0.9	4 0700 1.0	4 2200 -0.2	4 0500 -1.7	4 0500 -1.7	4 0600 -1.7	4 0600 -1.2	4 0600 -1.2	4 0500 1.0	4 0400 0.5	4 0400 0.5	4 1600 -0.3
5 1700 -1.1	5 1800 -0.2	5 2200 1.0	5 0500 -1.8	5 0500 -1.8	5 0700 -1.5	5 0800 -1.1	5 0800 -1.1	5 0900 0.9	5 0900 0.6	5 2100 1.0	5 0300 -0.4
6 0100 1.3	6 2400 -0.4	6 2300 -0.3	6 0700 1.3	6 0800 -2.0	6 1600 -0.7	6 0100 0.6	6 0400 0.9	6 2000 -1.4	6 2100 -1.3	6 2300 -1.8	6 1100 -0.4
7 0200 -0.7	7 1700 -0.2	7 1800 -0.3	7 0800 -2.1	7 0800 -2.1	7 0800 -1.3	7 0900 -0.4	7 0900 -0.4	7 0900 -0.4	7 0900 -0.4	7 0900 -0.4	7 0300 -0.4
8 0200 -0.8	8 1300 1.5	8 1300 1.5	8 0900 -1.7	8 0900 -1.7	8 1000 -0.8	8 1000 -0.8	8 1000 -0.8	8 1000 -0.8	8 1000 -0.8	8 1000 -0.8	8 0100 -2.2
9 0800 0.4	9 2100 -1.1	9 0800 -1.5	9 1100 -2.0	9 1100 -2.0	9 1100 -2.0	9 1100 -2.0	9 1100 -2.0	9 1100 -2.0	9 1100 -2.0	9 1100 -2.0	9 0300 0.0
10 0800 0.2	10 1500 -1.0	10 0800 -1.6	10 1100 -1.7	10 1100 -1.7	10 1100 -1.7	10 1100 -1.7	10 1100 -1.7	10 1100 -1.7	10 1100 -1.7	10 1100 -1.7	10 0100 -1.2
11 0100 -0.3	11 1100 -1.9	11 2000 -0.5	11 0100 -0.7	11 0100 -0.7	11 0100 -0.7	11 0100 -0.7	11 0100 -0.7	11 0100 -0.7	11 0100 -0.7	11 0100 -0.7	11 0100 -1.5
12 0100 -0.3	12 1100 -1.9	12 2000 -0.5	12 0100 -0.7	12 0100 -0.7	12 0100 -0.7	12 0100 -0.7	12 0100 -0.7	12 0100 -0.7	12 0100 -0.7	12 0100 -0.7	12 0100 -1.5
13 0100 -0.3	13 1100 -1.9	13 2000 -0.5	13 0100 -0.7	13 0100 -0.7	13 0100 -0.7	13 0100 -0.7	13 0100 -0.7	13 0100 -0.7	13 0100 -0.7	13 0100 -0.7	13 0100 -1.5
14 1100 -1.1	14 1200 -1.5	14 0900 -0.4	14 2000 -1.4	14 2000 -1.4	14 2000 -1.4	14 2000 -1.4	14 2000 -1.4	14 2000 -1.4	14 2000 -1.4	14 2000 -1.4	14 0100 -0.3
15 1100 -1.3	15 2400 e-1.4	15 0500 -1.0	15 0400 -1.3	15 0400 -1.3	15 0400 -1.3	15 0400 -1.3	15 0400 -1.3	15 0400 -1.3	15 0400 -1.3	15 0400 -1.3	15 0400 -1.3
16 1200 -1.2	16 0400 e-1.2	16 0400 e-1.2	16 0400 e-1.2	16 0400 e-1.2	16 0400 e-1.2	16 0400 e-1.2	16 0400 e-1.2	16 0400 e-1.2	16 0400 e-1.2	16 0400 e-1.2	16 0400 e-1.2
17 1300 -1.2	17 2300 e-1.2	17 0600 e-1.2	17 0600 e-1.2	17 0600 e-1.2	17 0600 e-1.2	17 0600 e-1.2	17 0600 e-1.2	17 0600 e-1.2	17 0600 e-1.2	17 0600 e-1.2	17 0600 e-1.2
18 1400 -1.2	18 0500 e-1.2	18 0500 e-1.2	18 0500 e-1.2	18 0500 e-1.2	18 0500 e-1.2	18 0500 e-1.2	18 0500 e-1.2	18 0500 e-1.2	18 0500 e-1.2	18 0500 e-1.2	18 0500 e-1.2
19 1400 -1.2	19 0500 e-1.2	19 0500 e-1.2	19 0500 e-1.2	19 0500 e-1.2	19 0500 e-1.2	19 0500 e-1.2	19 0500 e-1.2	19 0500 e-1.2	19 0500 e-1.2	19 0500 e-1.2	19 0500 e-1.2
20 0900 e-1.2	20 1600 e-1.2	20 0900 e-1.2	20 0900 e-1.2	20 0900 e-1.2	20 0900 e-1.2	20 0900 e-1.2	20 0900 e-1.2	20 0900 e-1.2	20 0900 e-1.2	20 0900 e-1.2	20 0900 e-1.2
21 0100 e-1.3	21 1900 e-1.3	21 0600 e-1.3	21 0600 e-1.3	21 0600 e-1.3	21 0600 e-1.3	21 0600 e-1.3	21 0600 e-1.3	21 0600 e-1.3	21 0600 e-1.3	21 0600 e-1.3	21 0600 e-1.3
22 0100 e-1.3	22 1900 e-1.3	22 0600 e-1.3	22 0600 e-1.3	22 0600 e-1.3	22 0600 e-1.3	22 0600 e-1.3	22 0600 e-1.3	22 0600 e-1.3	22 0600 e-1.3	22 0600 e-1.3	22 0600 e-1.3
23 0100 e-1.3	23 1900 e-1.3	23 0600 e-1.3	23 0600 e-1.3	23 0600 e-1.3	23 0600 e-1.3	23 0600 e-1.3	23 0600 e-1.3	23 0600 e-1.3	23 0600 e-1.3	23 0600 e-1.3	23 0600 e-1.3
24 0100 e-1.3	24 1900 e-1.3	24 0600 e-1.3	24 0600 e-1.3	24 0600 e-1.3	24 0600 e-1.3	24 0600 e-1.3	24 0600 e-1.3	24 0600 e-1.3	24 0600 e-1.3	24 0600 e-1.3	24 0600 e-1.3
25 0800 e-1.1	25 1900 e-1.1	25 0700 e-1.1	25 0700 e-1.1	25 0700 e-1.1	25 0700 e-1.1	25 0700 e-1.1	25 0700 e-1.1	25 0700 e-1.1	25 0700 e-1.1	25 0700 e-1.1	25 0700 e-1.1
26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2	26 0900 e-1.2
27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0	27 1000 e-2.0
28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2	28 1100 e-2.2
29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2	29 1100 e-2.2
30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8	30 1200 e-1.8
31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1	31 1300 e-1.1

e Estimated.

Table 16B.--Water stages in the Laguna Madre estuary, 1970 water year

P-6. Laguna Madre near Stover Point near Port Isabel, Texas

LOCATION.--Lat 26°12'35" long 97°15'45", on platform near Intracoastal Waterway marker No. 73, about 2.2 miles east northeast of Stover Point, about 10 miles north northwest of Port Isabel, Cameron Co.

RECORDS AVAILABLE.--March 1970 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.--Hurricane tides.--Celia: maximum elevation 1.6 feet Aug. 4.

REMARKS.--Gage operated by U.S. Army Corps of Engineers; records computed by U.S. Geological Survey.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1969 to September 1970.

October		November		December		January		February		March		April		May		June		July		August		September			
Day	Time	Day	Time	Day	Time	Day	Time	Day	Time	Day	Time	Day	Time	Day	Time	Day	Time	Day	Time	Day	Time	Day	Time		
												1	0700 e 0.0	1	2000	0.0	1	1000	1.1	1	1200	0.7	1	0100	0.2
												2	0900 e .2	2	0200	.3	2	2300	.2	2	1400	.8	2	0200	.6
												3	1000 e .4	3	0400	.3	3	2400	.1	3	1600	.2	3	0300	.8
												4	0400 e .4	4	1300	.4	4			4	1900	1.3	4	1400	.3
												5	0400 e .4	5	0800	.6	5			5	1000	1.6	5	0100	.7
												6	0300 e-0.5	6	1100	.0	6	1300	.6	6	1800	1.1	6	1400	.3
												7	0200 e-.2	7	1600	.1	7	0100	.2	7	0300	.6	7	2200	.5
												8	0100 e-.4	8	1000	.4	8	0200	.1	8	1100	.0	8	0300	.5
												9	0100 e-.4	9	0200	.4	9	0200	.1	9	1200	.1	9	1500	.1
												10	0200 e-.1	10	1600	.1	10	0400	.3	10	0400	.3	10	1800	.7
												11	0500 e .3	11	1500	.5	11	0500	.2	11	0400	.2	11	1900	.8
												12	0700 e .7	12	1700	.4	12	0700	.7	12	0700	.7	12	2000	.7
												13	0900 e 1.2	13	1700	.3	13	0800	.2	13	0900	.8	13	0500	.5
												14	0800 e 1.1	14	1900	.3	14	1100	.8	14	1100	.8	14	1700	.0
												15	0800 e .9	15	1800	.3	15	1100	.8	15	1100	.8	15	2000	.2
												16	0900 e .5	16	1700	.3	16	1200	.7	16	1200	.7	16	1900	.3
												17	1100 e .6	17	0900	.2	17	0900	.2	17	0900	.2	17	1800	.8
												18	1000 e .3	18	1300	.0	18	1100	1.3	18	1100	.5	18	1300	.3
												19	1100 e .2	19	1400	.0	19	1100	1.4	19	1100	.5	19	1400	.1
												20	1300 e .8	20	2400	.2	20	1300	1.3	20	1300	.4	20	2300	.7
												21	0300 e-.2	21	0900	.3	21	1400	1.4	21	1400	.6	21	0600	.6
												22	0600 e-.1	22	1500	.7	22	1500	1.3	22	1500	.3	22	1600	.1
												23	0100 e-.5	23	0300	.1	23	0200	.5	23	0200	.3	23	0500	1.1
												24	1800 e-.2	24	1700	.8	24	1700	1.0	24	1700	.4	24	0600	.3
												25	1300 e .4	25	0400	.2	25	0700	.2	25	0700	.2	25	1800	.2
												26	0300 e-.7	26	0800	.0	26	0800	.7	26	0800	.7	26	1900	.3
												27	0300 e-.3	27	0800	.0	27	0800	.2	27	0800	.2	27	2300	.3
												28	0300 e-.3	28	0900	.2	28	0900	.4	28	0900	.4	28	2300	.2
												29	0500 e-.2	29	1600	.8	29	1600	1.2	29	1600	.8	29	1900	.4
												30	0500 e-.2	30	1700	.8	30	1700	.8	30	1700	.8	30	1900	.4
												31	0700 e-.2	31	2000	.8	31	2000	.8	31	2000	.8	31	1900	.1

a No usable record.
e Estimated.

Table 16D.--Water stages in the Laguna Madre estuary, 1970 water year

P-9. Brazos Santiago Pass near Port Isabel, Texas

LOCATION.--Lat 26°04'00" long 97°09'11", on concrete pile near landward end of north jetty, 3.4 miles east of Port Isabel, Cameron Co.

RECORDS AVAILABLE.--September 1968 through September 1970.

GAGE.--Water-stage recorder. Datum of gage is mean sea level (levels by U.S. Army Corps of Engineers).

EXTREMES.--Excluding hurricane tides.--1970 water year: maximum elevation 2.1 feet Oct. 26; minimum -2.7 feet Jan. 7 and Feb. 4.
1969-70 water years: maximum elevation 2.8 feet Feb. 14, 1969; minimum -2.7 feet Jan. 7 and Feb. 4, 1970.
Hurricane tides.--Cells: maximum elevation 1.6 feet Aug. 4, 1970.

REMARKS.--Gage operated by U.S. Army Corps of Engineers; records computed by U.S. Geological Survey.

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1969 to September 1970.

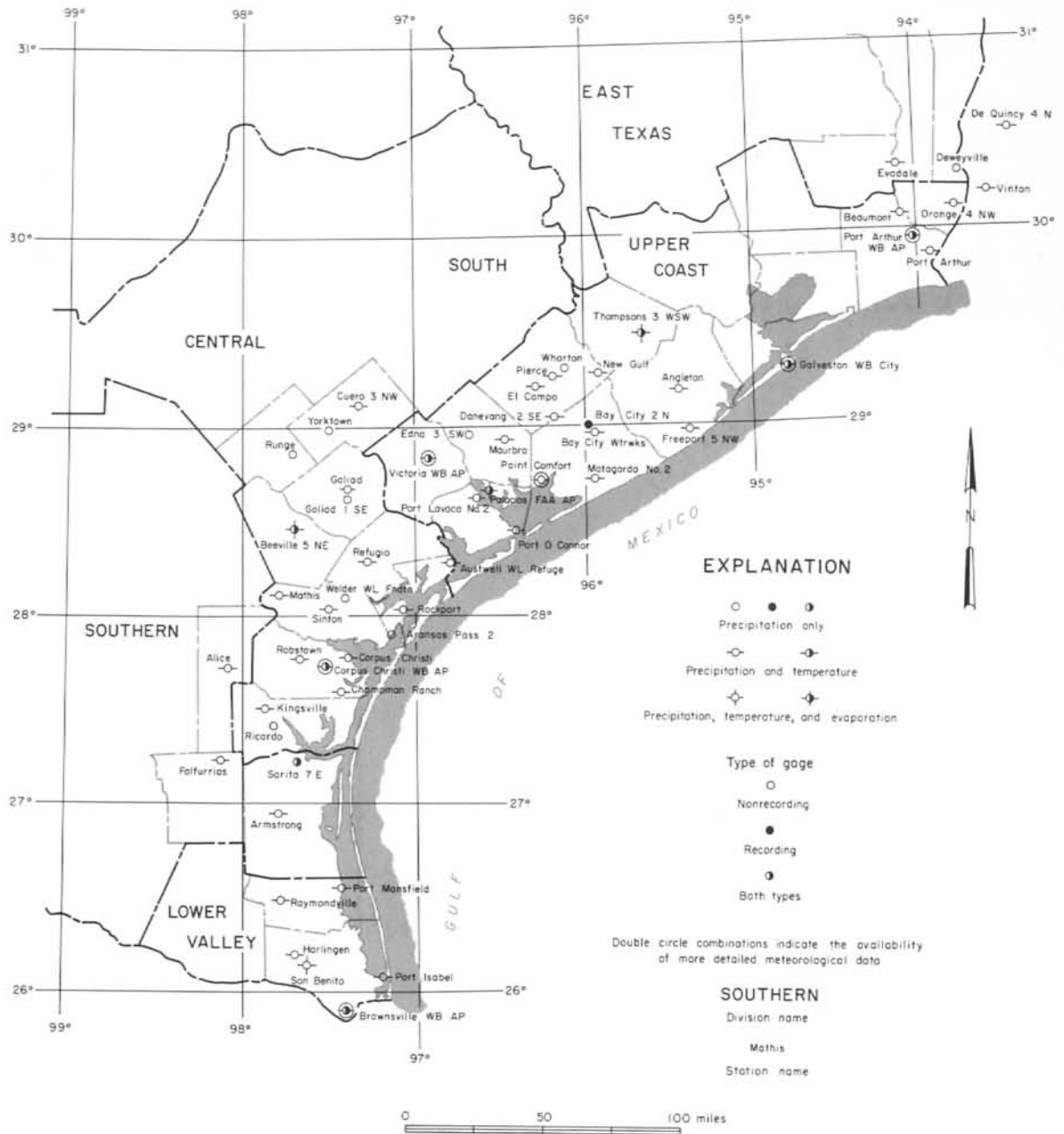
October		November		December		January		February		March		April		May		June		July		August		September																
Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage															
1	1200	-0.4	1	1300	0.1	1	1400	-0.7	1	0500	-1.1	1	0400	-1.1	1	0200	-1.4	1	0300	-0.8	1	0600	-0.2	1	0400	1.3	1	0500	.7	1	0600	0.9	1	0400	1.0			
2	1400	1.2	2	2300	1.3	2	2300		2	0300	-1.1	2	1700	1.1	2	1400	.7	2	1800	.9	2	1200	.9	2	1900	-1.8	2	1900	-1.8	2	0800	1.0	2	1300	1.1			
3	0100	1.0	3	1500	1.2	3	2200	-1.1	3	0400	-1.0	3	0500	-1.8	3	0400	-1.4	3	0500	-1.4	3	1800	1.0	3	0500	1.4	3	0500	.6	3	0800	1.0	3	2200	1.1			
4	0100	-0.6	4	0200	-0.9	4	0500	-0.8	4	0600	-1.1	4	0600	-2.2	4	0400	-1.4	4	2400	-3.3	4	0700	-2.2	4	0100	-0.9	4	0100	-0.9	4	0200	-1.3	4	0300	1.3	4	0900	1.3
5	0200	-0.7	5	0100	-0.6	5	0600	-0.7	5	1300	.8	5	1900	.2	5	1700	.8	5	1900	.0	5	0300	1.1	5	2000	-1.4	5	2000	-1.4	5	2000	-1.5	5	1400	1.4	5	1200	2.2
6	0200	-0.7	6	0200	-1.1	6	0300	-1.2	6	0300	-1.2	6	0800	-2.0	6	0800	-2.0	6	0800	-2.0	6	0800	-2.0	6	0800	-2.0	6	0800	-2.0	6	0800	-2.0	6	0800	-2.0	6	0800	-2.0
7	0200	-0.9	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1	7	0200	-1.1
8	0700	-0.7	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5	8	0700	-0.5
9	0700	-0.7	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5	9	0700	-0.5
10	0700	-0.7	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5	10	0700	-0.5
11	0600	-0.4	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2	11	0600	-0.2
12	0600	-0.4	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2	12	0600	-0.2
13	0900	-0.9	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2	13	0900	-1.2
14	1000	-0.9	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1	14	1000	-1.1
15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3	15	1100	-1.3
16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1	16	1200	-1.1
17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1	17	1300	-1.1
18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1	18	1300	-1.1
19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1	19	1300	-1.1
20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1	20	1300	-1.1
21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4	21	0100	1.4
22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4	22	0100	1.4
23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9	23	0600	-0.9
24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3	24	0700	-0.3
25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4	25	0100	1.4
26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3	26	0200	1.3
27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0	27	0900	-0.0
28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8	28	1000	-1.8
29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0	29	1000	-2.0
30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0	30	1000	-2.0
31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2	31	1300	-2.2
	2400	1.7		2400	1.7		2400	1.7		2400	1.7		2400	1.7		2400	1.7		2400	1.7		2400	1.7		2400	1.7		2400	1.7		2400	1.7		2400	1.7		2400	1.7

SELECTED HYDROLOGIC RECORDS

Climatological Records

The climate of a region plays a great role in estuarine water quality. The types of climatological data available for a 60-mile-wide band along the Texas coast are shown on Figure 12.

Tabulations of daily precipitation, temperature, and other data are published monthly and monthly summaries are published annually by the Environmental Science Services Administration in the series titled Climatological Data-Texas. For the period 1931-60, monthly and annual data are summarized in two U.S. Weather Bureau publications (1958, 1965).



Base From USCOMM - Weather Bureau. Revised July, 1965

Figure 12.—Locations of Selected Climatological Stations

Continuous Streamflow Records and Daily Water-Quality Records

Streams along the Texas coast lie in the flat coastal plain and are incised below sea level. Thus, changes in water stage within bays due to tides often extend many miles upstream. The most downstream sites at which continuous streamflow data are collected are several miles upstream from the estuaries. The locations of these sites are shown on Figure 11. The site numbers shown on the map correspond to station numbers used by the U.S. Geological Survey.

The streamflow data represent runoff reaching the coastal area but do not describe all of the flow from streams that enter an estuary. Intervening drainage, diversions for irrigation, return flows, and evapotranspiration may all influence streamflow between the measuring site and the estuary.

Analyses of water collected daily from continuous streamflow measuring sites (Figure 11) show the effect of geology and cultural development on runoff from the drainage basins. At times, however, intervening drainage,

return flows, and evapotranspiration may alter the water quality between the data-collection site and the estuary.

Streamflow and chemical-quality data are published annually in the series Water Resources of Texas: Part 1. Surface water Records, and Part 2. Water Quality Records.

Water-Quality and Streamflow Records for Selected Tributaries

The ungedged drainage areas to each estuary range from less than 100 square miles to more than 10,000 square miles. To completely describe the quality and quantity of runoff from the entire area between continuous streamflow stations and the estuary is not feasible; however, representative data (Table 17) are available from data-collection sites shown in Figure 13. Sites assigned station numbers 08117840 through 08468500 appear in the annual publications named in the foregoing section. Other sites have been numbered consecutively for this report.

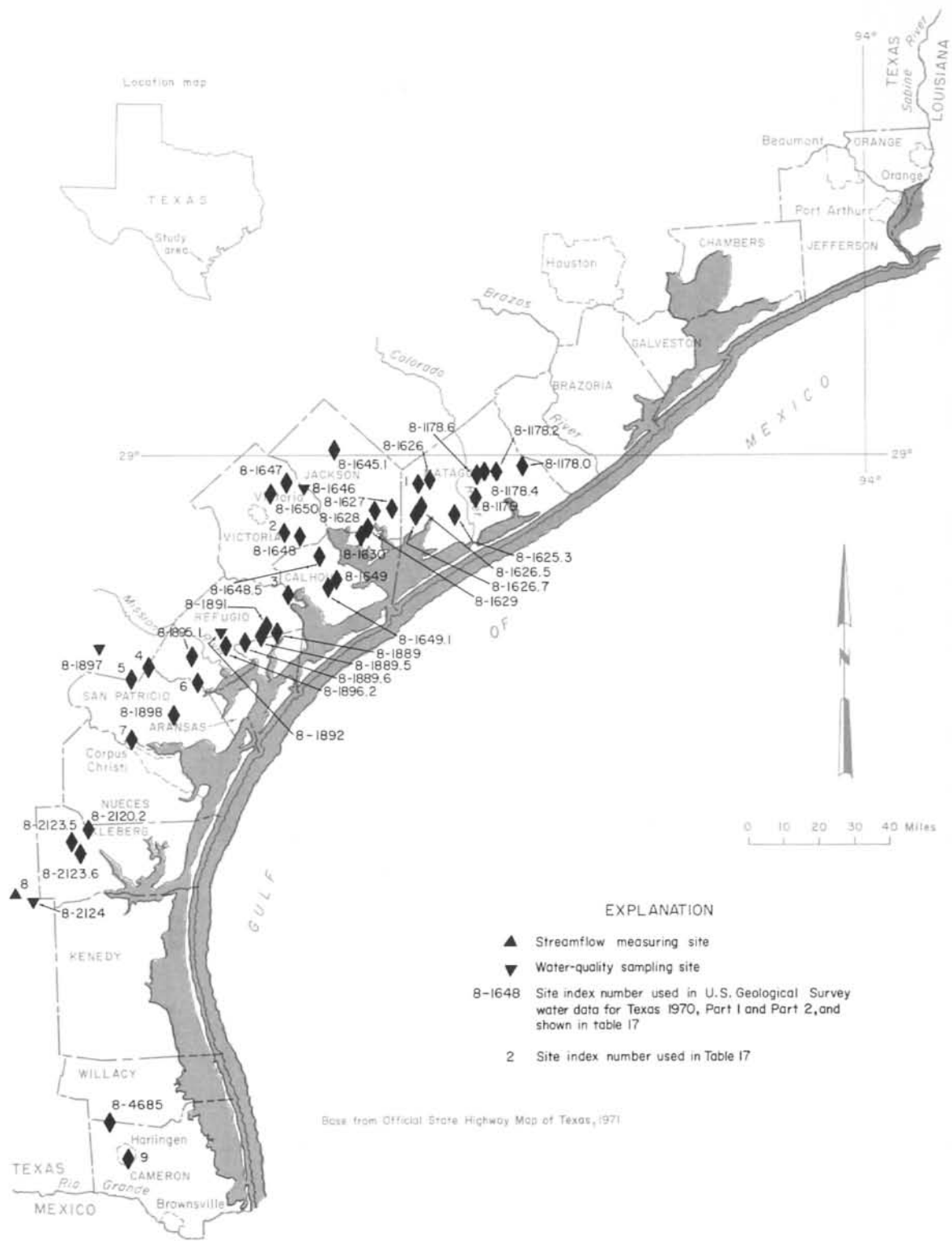


Figure 13.—Locations of Miscellaneous Water-Quality and Streamflow Data-Collection Sites

Table 17A.--Water-quality and streamflow records for selected tributaries

Nutrient and other environmental characteristics
March 1969 - Sept. 1970

(Results in milligrams per liter except as indicated)

Date of collection	Time	Discharge (cfs)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Turbidity mg/l SiO ₂	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
							Concentration	Percent saturation								
TRIBUTARIES TO EAST MATAGORDA ESTUARY																
8-1179 Big Boggy Creek near Wadsworth																
1969																
Mar. 13	1345	0.58	280	8.1	22	--	10.6	120	--	--	--	2.4	QP	QN	--	0.53
1970																
June 2	0930	441	--	7.0	21.5	8.0	4.1	46	2.6	28	7.3	.1	0.00	0.00	--	.09
July 20	1400	3.32	--	7.5	33.0	19	12.0	164	1.6	21	15	.0	.00	.00	--	.11
Aug. 4	1200	12.9	--	6.2	29.5	19	8.9	116	4.1	35	11	.1	.16	.04	--	.15
Aug. 24	1345	3.20	--	7.6	33.0	46	7.5	103	3.5	37	39	.1	.00	.00	--	.12
Sept. 29	0845	10.0	--	6.9	21.0	25	6.1	68	1.2	35	27	.0	.00	.00	--	.10
8-1625.3 Little Robins Slough near Matagorda																
1969																
Mar. 13	1200	.69	1,020	7.1	14.0	--	9.1	88	--	--	--	1.8	QP	QP	--	.05
July 22	1500	b20	--	--	30.0	--	--	--	--	--	--	.4	QN	QN	--	.20
Aug. 19	1510	21.2	--	--	31.0	--	--	--	--	--	--	.2	QN	QN	--	.64
TRIBUTARIES TO LAVACA-TRES PALACIOS ESTUARY																
8-1626 Tres Palacios Creek near Midfield																
1969																
Mar. 13	0815	24.2	650	7.4	11.0	--	9.0	81	--	--	--	4.6	QP	QP	--	.85
July 22	1130	b60	--	--	28.0	--	--	--	--	--	--	.3	QN	QN	--	.34
Aug. 19	1115	8.57	--	--	28.0	--	--	--	--	--	--	.1	QN	QN	--	.44
1970																
Feb. 18	1345	15.1	410	7.6	18.6	--	9.7	103	7.7	42	13	.0	--	.00	0.37	.65
Apr. 15	1530	53.5	360	7.3	23.7	--	7.0	81	2.6	39	15	.3	.12	.03	.15	.18
June 2	1200	3,040	--	6.7	23.5	40	4.8	56	2.6	28	11	1.0	.19	.00	--	.17
July 21	0900	79.5	--	7.5	28.0	18	6.4	81	.9	16	19	.0	.00	.00	--	.15
Aug. 4	1630	181	--	6.5	29.0	18	9.3	119	3.7	37	13	.0	.14	.03	--	.20
Aug. 24	1650	59.1	--	7.7	30.0	26	6.6	87	3.0	23	31	.0	.00	.00	--	.19
Sept. 29	1630	37.0	--	7.6	24.0	15	7.8	92	1.1	18	33	.1	.00	.00	--	.17
8-1626.5 Cashes Creek near Blessing																
1969																
Mar. 13	1015	1.21	900	7.2	13.0	--	9.2	87	--	--	--	1.8	QP	QN	--	.58
July 22	1300	4.68	--	--	29.0	--	--	--	--	--	--	.4	QN	QN	--	.17
Aug. 19	1300	.09	--	--	28.0	--	--	--	--	--	--	.5	QN	QN	--	.36
1970																
Feb. 18	0800	.12	1,400	7.5	13.7	--	8.9	85	1.5	7.0	14	.0	.00	.00	.02	.05
Apr. 15	1400	8.15	320	7.4	22.8	--	6.0	69	3.6	45	20	.0	.19	.03	.10	.14
June 1	1810	399	--	7.0	24.5	13	4.2	50	2.9	32	13	.3	.00	.00	--	.10
July 20	1630	7.56	--	7.4	30.5	18	6.9	91	1.1	25	27	.0	.00	.00	--	.10
Aug. 24	1545	9.34	--	7.1	29.0	12	4.8	62	6.0	29	40	.0	.00	.00	--	.18
Sept. 29	1510	5.01	--	7.4	21.0	13	7.8	87	1.7	22	27	.1	.00	.00	--	.08
8-1626.7 Turtle Creek near Palacios																
1969																
Mar. 12	1745	.57	580	7.3	13.0	--	11.0	104	--	--	--	.0	QP	QN	--	.75
July 22	1440	b15	--	--	29.0	--	--	--	--	--	--	.3	QN	QN	--	.21
Aug. 19	1340	1.18	--	--	32.0	--	--	--	--	--	--	.3	QN	QN	--	.62
8-1627 East Carancahua Creek near Blessing																
1970																
Feb. 18	1230	3.88	530	7.9	18.4	--	10.9	115	3.6	29	9.4	.1	.00	.00	.00	.06
Apr. 15	1215	49.8	320	7.4	22.6	--	7.3	84	3.3	45	16	.0	.16	.03	.06	.06
June 1	1615	3,780	--	7.0	25.0	33	4.8	57	2.2	25	10	.3	.00	.00	--	.09
July 21	1100	26.8	--	7.9	29.0	14	6.9	88	1.0	18	26	.0	.00	.00	--	.08
Aug. 25	0740	19.1	--	7.8	28.0	19	6.0	76	1.6	12	30	.0	.00	.00	--	.05
Sept. 29	1920	9.96	--	7.7	24.0	14	8.4	99	1.4	22	37	.1	.00	.00	--	.07
8-1628 West Carancahua Creek near La Ward																
1970																
Feb. 18	1020	.40	270	7.4	13.4	--	8.5	81	3.4	43	6.0	.2	.36	.00	.08	.16
Apr. 15	1050	14.4	260	7.4	23.4	--	6.4	74	4.2	37	17	.0	.14	.02	.10	.13
June 1	1330	1,420	--	6.7	25.0	42	4.2	50	2.3	27	13	.3	.07	.00	--	.17
July 21	1330	6.23	--	8.1	30.5	26	7.1	93	1.1	17	28	.0	.00	.00	--	.10
Aug. 25	0830	19.8	--	7.7	27.5	19	5.5	69	2.8	23	42	.1	.00	.00	--	.16
Sept. 28	1715	7.92	--	8.1	24.5	13	8.5	101	1.8	19	22	.1	.00	.00	--	.18

See footnote at end of table.

Table 17A.--Water-quality and streamflow records for selected tributaries

Nutrient and other environmental characteristics--Continued
March 1969 - Sept. 1970

(Results in milligrams per liter except as indicated)

Date of collection	Time	Discharge (cfs)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Turbidity mg/l SiO ₂	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Nitrate nitrogen (N)	Ammonia nitrogen (N)	Nitrite nitrogen (N)	Orthophosphate as phosphorus (P)	Total phosphorus (P)
							Concentration a/	Percent saturation								
TRIBUTARIES TO LAVACA-TRES PALACIOS ESTUARY--Continued																
8-1629 Kellers Creek near La Ward																
1970																
Feb. 18	0920	b.01	220	7.9	12.0	--	8.1	75	6.0	61	4.6	0.2	0.43	0.00	0.04	0.22
Apr. 15	1010	1.5	150	7.5	21.8	--	6.7	76	3.5	47	12	.0	.15	.02	.03	.07
8-1640 Lavaca River near Edna																
1970																
Feb. 17	1410	--	700	8.0	16.8	--	11.5	117	1.2	10	14	.4	.05	.00	.06	.11
Apr. 14	1325	--	630	8.1	23.6	--	9.0	105	2.7	14	14	.5	.05	.01	.08	.12
10 Mustang Creek near Ganado																
1970																
Feb. 17	1230	1.19	510	7.7	14.6	--	10.9	106	4.2	32	11	.1	.12	.00	.33	.44
Apr. 14	1130	34.6	260	7.4	23.2	--	7.4	85	4.2	39	13	.6	.21	.07	.12	.15
8-1645 Navidad River near Ganado																
1970																
Feb. 17	1315	--	750	8.1	14.9	--	10.8	106	1.1	12	16	.1	.11	.00	.06	.06
Apr. 14	1235	--	260	7.6	23.2	--	8.2	94	3.1	33	9.8	.3	.10	.02	.05	.12
8-1646 Garcitas Creek near Inez																
1970																
Feb. 17	1645	2.79	350	7.9	18.2	--	10.0	105	2.4	28	16	.1	.17	.00	.03	.06
Apr. 14	1550	11.8	230	7.8	25.4	--	8.4	101	2.5	44	14	.2	.14	.2	.00	.06
June 2	1700	117	--	7.7	27.0	17	7.2	89	2.4	58	20	.5	.08	.00	--	.06
July 21	1520	.26	--	7.5	30.0	1.0	8.0	105	.3	13	26	.0	.00	.00	--	.02
Aug. 25	1000	.26	--	7.3	26.0	1.4	5.8	71	.6	7.6	29	.1	.00	.00	--	.00
Sept. 28	1235	4.89	--	7.2	24.0	44	7.7	91	1.3	28	22	.1	.00	.00	--	.07
8-1647 Arenosa Creek near Inez																
1969																
Mar. 12	1100	6.30	480	7.1	10.0	--	9.7	86	--	--	--	1.7	QP	QN	--	.27
July 22	1640	3.2	--	--	30.5	--	--	--	--	--	--	.6	QN	QN	--	.33
Aug. 19	1640	1.16	--	--	32.0	--	--	--	--	--	--	.0	QN	QN	--	1.1
1970																
Feb. 17	1530	.94	600	7.7	15.8	--	10.1	101	1.7	21	20	.0	.18	.00	.05	.08
Apr. 14	1400	17.5	210	7.8	23.1	--	7.3	84	2.4	49	11	.0	.17	.02	.07	.12
8-1648 Placedo Creek near Placedo																
1970																
Feb. 17	1810	.63	2,600	7.2	14.6	--	8.3	81	1.9	29	23	.1	.17	.00	.04	.23
Apr. 14	1715	8.5	680	7.4	23.1	--	6.3	72	2.4	43	19	.2	.12	.05	.10	.10
June 2	1545	90.9	--	7.7	24.0	20	6.7	79	2.5	43	20	.2	.00	.00	--	.18
July 22	0915	109	--	7.5	25.0	260	6.0	71	4.3	29	12	.4	.00	.00	--	.40
Aug. 25	1305	0.62	--	7.5	27.0	2.3	4.5	58	2.5	20	15	.2	.50	.51	--	.07
Sept. 30	1115	3.82	--	7.1	22.0	27	6.3	72	1.1	31	28	.1	.00	.00	--	.13
8-1648.50 Chocolate Bayou at Port Lavaca																
1970																
Feb. 17	1845	b.6	600	7.2	14.7	--	5.9	57	4.4	62	22	.2	.52	.00	.42	.62
Apr. 14	1800	21.7	230	7.4	27.6	--	6.4	74	3.0	31	19	.7	.18	.04	.15	.16
June 2	2000	130	--	7.6	24.0	128	5.9	69	2.6	41	22	.5	.16	.00	--	.21
July 22	1135	41.5	--	7.3	29.5	380	5.8	75	2.4	44	17	.8	.00	.00	--	.30
Aug. 25	1530	6.93	--	7.7	27.0	12	3.8	47	1.8	19	24	.1	.00	.00	--	.13
Sept. 30	1535	11.78	--	7.0	22.0	51	6.5	74	1.4	27	27	.2	.00	.00	--	.26
8-1649 East Coloma Creek near Port Lavaca																
1969																
Mar. 12	1615	.26	8,700	6.8	18.0	--	11.5	124	--	--	--	.2	QP	QN	--	.09
July 23	0800	b20	--	--	28.0	--	--	--	--	--	--	.4	QN	QN	--	.24
Aug. 20	0840	10.2	--	--	28.5	--	--	--	--	--	--	.4	QN	QN	--	1.4
8-1649.1 West Coloma Creek near Seadrift																
1969																
Mar. 12	1430	.35	6,800	6.6	17.0	--	11.8	124	--	--	--	1.6	QP	QN	--	.12
July 23	0830	b20	--	--	28.0	--	--	--	--	--	--	.2	QN	QN	--	.23
Aug. 20	0930	21.1	--	--	28.5	--	--	--	--	--	--	.0	QN	QN	--	.71

See footnote at end of table.

Table 17A.--Water-quality and streamflow records for selected tributaries

Nutrient and other environmental characteristics--Continued
March 1969 - Sept. 1970

(Results in milligrams per liter except as indicated)

Date of collection	Time	Discharge (cfs)	Specific conductance (micro-mhos at 25° C)	pH	Temperature (°C)	Turbidity mg/l SiO ₂	Dissolved oxygen		Bio-chemical oxygen demand (BOD)	Chemical oxygen demand (COD)	Silica (SiO ₂)	Ni-trate nitrogen (N)	Ammonia nitrogen (N)	Ni-trite nitrogen (N)	Ortho-phosphate as phosphorus (P)	Total phosphorus (P)
							Concentration	Percent saturation								
TRIBUTARIES TO MISSION-ARANSAS ESTUARY																
8-1891 Salt Creek near Refugio																
1970																
June 3	1000	49.6	--	6.9	22.5	26	5.4	61	1.8	53	29	0.3	0.00	0.00	--	0.05
8-1892 Copano Creek near Refugio																
1970																
June 3	1200	252	--	8.0	25.0	22	3.7	44	2.0	59	24	.2	.13	.00	--	.09
July 22	1600	1.22	--	7.3	29.0	44	5.6	72	2.7	61	17	.2	.00	.00	--	.26
Sept.30	1800	.20	--	7.6	26.0	60	7.8	95	4.5	43	19	.1	.00	.00	--	.17
8-1898 Chiltipin Creek at Sinton																
1970																
June 3	1500	335	--	7.8	29.5	114	6.2	75	2.1	29	14	.4	.08	.00	--	.28
July 23	0900	1.82	--	7.4	28.0	9.0	3.7	76	2.7	42	22	.7	.00	.00	--	.04
Aug. 26	1000	1.04	--	7.7	29.5	4.4	8.5	157	4.2	26	20	.1	.02	.00	--	.10

a/ Determined at data-collection site.

E/ Estimated.

QN means qualitative test negative.

QP means qualitative test positive.

Table 17B.--Water-quality and streamflow records for selected tributaries
Chemical analyses, 1970 water year

Date of Collection	Discharge (cfs)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Iron (Br)	Dissolved Solids	Suspended Solids	Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Calcium	Magnesium			
(Results in milligrams per liter except as indicated)																			
TRIBUTARY TO EAST MATAGORDA ESTUARY																			
8-1179 Big Boggy Creek near Wadsworth																			
June 2	441	7.3	7.5	1.8	3.2	2.5	31	0	0.4	3.0	0.0	--	41	--	26	1	0.3	70	6.4
July 20	3.32	15	44	14	32	2.2	162	0	27	57	.3	0.03	272	71	167	35	1.1	495	7.4
Aug. 4	12.9	11	17	7.0	15	c	60	0	22	23	0	--	126	--	71	22	.8	231	6.8
Aug. 24	3.20	39	56	21	60	15	234	0	28	110	.4	--	445	160	226	34	1.7	759	7.5
Sept. 29	10.0	27	25	6.8	18	3.9	94	0	5.4	29	.2	--	161	55	90	13	.8	262	6.6
TRIBUTARIES TO LAVACA-TRES PALACIOS ESTUARY																			
8-1626 Tres Palacios Creek near Midfield																			
Feb. 18	15.1	13	42	13	57	c	177	0	16	83	.3	.041	313	--	160	15	2.0	565	7.5
Apr. 15	53.5	15	36	9.5	32	c	152	0	13	42	.2	.026	225	--	129	4	1.2	400	7.5
June 2	3,040	11	12	2.8	5.7	3.3	54	0	2.4	3.9	.1	--	73	--	41	0	.4	111	6.7
July 21	79.5	19	52	16	50	2.7	214	0	18	79	.3	.05	343	91	196	20	1.6	618	7.4
Aug. 4	181	13	29	12	33	c	134	0	16	47	.2	--	216	--	121	11	1.3	415	7.4
Aug. 24	59.1	31	58	18	60	9.4	249	0	30	94	.3	--	423	94	218	14	1.8	730	7.5
Sept. 29	37.0	33	57	18	64	7.0	246	0	20	98	.3	--	419	64	216	14	1.9	698	7.8
8-1626.5 Cashes Creek near Blessing																			
Feb. 18	.12	14	99	49	162	c	466	0	59	252	.7	.16	865	--	448	66	3.3	1,560	7.6
Apr. 15	8.15	20	27	8.9	30	c	155	0	8.6	23	.2	.030	195	--	104	0	1.3	338	7.5
June 1	399	13	12	3.4	8.1	2.9	61	0	4.4	4.4	.1	--	76	--	44	0	.5	125	6.9
July 20	7.56	27	46	15	50	2.7	215	0	8.4	72	.4	.05	328	67	176	0	1.5	570	7.7
Aug. 24	9.34	40	57	18	62	11	252	0	23	100	.3	--	435	36	216	10	1.8	748	7.4
Sept. 29	5.01	27	48	16	54	4.7	218	0	8.6	83	.3	--	349	60	186	8	1.7	605	7.5
8-1627 East Carancahua Creek near Blessing																			
Feb. 18	3.88	9.4	46	22	73	c	222	0	27	109	.4	.076	396	--	207	25	2.2	725	7.5
Apr. 15	49.8	16	27	9.5	27	c	127	0	11	35	.2	.030	188	--	107	3	1.1	332	7.6
June 1	3,780	10	9.5	2.6	5.0	2.2	44	0	.4	3.6	.0	--	57	--	34	0	.4	92	6.7
July 21	26.8	26	44	18	71	2.7	226	0	12	103	.4	.07	389	52	184	0	2.3	683	7.8
Aug. 25	19.1	30	51	21	85	4.6	260	0	18	128	.4	--	466	56	214	0	2.5	827	7.7
Sept. 29	9.96	37	52	20	68	5.6	246	0	16	106	.4	--	425	46	212	10	2.0	726	7.5

See footnotes at end of table

Table 17B.--Water-quality and streamflow records for selected tributaries
Chemical analyses, 1970 water year--Continued

Date of Collection	Discharge (cfs)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Iodide (I)	Bromide (Br)	Iron (B)	Dissolved Solids	Suspended Solids	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25° C)	pH	
																	Calcium	Magnesium			
TRIBUTARIES TO LAVACA--TRES PALACIOS ESTUARY--Continued																					
8-1628 West Carancahua Creek near La Ward																					
Feb. 18	0.40	6.0	30	6.4	34	c	139	0	12	35	0.2	0.012	0.00	150	193	--	101	0	1.5	348	7.1
Apr. 15	14.4	17	29	4.3	18	c	117	0	8.8	16	-2	-0.14	2.4	120	152	--	90	0	.8	251	7.5
June 2	1,420	13	12	2.8	5.8	c	48	0	3.2	5.5	-1	--	--	--	72	--	41	2	.4	111	6.4
July 21	6.23	28	61	18	74	4.1	220	0	32	128	-4	.04	.40	160	455	63	226	46	2.1	797	7.6
Aug. 25	19.8	42	76	20	76	13	290	0	18	145	-4	--	--	--	534	81	272	34	2.0	927	7.5
Sept. 28	7.92	22	67	17	82	9.6	302	0	11	114	-4	--	--	--	472	70	237	0	2.3	830	7.8
8-1629 Kellers Creek near La Ward																					
Feb. 18	60.1	4.6	28	7.8	24	c	134	0	12	22	.3	-.025	.06	120	166	--	102	0	1.0	271	6.9
Apr. 15	1.5	12	18	3.7	7.8	c	82	0	.8	6.6	.0	.007	2.0	150	89	--	60	0	.4	157	7.4
8-1640 Lavaca River near Edna																					
Apr. 14	--	14	96	7.4	54	c	292	0	27	82	.3	.043	2.5	130	427	--	270	30	1.4	784	7.8
10 Mustang Creek near Gannado																					
Feb. 17	1.19	11	42	8.3	36	c	145	0	19	55	.2	.027	.06	90	244	--	139	20	1.3	447	7.6
Apr. 14	34.6	13	26	3.7	19	c	74	0	16	29	.2	.009	1.0	90	147	--	80	19	.9	257	7.0
8-1646 Garcitas Creek near Inez																					
Feb. 17	2.79	16	51	5.5	24	c	166	0	23	30	.2	-.045	.10	70	232	--	150	14	.9	394	7.4
Apr. 14	11.8	14	26	4.4	12	c	93	0	11	15	.0	-.037	1.5	140	130	--	83	7	.6	220	7.3
June 2	117	20	18	3.4	8.3	c	67	0	.4	8.0	.1	--	--	--	96	--	59	4	.5	248	6.8
July 21	.26	26	87	8.8	35	2.2	252	0	61	47	.3	.44	.44	110	393	7	253	46	1.0	639	7.4
Aug. 25	.26	29	71	7.6	65	2.2	254	0	20	89	.3	--	--	--	410	5	208	0	2.0	700	7.6
Sept. 28	4.89	22	36	4.2	19	2.5	114	0	8.2	24	.2	--	--	--	172	128	107	14	.8	276	7.1
8-1647 Arenosa Creek near Inez																					
Feb. 17	.94	20	59	13	54	c	265	0	7.6	66	.4	.080	.21	100	350	--	202	0	1.7	631	7.6
Apr. 14	17.5	11	18	4.6	16	c	82	0	7.0	17	.1	.013	2.4	130	114	--	64	0	.9	207	7.1
8-1648 Placedo Creek near Placedo																					
Feb. 17	.63	23	208	35	343	c	272	0	40	810	.3	.23	2.8	570	1,590	--	665	442	5.8	3,020	7.5
Apr. 14	8.5	19	68	11	91	c	137	0	13	203	-2	.069	2.3	270	474	--	215	102	2.7	929	7.1
June 2	90.9	20	20	3.3	16	3.6	70	0	13.4	25	-1	--	--	--	123	--	63	6	.9	213	6.8
July 22	109	12	28	3.6	26	4.7	99	0	13	35	-2	.02	.20	110	174	732	85	4	1.2	303	7.0
Aug. 25	.62	15	257	36	2,680	22	314	0	26	4,600	.6	--	--	--	7,800	23	798	540	--	13,800	7.4
Sept. 30	3.82	28	95	14	146	4.4	162	0	15	332	.2	--	--	--	715	86	294	162	3.7	1,410	7.1
8-1648.5 Chocolate Bayou at Port Lavaca																					
Feb. 17	b.6	22	47	11	60	c	133	0	17	118	.2	.036	.39	180	343	--	162	53	2.1	615	6.9
Apr. 14	21.7	19	21	3.8	17	c	78	0	7.4	21	.1	.027	1.6	130	131	--	68	4	.9	223	7.1
June 2	130	11	15	2.8	11	4.3	63	0	.8	9.2	-1	--	--	--	99	--	49	0	.7	148	6.7
July 22	41.5	27	18	3.8	44	3.6	88	0	7.2	5.5	.3	.03	.26	160	197	732	61	0	2.5	341	6.9
Aug. 25	6.93	24	40	11	262	3.4	296	0	7.8	340	.6	--	--	--	835	34	145	0	9.5	1,540	7.7
Sept. 30	11.8	27	28	4.1	27	5.3	110	0	7.2	34	.2	--	--	--	188	156	87	0	1.3	304	7.0

See footnote at end of table.

Table 17B.--Water-quality and streamflow records for selected tributaries

Chemical analyses, 1970 water year--Continued

(Results in milligrams per liter except as indicated)

Date of Collection	Discharge (cfs)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Bromide (Br)	Boron (B)	Dissolved Solids	Suspended Solids	Hardness as CaCO ₃ (Mg-necium, Non-carbonate)	Sodium sorption ratio	Specific conductance (micro-mhos at 25° C)	pH	
																				8-1891 Salt Creek near Refugio
June 3	49.6	29	20	3.3	10	4.7	85	0	0.4	6.4	0.0	--	--	117	--	63	0	0.5	168	7.0
June 3	252	24	14	3.0	33	5.3	61	0	.0	43	.0	--	--	153	--	47	0	2.1	262	6.7
July 22	1.22	17	19	4.3	53	7.4	87	0	29.0	60	.1	.03	.30	235	192	65	0	2.9	399	6.7
Sept. 30	.20	19	34	5.4	88	7.5	150	0	26	108	.3	--	--	363	182	107	0	3.7	636	7.6
June 3	335	14	22	4.0	102	5.2	60	0	2.0	172	.1	--	--	353	--	72	22	5.2	683	6.8
July 23	1.82	22	2,400	388	20,900	68	115	0	12	38,000	.3	18	171	62,200	13	7,580	7,490	--	99,900	6.5
Aug. 26	1.04	20	1,810	304	15,600	56	114	0	15	28,000	.3	--	--	46,700	24	5,770	5,670	--	70,600	7.0

a/ Micrograms per liter

b/ Estimated

c/ Included in sodium-ion concentration

Table 17C.--Water-quality and streamflow records for selected tributaries

Analyses for selected ions, 1970 water year

(Results in micrograms per liter except as indicated)

Date of Collection	Discharge (cfs)	Specific conductance (micro-mhos at 25° C)	Iron (Fe)	Manganese (Mn)	Lithium (Li)	Aluminum (Al)	Nickel (Ni)	Chromium VI (Cr)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (As)	Cobalt (Co)	Cadmium (Cd)	Mercury (Hg)	Strontium (Sr)
TRIBUTARY TO EAST MATAGORDA ESTUARY																
<u>8-1179 Big Boggy Creek near Wadsworth</u>																
July 20	3.32	495	0	40	10	50	0	0	2	0	0	0	1	0	--	320
TRIBUTARIES TO LAVACA-TRES PALACIOS ESTUARY																
<u>8-1626 Tres Palacios Creek near Midfield</u>																
July 21	79.5	618	0	10	10	60	0	0	1	0	0	0	1	0	--	360
<u>8-1626.5 Cashes Creek near Blessing</u>																
July 20	7.56	570	0	40	10	40	0	0	2	0	0	0	0	0	--	290
<u>8-1627 East Carancahua Creek near Blessing</u>																
July 21	26.8	683	0	0	10	40	0	0	2	0	0	0	0	0	--	510
<u>8-1628 West Carancahua Creek near Blessing</u>																
July 21	6.23	797	0	10	20	70	0	0	2	0	0	0	0	0	--	460
<u>8-1646 Garcitas Creek near Inez</u>																
July 21	.26	639	0	480	0	10	1	0	0	0	0	0	2	0	--	230
<u>8-1648 Placedo Creek near Placedo</u>																
July 22	109	305	0	0	0	50	0	0	4	0	0	0	0	0	--	110
<u>8-1648.5 Chocolate Bayou at Port Lavaca</u>																
July 22	41.5	341	0	0	0	830	1	0	4	0	0	0	0	0	--	80
TRIBUTARIES TO MISSION-ARANSAS ESTUARY																
<u>8-1892 Copano Creek near Refugio</u>																
July 22	1.22	399	30	20	10	50	0	0	8	0	0	0	0	0	--	300
<u>8-1898 Chiltipin Creek at Sinton</u>																
July 23	1.82	90,900	330	1,000	2,680	180	0	0	2	0	30	0	3	1	--	146,000

Table 17D.--Water-quality and streamflow records for selected tributaries
 Insecticide and herbicide analyses, 1970 water year

Date of Collection	Discharge	Type of Sample	Insecticides										Herbicides								
			Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor Epoxide	Heptachlor Lindane	Chlor-dane	Para-thion	Methyl Para-thion	Malathion	Diazinon	2,4-D	Silvex	2,4,5-T			
TRIBUTARY TO EAST MATAGORDA ESTUARY																					
8-1179 Big Boggy Creek near Wadsworth																					
July 20	3.32	Water c/	0.00	a/	a/	a/	a/	0.00	0.00	0.00	0.00	0.00	0.00	0.00	b/	b/	--	b/	0.00	0.00	0.00
Aug. 4		Sediment water d/	.00	a/	a/	a/	a/	0.0	0.0	.0	.0	.0	.0	.0	0.0	0.0	--	0.0	.0	.0	.00
July 21	79.5	Water d/	.00	a/	a/	a/	a/	.00	.00	.00	.00	.00	.00	.00	b/	b/	--	b/	.00	.00	.00
Aug. 4	179	Sediment water g/	.00	a/	a/	a/	a/	.0	.0	.0	.0	.0	.0	.0	.0	.0	--	.0	.0	.0	.00
TRIBUTARIES TO LAVACA-TRES PALACIOS ESTUARY																					
8-1626 Tres Palacios Creek near Midfield																					
July 20	7.56	Water	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	b/	b/	--	b/	.00	.00	.00
		Sediment	.0	.3	.6	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0	0.0	.0	.0	.0
8-1626.5 Cashes Creek near Blessing																					
8-1627 East Carancahua Creek near Blessing																					
July 21	26.8	Water d/	.00	a/	a/	a/	a/	.00	.00	.00	.00	.00	.00	.00	b/	b/	--	b/	.00	.00	.00
		Sediment	.0	.3	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8-1628 West Carancahua Creek near La Ward																					
July 21	6.23	Water f/	.00	a/	a/	a/	a/	.00	.00	.00	.00	.00	.00	.00	.03	.22	--	--	.00	.00	.00
		Sediment	.0	.7	1.8	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8-1646 Gracitas Creek near Inez																					
8-1648 Placedo Creek near Placedo																					
July 21	.26	Water	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	b/	b/	--	b/	.00	.00	.00
		Sediment	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
July 22	109	Water g/	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	b/	b/	--	b/	.04	.00	.42
		Sediment	.0	.6	1.3	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8-1648.5 Chocolate Bayou at Port Lavaca																					
July 22	41.5	Water c/	.00	a/	a/	a/	a/	.00	.00	.00	.00	.00	.00	.00	.36	1.5	--	--	.00	.00	.00
		Sediment	.0	6.2	25	3.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

See footnote at end of table.

Table 17D.--Water-quality and streamflow records for selected tributaries
 Insecticide and herbicide analyses, 1970 water year--Continued

Date of Collection	Discharge	Type of Sample	Insecticides										Herbicides						
			Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Heptachlor Epoxide	Lin-dane	Chlor-dane	Para-thion	Methyl Para-thion	Malathion	Diazinon	2,4-D	Silvex	2,4,5-T
TRIBUTARIES TO MISSION-ARANSAS ESTUARY																			
8-1892 Copano Creek near Refugio																			
July 22	1.22	Water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	b/	b/	0.00	0.00	0.00	0.00	
		Sediment	.0	.0	.4	.3	.0	.0	.0	.0	.0	.0	.0	0.0	0.0	.0	.0	.0	
8-1898 Chiltiplin Creek at Sinton																			
July 23	1.82	Water	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	b/	b/	.00	.00	.00	.00
		Sediment	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

a/ These insecticides might have been present at concentrations less than 0.1 micrograms per liter.
 b/ Screened for parathion, methyl parathion, and diazinon; results negative.
 c/ Sample contained 1.0-2.0 micrograms per liter of strobane.
 d/ Sample contained 0.6-1.0 micrograms per liter of strobane.
 e/ Sample contained 0.3-0.5 micrograms per liter of strobane.
 f/ Sample contained 0.1-0.5 micrograms per liter of strobane.
 k/ Sample contained 0.5-1.0 micrograms per liter of strobane.

Table 17E.--Water-quality and streamflow records for selected tributaries
Insecticide and herbicide analyses, 1969 water year

Date of Collection	Discharge	Type of Sample	(Water analyses in micrograms per liter; sediment analyses in micrograms per kilogram sediment, dry weight)																	
			Insecticides						Herbicides											
			Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Heptachlor Epoxide	Lin-dane	Chlor-dane	Parathion	Methyl Parathion	Malathion	Diazinon	2,4-D	Silvex	2,4,5-T	
TRIBUTARY TO LAVACA-TRES PALACIOS ESTUARY																				
8-1625.3 Little Robins Slough near Matagorda																				
Mar. 13	0.69	Water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	--	--	--	15	0.00	0.00	0.00
July 22	a20	Water	.00	.01	.00	.03	.01	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	--	--	--	--	--	--	--	--
Aug. 19	21.2	Water	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	.00	1.4	7.1	1.2	1.4	.00	.00	.00	.00	.00	b/	b/	b/	b/	--	--	--	--
8-1626.7 Turtle Creek near Palacios																				
Mar. 12	.57	Water	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.03
July 22	a15	Water	.00	.04	.00	.05	.05	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	23	.00	6.8	.00	12	.00	.00	.00	.00	.00	b/	b/	b/	b/	--	--	--	--
Aug. 19	1.18	Water	.00	.00	.00	.01	.02	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	106	.00	1.3	.00	1.7	.00	.00	.00	.00	.00	b/	b/	b/	b/	--	--	--	--
8-1649 East Coloma Creek near Port Lavaca																				
Mar. 12	.26	Water	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	.00	1.1	2.9	2.2	.00	.00	.00	.00	.00	.00	--	--	--	--	--	--	--	--
July 23	a20	Water	.00	.06	.00	.22	.07	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	.00	14	29	6.5	3.1	.00	.00	.00	.00	.00	--	--	--	--	--	--	--	--
Aug. 20	10.2	Water	.00	.01	.00	.03	.02	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	.00	11	35	.00	1.7	.00	.00	.00	.00	.00	b/	b/	b/	b/	--	--	--	--
8-1649.1 West Colma Creek near Seadrift																				
Mar. 12	.35	Water	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	.00	.52	1.4	.00	.00	.00	.00	.00	.00	.00	--	--	--	--	--	--	--	--
July 23	a20	Water	.00	.01	.00	.08	.02	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	--	--	--	--	--	--	--	--
Aug. 20	21.1	Water	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	--	--	--	--	--	.00	.00	.00
		Sediment	.00	.00	.61	.00	.00	.00	.00	.00	.00	.00	--	--	--	--	--	--	--	--

a/ Estimated
b/ Screened for parathion, methyl parathion, and diazinon; results negative.

REFERENCES CITED

- American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1966, Standard methods for the examination of water and wastewater: Am. Public Health Assoc., second printing, 769 p.
- Grozier, R. U., Hahl, D. C., Hulme, A. E., and Schroeder, E. E., 1968, Floods from Hurricane Beulah in South Texas and Northeastern Mexico, Sept.-Oct., 1967: Texas Water Devel. Board Rept. 83.
- Hahl, D. C., and Ratzlaff, Karl W., 1970, Chemical and physical characteristics of water in estuaries of Texas, Sept. 1967-Sept. 1968: Texas Water Devel. Board Rept. 117, 91 p.
- _____, 1972, Chemical and physical characteristics of water in estuaries of Texas, Oct. 1968-Sept. 1969: Texas Water Devel. Board Rept. 144, 161 p.
- Lauff, H., ed., 1967, Estuaries: Washington, D. C., Am. Assoc. Adv. Sci., 757 p.
- U.S. Weather Bureau, 1958, Climatic Summary of the United States-Supplement for 1931 through 1952, Texas: Climatology of the United States No. 11-36, U.S. Dept. of Commerce.
- _____, 1965, Climatic Summary of the United States-Supplement for 1951 through 1960, Texas: Climatology of the United States No. 86-36, U.S. Dept. of Commerce.

