

Table 7 D.--INSECTICIDE AND HERBICIDE ANALYSES OF WATER AND SEDIMENT
FROM THE LAGUNA MADRE ESTUARY, 1969 WATER YEAR.

Date	Time (24 hour)		Micrograms per liter											
			Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Heptachlor epoxide	Lindane	2,4-D	Silvex	2,4,5-T
<u>Line 6 site 2. Baffin Bay</u>														
Sept. 15	1630	Water	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Sediment	.00	2.2	5.4	.00	.00	.00	.00	.00	.00	--	--	--
<u>Line 7 site 2. Baffin Bay</u>														
Sept. 15	1530	Water	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05
		Sediment	.00	.00	.00	.00	.00	.00	.00	.00	.00	--	--	--
<u>Line 11 site 3. Baffin Bay</u>														
Sept. 15	1750	Water	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
		Sediment	.00	.00	.00	.00	.00	.00	.00	.00	.00	--	--	--
<u>Line 22 site 2. Arroyo Colorado</u>														
Sept. 10	1340	Water ^{a/}	<u>---</u> ^{b/}	.00	.00	.00	.00	.00	<u>---</u> ^{b/}	.00	<u>---</u> ^{b/}	.00	.00	.02
		Sediment ^{c/}	.00	2.0	5.1	.00	.00	.00	.00	.00	.00	--	--	--
<u>Line 25 site 2. Arroyo Colorado</u>														
Sept. 10	1055	Water	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
		Sediment	.00	.00	.84	.00	.00	.00	.00	.00	.00	--	--	--

a/ H₂S odor.

b/ Not detectable due to interfering sulphur compounds.

c/ H₂S odor; Qualitative test for parathion, methylparathion, and diazinon negative.

WATER STAGES IN THE ESTUARIES

Celestial tides along the Texas coast vary during a 2-week period from diurnal to semidiurnal. The tides generate variable water stages in the estuaries and cause a cyclic exchange of water between the Gulf of Mexico and the estuaries. At times, however, winds or streamflow exert a greater influence on the estuarine water stage than celestial tides; therefore, at certain water stages in the estuaries, flow during one or more

tidal cycles may be constantly out of the estuary or constantly into the estuary.

All water-stage recorder sites in the estuaries are shown on Figure 22 and are numbered arbitrarily for convenience. The data given in Tables 8 through 15 represent peaks and troughs in water stages caused by tides, wind, or inflow.

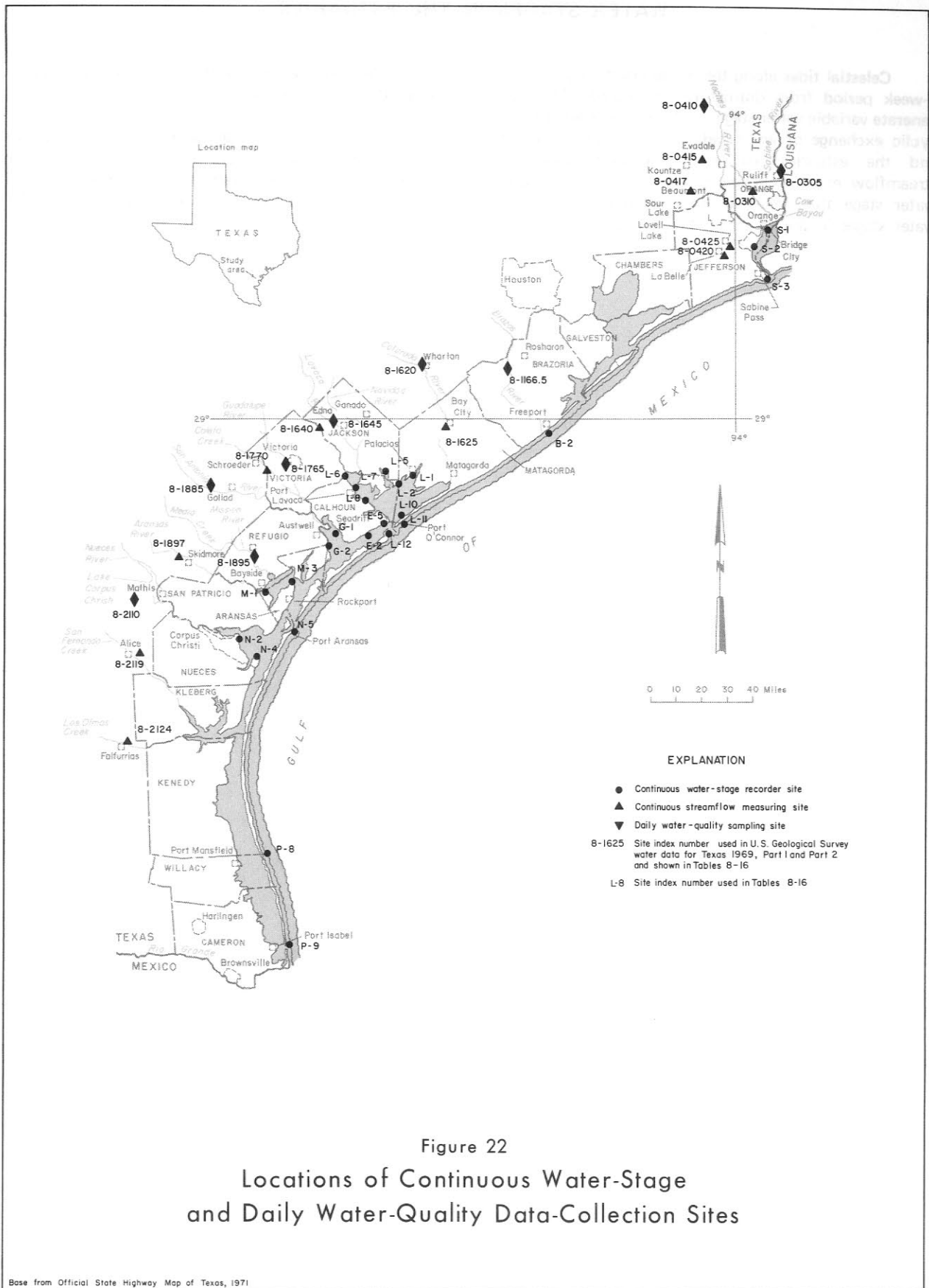


Figure 22
 Locations of Continuous Water-Stage
 and Daily Water-Quality Data-Collection Sites

Base from Official State Highway Map of Texas, 1971

Table 8B.--52, Sabine-Neches Canal at Port Arthur, Tex.--Continued

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

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	1200	1	0300	1	0100	1	0900	1	0200	1	a	1	0400	1	0400								
2	1800	4	0800																				
3	0400	1.4	1500	1.1	1500	1.1	1100	1.1	0900	1.3	0900	1.3	1800	1.2	1800	1.2	1800	1.2	1800	1.2	1800	1.2	
4	0200	.8	1500	.6	1800	.0	1900	.3	1700	.9	1900	2.0	1100	1.0	1500	2.0							
5	1600	2.1	1500	.4	1600	.2	0400	1.1	0500	1.3	0400	.5	1200	1.5	5	1300	2.7						
6	0500	2.2	1000	-1.1	1100	-7.7	0100	-9.9	1900	.7	1900	.7	0300	-5.5	5	0900	2.2	1900	2.2				
7	0400	1.4	1700	1.1	0100	1.7	0100	1.0	1300	.1	2100	1.1	1800	1.0	0900	1.7	2200	2.1					
8	1600	1.4	1000	-7.5	0400	-5.7	1400	-7.5	0900	1.1	0900	1.1	2000	1.3	7	0100	1.1	1100	2.1				
9	0600	1.5	1300	-4.10	0400	1.2	2400	.9	2100	.9	0700	.0	9	0500	.5	2300	1.1						
10	0200	1.6	2100	-1.7	1700	.6	1700	1.2	0700	-4.16	0400	1.9	11	0600	.3	0800	.4						
11	0300	1.5	0600	-9.9	0600	1.4	0600	-3.3	2300	1.3	1600	1.8	1900	.9	2000	.3							
12	0200	1.5	1700	.0	0800	-5.5	2400	1.3	0700	1.1	1800	1.2	2300	1.5	1500	1.9	11	0100	1.3				
13	0500	1.9	1100	1.0	2000	.0	1400	1.2	1500	3.4	1700	2.1	13	0400	2.3	2000	.2						
14	0500	1.9	2200	1.2	0700	-7.7	1000	-1.15	0100	2.4	18	0400	1.6	1600	1.7	1100	1.3						
15	0200	2.0	1700	.8	1600	.1	17	0100	1.5	1800	1.3	1700	.5	a	a	2000	.6						
16	0600	2.2	0800	1.5	0700	-2.2	1500	1.2	16	0300	.8	19	0700	.7	2100	1.4	1000	1.3					
17	0300	2.0	2000	.7	17	0100	1.2	1100	.1	1700	.7	1800	1.0	0900	1.7	2000	.6						
18	0400	1.2	0700	.6	1500	.9	19	0400	1.6	1100	1.1	20	0600	1.3	2000	1.7	1700	1.4					
19	0300	1.4	0200	-1.1	2300	1.7	1300	-1.1	1100	-4.21	0700	1.0	1900	2.5	2100	.4							
20	0200	1.6	1000	-9.9	1900	1.5	1900	1.1	1200	.2	0900	1.2	1100	1.5	18	1000	1.9						
21	0800	.8	1600	.5	21	0300	2.1	22	0900	1.1	1700	.8	1800	1.5	19	0400	.4	2300	.5				
22	0300	1.2	23	0400	1.1	1300	-1.2	24	0400	.2	1900	.9	26	0400	-6.6	1800	1.2	23	a	a			
23	0400	1.5	24	0500	1.2	1400	-5.25	0400	.0	2200	e1.5	27	0500	-4.23	0700	.0	26	a	a				
24	0300	1.6	25	0800	.8	2400	1.2	26	0600	.2	1400	1.4	1700	1.1	2000	1.4	29	a	a				
25	0500	1.1	27	0100	.3	2000	.0	30	0900	.3	1500	1.2	1900	1.2									
26	1300	.6	2000	1.6	1900	1.4	1000	-1.1	0900	.9													
27	0300	1.2	28	0800	.0	28	0700	.2	27	a	a	1500	1.0	1900	2.7								
28	0200	.9	29	0100	.3	2000	.0	2400	1.6														
29	1000	.6	1900	.3	1400	.9	31	0200	1.1														
30	1300	.6	2000	1.6	1900	1.4	1000	-1.1	0900	.9													
31	0100	.7	2300	1.8	1700	.2																	

Note: No usable record for June through September.

Table 8C.--S3, Sabine Pass at Texas Point, near Sabine Pass, Tex.

LOCATION.-- Lat 29°40'54" long 93°50'17", on concrete pile near landward end of west jetty, about 4 miles southeast of city of Sabine Pass, Jefferson Co.

RECORDS AVAILABLE.-- May 1965 through September 1969.

GAGE.-- Water-stage recorder. Datum of gage is mean sea level (levels by U. S. Army Corps of Engineers). Gage moved about 300 yards southeast off west jetty to present location Sept. 23, 1968.

EXTREMES.-- 1968 water year: maximum elevation 3.5 feet, June 24; minimum -3.2 feet, May 27.
1969 water year: maximum elevation 5.0 feet, Feb. 14; minimum -2.4 feet, Nov. 21 and Dec. 23.

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	0200 1.4 1 0500 0.9
											1000 1.0 1000 1.3
											1800 -.8 1800 -.8
										2	0300 1.6 2 0200 1.6
											1100 1.1 0700 1.2
											1900 -1.0 1000 1.4
										3	0300 1.7 1900 -.8
											0800 1.1 3 0200 1.9
											1100 1.3 0800 1.1
											1900 -.9 1300 1.7
										4	0300 1.7 2000 -.6
											0900 1.1 4 0400 1.9
											1200 1.3 0800 1.2
											2000 -1.2 1400 2.0
										5	0500 1.7 2100 1.2
											0900 1.1 5 0600 2.4
											1400 1.5 1000 1.3
											2200 -1.3 1400 2.5
										6	0400 1.9 2200 -.7
											0900 .9 6 0300 2.6
											1300 1.7 1100 .3
											2100 -1.0 1600 1.8
										7	0400 1.8 2300 -.1
											1100 1.1 7 0500 1.6
											1400 1.5 1100 -.4
											2200 -.6 1800 1.5
										8	0600 1.6 8 0100 .5
											1100 .7 0500 1.2
											1700 1.4 1200 -.9
											2300 -.4 1900 1.6
										9	0500 1.5 2300 .7
											1200 .2 9 0500 1.2
											1800 1.2 1100 -.7
											2400 .0 1900 1.6
										10	0700 1.2 0500 1.3
											1300 .1 10 1400 -.8
											2000 1.4 2200 1.5
										11	0100 .5 0700 1.2
											0700 1.5 11 1500 -.8
											1500 -.2 2300 1.5
											2100 1.4 0800 1.1
										12	0300 .7 12 1600 -.7
											0800 1.6 13 0100 1.9
											1400 -.6 0700 1.4
											2300 1.5 1000 1.6
										13	0700 1.3 1700 -.4
											1700 -.5 14 0200 2.0
											2400 1.8 0600 1.6
										14	1000 1.6 1100 1.9
											1700 -.2 1800 .2
										15	0300 2.2 15 0200 2.4
											0800 1.8 0700 1.8
											1000 2.1 1200 2.2
											1800 -.1 2000 .3
										16	0300 1.9 16 0300 2.3
											1400 1.4 0800 1.6
											1900 -.5 1200 2.2
										17	0300 2.0 2000 .5
											0800 1.4 17 0200 2.1
											1200 2.0 1000 1.5
											2000 -.9 1400 2.1
										18	0300 1.8 2100 1.0
											0900 1.1 18 0300 2.2
											1300 1.6 0900 1.4
											2000 -.9 1600 2.4
										19	0400 2.0 2000 e1.5
											0900 1.3 19 0400 e2.4
											1200 2.0 1000 e1.6
											1900 -.2 1700 e2.8
										20	0600 1.8 2000 e2.2
											1600 1.6 20 0400 e2.9
											2400 .0 1000 e2.5
										21	0500 2.0 1600 e3.3
											1100 .8 2300 2.3
											1600 1.9 21 0700 2.9
											2300 -.1 1200 1.3
										22	0600 1.8 1800 e2.9
											1100 .9 2300 1.5
											1600 1.7 22 0400 2.1
											2400 .3 1200 .2
										23	0700 1.6 1900 2.0
											1300 .8 23 0200 1.6
											1800 1.8 1000 -.2
											2400 .7 1900 2.1
										24	0500 1.7 24 0400 1.6
											1200 .6 1200 -.1
											1800 1.6 2200 1.8
											2300 1.1 25 0500 1.7
										25	0400 1.8 1300 .1
											1300 .6 2200 2.1
											1900 2.1 26 1400 .2
											2400 1.4 2300 2.2
										26	0400 2.0 27 1700 -.8
											1400 .1 28 0500 .9
											2100 1.9 1700 -.6
											2400 1.1 2400 1.6
										27	0600 1.8 29 0600 1.2
											1300 -.1 0900 1.5
											0200 1.6 1700 -.2
										28	1700 -.2 2400 2.0
											2400 1.6 30 0600 .9
											1600 -.7 1100 1.6
										30	0100 1.4 1700 -.4
											1700 -.6
										31	0200 1.6
											1700 -.8
											2400 1.6

Table 9.--R2, Freeport Harbor Entrance near Freeport, Tex.--Continued

Water stage, in feet, above or below (-) mean sea level; Time is Central Standard; Water Year October 1967 to September 1968.

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	0300 1.8 1	0200 0.6 1	0900 -0.8 1	0900 -1.1 1	0300 1.3 1	0500 -1.6 1	0700 1.3 1	0700 1.8 1	0800 e1.5 1	0700 1.6 1	0700 2.0 1	0700 1.3 1	0700 1.6 1	0700 1.8 1	0700 1.8 1	0700 1.8 1	0700 1.8 1	0700 1.8 1	0700 1.8 1	0700 1.8 1	0700 1.8 1	0700 1.8 1	0700 1.8 1
30	0100 2.8	0700 -2	0900 2.3	0900 -6	1100 -8	1400 8	1500 -1.2	1500 8	1500 -1.2	1500 8	1500 -1.2	1500 8	1500 -1.2	1500 8	1500 -1.2	1500 8	1500 -1.2	1500 8	1500 -1.2	1500 8	1500 -1.2	1500 8	1500 -1.2

Table 10A.--L1, Tres Palacios Bay at Palacios, Tex.

LOCATION.-- Lat 28°41'51" long 96°13'37", in turning basin at southwest edge of Palacios, Matagorda Co.

RECORDS AVAILABLE.-- April 1967 through September 1969.

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

EXTREMES.-- 1968 water year: maximum and minimum elevations not determined.
1969 water year: maximum elevation 3.5 feet, Feb. 14; minimum -2.3 feet, Dec. 31.

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				
										1	0700	1.4	1	0800	0.8
											2100	.3		2200	-.1
										2	0800	1.4	2	1100	1.3
											2200	.3		2300	.1
										3	0900	1.3	3	1100	1.4
											2300	.2	4	0100	.5
										4	1000	1.2		1100	1.4
											2400	.1	5	0200	.6
										5	1300	1.2		0800	1.5
										6	0100	.2		1400	1.0
											1400	1.2		1800	1.3
										7	0200	.3	6	0100	.8
											1400	1.2		0700	1.2
										8	0200	.4		1300	1.0
											1300	1.1		1900	1.3
											1500	.9	7	1400	.3
											1700	1.1		2300	1.0
										9	0200	.6	8	1500	-.2
											0900	.9	9	0300	.9
											1600	.6		1600	-.1
											2000	.8	10	0700	.9
										10	0400	.5		1700	.0
											0700	.8	11	0700	1.1
											1600	.5		2000	.0
											2300	1.0	12	0700	1.0
											0600	.6		2000	.0
										11	0900	1.0	13	0900	1.3
											1700	.1		2100	.3
											2300	.7	14	1000	1.5
										12	0600	.4		2200	.5
											1000	.8	15	1100	1.7
											1700	.1		2300	.9
										13	0400	1.1	16	1100	1.7
											1900	.1		2300	.9
										14	0700	1.2	17	0900	1.5
											1800	.1		1600	1.6
										15	0900	1.5	18	0100	1.1
											2200	.5		1800	1.9
										16	0700	1.4	19	0200	1.6
											2200	.2		0800	2.1
										17	1000	1.6		1300	1.7
											2300	.2		1900	2.9
										18	1000	1.5		2300	2.4
											2300	.2	20	1600	4.2
										19	0900	1.5		1900	5.6
											2400	.2		2200	4.8
										20	1500	1.4	21	1400	3.7
											0200	.5	22	1800	1.6
											1800	1.2	23	0100	2.1
										22	0300	.5		1700	1.2
											1300	1.3	24	0100	1.9
										23	0200	.5		1500	.9
											1000	.8	25	0400	1.9
											1100	1.7		1800	.9
											1600	.8	26	0300	1.9
											2300	1.2		1700	.8
										24	0200	.8	27	0400	2.0
											1400	.5		1800	-.3
										25	0800	1.1	28	0900	.8
											1600	.3		2000	.1
											0400	1.2	29	a	a
											1800	.5	30	a	a
										27	0400	1.2			
											1900	.4			
										28	0600	1.2			
											2000	.2			
										29	0400	1.0			
											2000	.0			
										30	0800	.9			
											2200	.0			
										31	0800	1.0			
											2200	-.1			

Table 10C.--LS, Carancahua Bay near Point Comfort, Tex.

LOCATION.-- Lat 28°43'56" long 96°25'44", on north side of bridge on State Highway 35, about 8.5 miles northeast of Point Comfort, Jackson Co.

RECORDS AVAILABLE.-- August 1968 through September 1969.

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

EXTREMES.-- 1969 water year: maximum elevation 4.4 feet, Feb. 14; minimum -0.6 feet, Feb. 9 and Mar. 24.

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 1967 to September 1968.

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		2100	1.0	1	0900	1.8																																
2		0900	1.8		2300	.6																																
		2300	1.0	2	1100	1.8																																
3		0900	1.8		2300	.9																																
		2400	.9	3	1300	2.4																																
4		1000	2.0	4	0100	1.4																																
		2400	.9		1300	2.4																																
5		1200	2.2	5	0500	1.0																																
6		0100	1.2		1000	1.5																																
		1300	2.3	6	0300	.5																																
7		0300	1.1		1800	2.0																																
		1400	2.2	7	0400	1.0																																
8		0300	1.1		1900	2.0																																
		1500	2.3	8	0500	1.3																																
9		0500	1.3		0900	1.6																																
		1500	2.1		1300	1.4																																
10		0600	1.3		2000	1.6																																
		1800	2.0	9	1400	.8																																
11		0600	1.3		2300	1.5																																
		1300	1.7	10	1700	.3																																
		2200	1.8	11	0500	1.1																																
12		0600	1.3		1700	.6																																
		1200	1.6	12	0500	1.6																																
		1700	1.5		1700	.8																																
13		0100	1.9	13	0700	2.0																																
		1100	2.0		2000	1.1																																
		1900	1.5	14	0800	2.0																																
14		0500	2.2		2000	1.4																																
		1400	2.0	15	0500	2.5																																
		1900	1.6		2200	1.3																																
15		0900	2.6	16	1000	2.1																																
		2000	1.7		2400	.9																																
16		0800	2.5	17	1200	2.2																																
		2200	1.5	18	0200	.3																																
17		0800	2.3		1200	1.4																																
		1300	2.0	19	0100	.6																																
		1700	2.1		1900	1.8																																
		2300	1.2	20	0200	1.0																																
18		1000	2.3		1200	1.8																																
		2300	1.3	21	0100	1.1																																
19		1100	2.4		1700	1.9																																
		2400	1.3	22	0200	1.2																																
20		1200	2.2		1900	2.5																																
21		0100	1.3	23	1400	1.8																																
		1300	2.0		2200	2.3																																
22		0200	1.0	24	1500	1.4																																
		1600	2.0		2400	2.0																																
23		0300	1.1	25	1700	.5																																
		1700	2.0	26	0400	1.4																																
24		0300	1.1		1800	.3																																
		1400	2.0	27	0600	1.5																																
25		0400	1.1		1800	.6																																
		1300	1.9	28	0700	1.8																																
		1600	1.6		2000	.8																																
		1900	1.8	29	0700	1.8																																
26		0400	1.2		2200	.7																																
		1100	1.6	30	0800	1.6																																
		1500	1.4		2400	.4																																
		2200	1.9																																			
27		0600	1.4																																			
		0800	1.6																																			
		1700	1.2																																			
28		0600	2.0																																			
		1600	1.6																																			
29		0700	1.8																																			
		2000	1.0																																			
30		0800	1.9																																			
		2000	1.1																																			
31		0700	2.1																																			
		2200	.8																																			

Table 10D.--L6, Lavaca Bay at Six Mile Co. Park near Port Lavaca, Tex.

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 1969.

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

EXTREMES.-- 1969 water year: maximum elevation 4.9 feet, Feb. 13; minimum not determined.

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 1967 to September 1968.

October	November	December	January	February	March	April	May	June	July	August	September				
Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage				
										1	0300	1.5	1	0800	2.0
											2100	.6		2300	.7
										2	0800	1.5	2	1000	2.2
											2200	.6		2400	.3
										3	0800	1.6	3	1300	e2.4
											2300	.6	4	0100	1.4
										4	1000	1.7		1100	e2.4
											2400	.6	5	0300	.9
										5	1300	2.1		1000	1.7
										6	0100	.8	6	0200	.6
											1300	2.1		1800	e2.2
										7	0300	.6	7	0300	1.2
											1300	1.9		1300	1.9
										8	0300	.6		1400	1.8
											1600	2.0		1900	2.2
										9	0400	.7	8	0500	1.4
											1700	1.9		0900	1.8
										10	0500	.8		1500	1.6
											1900	1.8		1900	1.9
										11	0500	.8	9	0500	1.2
											1200	1.3		0900	1.4
											1400	e1.1		1400	1.0
											2100	1.5		2400	1.6
										12	0500	.8	10	1600	.6
											1200	e1.2	11	0800	1.5
											1700	e1.1		1600	.7
											2400	1.4	12	0100	1.8
										13	0500	e1.2		0700	1.8
											1100	e1.5		1700	1.0
											1700	e1.2	13	0800	2.3
										14	0400	e1.7		2000	1.4
											1100	e1.7	14	0800	2.4
											1800	1.3		2000	1.6
										15	1100	e2.1	15	0600	2.6
											2100	1.4		2300	1.3
										16	0900	2.1	16	0900	2.2
											2000	1.2		2300	1.0
										17	0800	1.9	17	0400	2.0
											2200	.8		1100	2.1
										18	1000	1.9	18	0200	.5
											2300	.8		1200	1.7
										19	1100	2.1		2400	.8
											2400	1.0	19	1400	2.0
										20	1200	2.0	20	0100	1.2
										21	0200	.8		1200	2.1
											1300	1.7	21	0200	1.4
										22	0200	.5		1800	2.3
											1500	1.8	22	0200	1.6
										23	0300	.6		2000	2.9
											1200	1.7	23	0400	2.3
											1800	1.8		1400	2.2
										24	0400	.8		2100	2.6
											1700	1.7	24	1400	1.8
										25	0300	.7		2300	2.4
											1800	1.7	25	a	a
										26	0400	.8	26	0300	e1.8
											1000	1.4		a	a
											1400	1.2	27	0400	e1.9
											2000	1.7		a	a
										27	0500	1.0	28	0700	e2.1
											0900	1.4		a	a
											1500	e.9	29	0800	e2.1
											2300	1.8		2300	e1.7
										28	0300	1.6	30	0800	2.0
											0700	2.0			
										29	1300	1.3			
											0300	2.1			
											1800	1.2			
										30	0900	2.2			
											1900	1.4			
										31	0600	2.3			
											2200	.9			

Table 10E.--L7, Lavaca Bay near Point Comfort, Tex.

LOCATION.-- Lat 28°39'12" long 96°35'40", on north side of bridge on State Highway 35, about 2.8 miles southwest of Point Comfort, Calhoun Co.
RECORDS AVAILABLE.-- October 1963 through September 1969.

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

EXTREMES.-- 1968 water year: maximum elevation 2.6 feet, Oct. 30, Apr. 3, and Sept 22; minimum -1.1 feet, Feb. 29.
1969 water year: maximum elevation 3.1 feet, May 6; minimum -1.2 feet, Mar. 25.

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 1000	1.6
										2400	.8
										2 1200	1.7
										3 0300	.7
										1400	1.6
										4 0200	.6
										1400	1.6
										5 0300	.4
										1600	1.7
										6 0400	.5
										1600	1.7
										7 0500	.6
										1800	1.6
										8 0500	.6
										1500	1.4
										2000	1.4
										9 0600	.7
										1400	1.1
										1900	1.0
										2300	1.1
										10 0700	.7
										1200	.9
										1800	.8
										11 0200	1.2
										0600	.8
										0900	1.1
										1900	.6
										12 0700	1.5
										2000	.6
										13 0800	1.6
										2000	.9
										14 0900	1.6
										2300	.8
										15 1200	1.9
										2400	1.0
										16 1000	1.8
										17 0200	.5
										1400	1.8
										18 0200	.6
										1000	1.4
										1500	1.4
										19 0200	.6
										1400	1.6
										20 0300	.6
										1800	1.8
										21 0400	.9
										1800	1.6
										22 0400	.8
										1400	1.6
										2100	1.7
										23 0500	2.5
										23 0400	.9
										1100	1.6
										1500	1.4
										1900	1.6
										24 1700	.8
										25 0100	1.4
										0600	1.2
										0900	1.5
										1700	1.0
										26 0600	1.6
										1700	.9
										27 0600	1.6
										2000	.8
										28 0700	1.6
										2100	.5
										29 0700	1.3
										2200	.2
										30 0800	1.2
										2300	.1
										31 1100	1.2
										2400	.3

Table 10F--18, Lavaca Bay at Magnolia Beach near Port Lavaca, Tex.
 RECORDS AVAILABLE.-- August 1968 through September 1969.

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

EXTREMES.-- 1969 water year: maximum elevation 4.6 feet, Feb. 14; minimum -0.8 feet, Nov. 11 and Dec. 23.

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 1967 to September 1968.

October	November	December	January	February	March	April	May	June	July	August	September
Day	Time	Stage	Day	Time	Stage	Day	Time	Stage	Day	Time	Stage
1	0300	1.2	1	0800	1.9						
2	1300	1.3	2	2200	1.6						
3	0800	1.4	3	2200	1.7						
4	0900	1.4	4	1000	2.0						
5	2100	.4	5	2400	1.0						
6	0200	1.5	6	1100	2.1						
7	1200	1.8	7	0500	1.6						
8	0200	1.7	8	1300	2.0						
9	0200	1.5	9	0300	1.2						
10	1400	1.7	10	1100	1.7						
11	0200	.6	11	1400	1.6						
12	0500	1.6	12	2000	1.9						
13	0300	1.7	13	0400	1.3						
14	1700	1.4	14	1500	1.3						
15	0200	1.6	15	0500	1.6						
16	0200	1.6	16	0200	1.9						
17	0500	1.8	17	0200	1.6						
18	0200	1.8	18	0200	1.3						
19	0200	1.7	19	0200	1.8						
20	0200	1.6	20	0200	1.3						
21	0200	1.6	21	0200	1.3						
22	0200	1.6	22	0200	1.3						
23	0200	1.6	23	0200	1.3						
24	0200	1.6	24	0200	1.3						
25	0200	1.6	25	0200	1.3						
26	0200	1.6	26	0200	1.3						
27	0200	1.6	27	0200	1.3						
28	0200	1.6	28	0200	1.3						
29	0200	1.6	29	0200	1.3						
30	0200	1.6	30	0200	1.3						
31	0200	1.6	31	0200	1.3						

Table 11.--E2, Espiritu Santo Bay near Port O'Connor, Tex.

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 1969.

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

EXTREMES.-- 1968 water year: maximum elevation 2.3 feet, June 24; minimum -1.1 feet, Mar. 13.
1969 water year: maximum elevation 2.5 feet, Feb. 15; minimum -0.5 feet, Dec. 7.

REMARKS.-- Gage operated by U. S. 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 0700	0.6 1 0900	0.3
										2200	.2 2200	.1
										2 1200	.6 2 1400	.5
										2300	.3 2200	.1
										3 1000	e.7 3 1800	.7
										2400	.3 4 0100	.6
										4 1300	e.6 1300	1.0
										5 0300	e.3 2300	.8
										1500	.6 5 0800	1.1
										2400	.3 6 a	a
										6 1500	e.6 7 a	a
										7 0100	.3 8 1500	.2
										1300	e.6 9 0600	.5
										2400	e.4 1700	.3
										8 1100	.6 10 0600	.4
										9 0200	.3 2000	.2
										1100	.5 11 0900	.5
										10 1700	.2 2100	.2
										11 0900	.5 12 1000	.5
										1600	.2 2100	.2
										12 0100	.4 13 1100	.6
										0300	.2 2100	.3
										13 0700	.7 14 1400	.7
										2000	.3 2200	.5
										14 0900	.7 15 1100	1.0
										2100	.4 2300	.8
										15 1000	.9 16 1500	1.1
										2000	.6 2400	1.0
										16 0800	e.9 17 1100	1.1
										2300	e.6 2200	1.0
										17 1000	e1.0 18 0800	1.2
										2400	e.6 19 0100	1.3
										18 1000	e1.0 20 0200	2.0
										19 0200	.4 1500	3.8
										0900	1.0 2400	3.6
										20 a	a 21 0300	4.4
										21 a	a 22 1700	3.3
										22 a	a 23 0600	3.6
										23 a	a 24 0200	3.3
										24 a	a 1600	2.8
										25 1900	e.6 25 1700	2.4
										26 0800	e.8 26 1000	2.3
										2000	e.7 27 0700	2.1
										27 1100	e.8 2300	1.4
										2000	e.6 28 0700	1.6
										28 0900	e.8 1000	1.4
										2200	e.5 29 1100	1.4
										29 a	a 2300	1.3
										30 a	a 30 0900	1.4
										31 1100	.5 1700	1.2
										2300	.2	

Table 13A.--M1, Copano Bay near Bayside, Tex.

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

RECORDS AVAILABLE.-- October 1966 through September 1969.

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

EXTREMES.-- 1968 water year: maximum elevation 3.1 feet, May 11; minimum -0.8 feet, Mar. 12 and 13.
 1969 water year: maximum elevation 2.9 feet (estimated), Feb. 15; minimum -0.1 feet, Jan. 2.

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	0100	e0.3	1	0100	0.5	
										2000	.9		1	1600	1.1	
										2	1100	1.3	2	0200	.7	
										2000	.8			1700	1.2	
										3	0900	1.2	3	0100	.9	
										2100	.8			1800	1.8	
										4	1000	1.2	4	0400	1.3	
										2200	.7			1700	1.9	
										5	1100	1.2	5	0800	2.0	
										2100	.8			2000	1.8	
										6	1100	1.3	6	1600	1.4	
										2200	.8			2200	1.6	
										7	1300	1.3	7	1800	1.1	
										2400	.8			2400	1.2	
										8	1300	1.3	8	2000	.7	
										9	0100	.8	9	0800	1.1	
										0900	1.0			2000	.7	
										2400	.7	10	1000	1.1		
											c			2200	.7	
										11	0200	1.0	11	1100	1.1	
										1100	.8			2300	.7	
										2100	1.3	12	1300	1.0		
										12	0900	.9		2300	.7	
										13	0200	1.2	13	1400	1.3	
										1200	1.0			2400	.9	
										14	0700	1.3	14	1500	1.4	
										1500	.9	15	0300	1.2		
										15	0600	1.4		1900	1.6	
										1500	1.1	16	0300	1.4		
										16	0400	1.4		1900	1.8	
										1700	1.0	17	0200	1.6		
										17	0600	1.5		1900	1.9	
										1800	.9	18	0400	1.6		
										18	0600	1.4		2100	2.1	
										1800	.9	19	0200	1.9		
										19	0200	1.4	20	2300	6.8	
										0400	1.3	21	1600	5.8		
										0700	1.4		2000	6.0		
										1800	1.0	22	1700	5.1		
										20	0800	1.4	23	0900	e5.1	
										1800	1.1	24		b		
										21	0800	1.4	25	1800	3.1	
										1900	1.1	26		b		
										22	0800	1.5	27	1200	2.7	
										2000	1.1	28	0300	2.0		
										23	0500	1.6		1000	2.1	
										24	1200	1.4		2300	1.8	
										25	0800	1.2	29	a	a	
										0900	1.3	30	a	a		
										1500	1.1					
										26	1000	1.5				
										2200	1.1					
										27	1200	1.4				
										2400	1.0					
										28	1000	1.4				
										2300	.9					
										29	0900	1.1				
										2400	.6					
										30	1200	.9				
										31	0100	.5				
										1500	.9					

Table 13A.--MI, Copano Bay near Bayside, Tex.--Continued

Day	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	0100	1.7	0500	0.7	0100	1.3	0700	1.3	1600	-0.3	0100	0.8	0100	0.6	0100	0.6	0100	1.0	0100	1.3	1100	1.0	1100	1.7	
2	1600	1.9	1300	1.3	1600	1.3	1300	1.3	2100	1.3	2100	1.3	2100	1.3	2100	1.3	2100	1.3	2100	1.3	2100	1.3	2100	1.3	
3	0200	1.6	0700	1.9	0200	1.6	0700	1.9	0200	1.6	0700	1.9	0200	1.6	0700	1.9	0200	1.6	0700	1.9	0200	1.6	0700	1.9	
4	0800	1.8	1200	1.6	0800	1.8	1200	1.6	0800	1.8	1200	1.6	0800	1.8	1200	1.6	0800	1.8	1200	1.6	0800	1.8	1200	1.6	
5	1800	1.8	0300	1.8	1800	1.8	0300	1.8	1800	1.8	0300	1.8	1800	1.8	0300	1.8	1800	1.8	0300	1.8	1800	1.8	0300	1.8	
6	1800	2.2	1800	1.6	1800	2.2	1800	1.6	1800	2.2	1800	1.6	1800	2.2	1800	1.6	1800	2.2	1800	1.6	1800	2.2	1800	1.6	
7	0100	1.6	1800	1.6	0100	1.6	1800	1.6	0100	1.6	1800	1.6	0100	1.6	1800	1.6	0100	1.6	1800	1.6	0100	1.6	1800	1.6	
8	1800	1.2	1800	1.4	1800	1.2	1800	1.4	1800	1.2	1800	1.4	1800	1.2	1800	1.4	1800	1.2	1800	1.4	1800	1.2	1800	1.4	
9	0800	1.5	10	0600	1.5	0800	1.5	10	0600	1.5	0800	1.5	10	0600	1.5	0800	1.5	10	0600	1.5	0800	1.5	10	0600	
10	0800	1.4	11	0500	1.5	0800	1.4	11	0500	1.5	0800	1.4	11	0500	1.5	0800	1.4	11	0500	1.5	0800	1.4	11	0500	
11	2200	1.0	12	1800	1.4	2200	1.0	12	1800	1.4	2200	1.0	12	1800	1.4	2200	1.0	12	1800	1.4	2200	1.0	12	1800	
12	1400	1.3	14	0500	1.1	1400	1.3	14	0500	1.1	1400	1.3	14	0500	1.1	1400	1.3	14	0500	1.1	1400	1.3	14	0500	
13	2300	1.0	2300	1.1	2300	1.0	2300	1.1	2300	1.0	2300	1.1	2300	1.0	2300	1.1	2300	1.0	2300	1.1	2300	1.0	2300	1.1	
14	0100	1.2	15	1300	1.1	0100	1.2	15	1300	1.1	0100	1.2	15	1300	1.1	0100	1.2	15	1300	1.1	0100	1.2	15	1300	
15	2000	1.5	17	0500	1.3	2000	1.5	17	0500	1.3	2000	1.5	17	0500	1.3	2000	1.5	17	0500	1.3	2000	1.5	17	0500	
16	0200	2.0	18	1300	1.9	0200	2.0	18	1300	1.9	0200	2.0	18	1300	1.9	0200	2.0	18	1300	1.9	0200	2.0	18	1300	
17	2300	1.7	18	1400	1.0	2300	1.7	18	1400	1.0	2300	1.7	18	1400	1.0	2300	1.7	18	1400	1.0	2300	1.7	18	1400	
18	0600	1.6	19	0400	1.4	0600	1.6	19	0400	1.4	0600	1.6	19	0400	1.4	0600	1.6	19	0400	1.4	0600	1.6	19	0400	
19	0600	1.9	20	0700	1.3	0600	1.9	20	0700	1.3	0600	1.9	20	0700	1.3	0600	1.9	20	0700	1.3	0600	1.9	20	0700	
20	0600	1.1	21	0900	1.4	0600	1.1	21	0900	1.4	0600	1.1	21	0900	1.4	0600	1.1	21	0900	1.4	0600	1.1	21	0900	
21	1400	1.1	21	0900	1.0	1400	1.1	21	0900	1.0	1400	1.1	21	0900	1.0	1400	1.1	21	0900	1.0	1400	1.1	21	0900	
22	0600	1.2	22	0600	1.3	0600	1.2	22	0600	1.3	0600	1.2	22	0600	1.3	0600	1.2	22	0600	1.3	0600	1.2	22	0600	
23	0800	1.3	23	0800	1.3	0800	1.3	23	0800	1.3	0800	1.3	23	0800	1.3	0800	1.3	23	0800	1.3	0800	1.3	23	0800	
24	0800	1.1	24	0800	1.1	0800	1.1	24	0800	1.1	0800	1.1	24	0800	1.1	0800	1.1	24	0800	1.1	0800	1.1	24	0800	
25	2400	1.1	24	0800	1.1	2400	1.1	24	0800	1.1	2400	1.1	24	0800	1.1	2400	1.1	24	0800	1.1	2400	1.1	24	0800	
26	1100	1.5	26	0500	1.3	1100	1.5	26	0500	1.3	1100	1.5	26	0500	1.3	1100	1.5	26	0500	1.3	1100	1.5	26	0500	
27	0800	1.2	27	0800	1.2	0800	1.2	27	0800	1.2	0800	1.2	27	0800	1.2	0800	1.2	27	0800	1.2	0800	1.2	27	0800	
28	0400	1.4	28	0400	1.4	0400	1.4	28	0400	1.4	0400	1.4	28	0400	1.4	0400	1.4	28	0400	1.4	0400	1.4	28	0400	
29	2100	1.3	29	2100	1.3	2100	1.3	29	2100	1.3	2100	1.3	29	2100	1.3	2100	1.3	29	2100	1.3	2100	1.3	29	2100	
30	2000	1.1	30	2000	1.1	2000	1.1	30	2000	1.1	2000	1.1	30	2000	1.1	2000	1.1	30	2000	1.1	2000	1.1	30	2000	
31	1400	1.3	31	1400	1.3	1400	1.3	31	1400	1.3	1400	1.3	31	1400	1.3	1400	1.3	31	1400	1.3	1400	1.3	31	1400	
2400	1.5	2400	1.5	2400	1.5	2400	1.5	2400	1.5	2400	1.5	2400	1.5	2400	1.5	2400	1.5	2400	1.5	2400	1.5	2400	1.5	2400	1.5

Note: No usable record for December.

Table 14A.--N2, Corpus Christi Ship Channel at Corpus Christi, Tex.

LOCATION.-- 27°48'53" long 97°23'47" on pier 9 at turning basin in mouth of Tule Lake Channel, at Corpus Christi, Nueces Co.

RECORDS AVAILABLE.-- September 1949 through September 1969.

GAGE.-- Water-stage recorder. Datum of gage is mean sea level (levels by U. S. Army Corps of Engineers). Gage moved to Pier 9 in turning basin at mouth of Tule Lake channel July 24, 1968.

EXTREMES.-- 1968 water year: maximum and minimum elevations not determined.
1969 water year: maximum and minimum elevations not determined.

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 1967 to September 1968.

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
									25 0300 0.4 1 0900 0.8 1 1100 1.5		
									1700 1.1 2000 .4 2300 1.0		
									26 0300 .4 2 1100 .8 2 1200 1.5		
									1800 1.1 2100 .4 2400 1.0		
									27 0400 .5 3 1100 .9 3 1400 1.6		
									1700 1.2 2200 .3 4 0200 1.0		
									28 0400 .6 4 1100 1.0 1400 1.4		
									1600 1.1 2300 .4 5 0200 .8		
									29 0400 .6 5 1300 1.1 1500 1.3		
									1400 .9 2400 .5 6 0200 .9		
									30 0500 .5 6 1400 1.1 1800 1.5		
									1100 .7 7 0100 .5 7 0300 1.1		
									31 1100 .7 1500 1.1 2000 1.6		
									2100 .5 8 0200 .5 8 0400 1.3		
									1700 1.1 1400 1.3		
									9 0300 .5 2000 1.4		
									1600 1.1 9 1400 1.0		
									10 0400 .5 2400 1.2		
									1900 1.0 10 1700 .9		
									11 0500 .6 11 0800 1.3		
									2100 .9 1700 1.0		
									12 0500 .5 12 0900 1.4		
									2400 .8 1800 1.0		
									13 1800 .5 13 0900 1.7		
									14 0300 .8 1800 1.3		
									2100 .6 14 0500 1.9		
									15 1100 1.0 2000 1.4		
									2100 .6 15 0600 1.7		
									16 1000 1.0 2300 1.1		
									2200 .6 16 0900 1.4		
									17 1500 1.1 2200 .8		
									2100 .5 17 1000 1.4		
									18 1100 1.0 2400 .9		
									2400 .5 18 1400 1.4		
									19 1100 1.1 2400 .9		
									2300 .5 19 1400 1.4		
									20 1300 1.1 20 0100 .9		
									21 0100 .5 1600 1.3		
									1300 .9 21 0100 .9		
									22 0100 .4 1800 1.4		
									1600 1.0 22 0100 1.1		
									23 0200 .5 2200 1.8		
									1800 1.1 23 1500 1.5		
									24 0200 .6 2000 1.8		
									1800 1.2 24 0700 1.7		
									25 0300 .7 1400 1.3		
									1900 1.1 25 0100 1.6		
									26 0400 .8 1600 1.1		
									2200 1.1 26 0600 1.5		
									27 0600 1.0 1700 1.0		
									1700 1.0 27 0700 1.4		
									28 1100 1.4 1900 .9		
									1900 1.2 28 0900 1.5		
									29 0800 1.5 2000 1.0		
									1900 1.1 29 1100 1.6		
									30 0800 1.6 2100 1.1		
									2000 1.1 30 1100 1.5		
									31 1000 1.6 2300 .9		
									2200 1.0		

Table 15B.--P9, Brazos Santiago Pass near Port Isabel, Tex.

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 1969.

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

EXTREMES.-- 1969 water year: maximum elevation 2.8 feet, Feb. 14; minimum -2.4 feet, June 1.

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 1967 to September 1968.

October	November	December	January	February	March	April	May	June	July	August	September																					
Day	Time	Day	Time	Day	Time	Day	Time	Day	Time	Day	Time	Stage																				
												17	0300	1.5																		
														1750	-1.8																	
														18	0200	1.9																
															1900	-2																
														19	0400	1.7																
																1800	-2															
																20	0500	1.4														
																	1300	1.2														
																	2000	.0														
																	21	0500	1.2													
																		0800	1.0													
																		1400	1.4													
																		2100	.5													
																		22	0400	1.5												
																			0900	1.2												
																			1600	1.8												
																			2100	e1.0												
																			23	0300	e1.6											
																				0900	e.9											
																				1600	2.0											
																					2300	1.5										
																					24	0300	1.6									
																						0900	.5									
																						1800	2.0									
																						25	0400	1.6								
																								1000	.2							
																									2100	2.0						
																									26	1100	-1					
																											2300	2.0				
																												27	1200	-1.1		
																												28	0100	2.2		
																													1400	-1.1		
																													29	0200	2.1	
																														1500	.1	
																														30	0200	2.1
																															1700	-2

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 23.

Tabulations of daily precipitation, temperature, and other data are published monthly by the Environmental Science Services Administration (1969). Monthly summaries are published annually (Environmental Science Services Administration, 1970). For the period 1931-60, monthly and annual data are summarized in two U.S. Weather Bureau publications (1958, 1965).

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 22. The site numbers shown on the map correspond to station numbers used in the annual publication of water-resources data by the U.S. Geological Survey (1969a).

The streamflow data represent runoff reaching the coastal area but do not describe all of the flow from

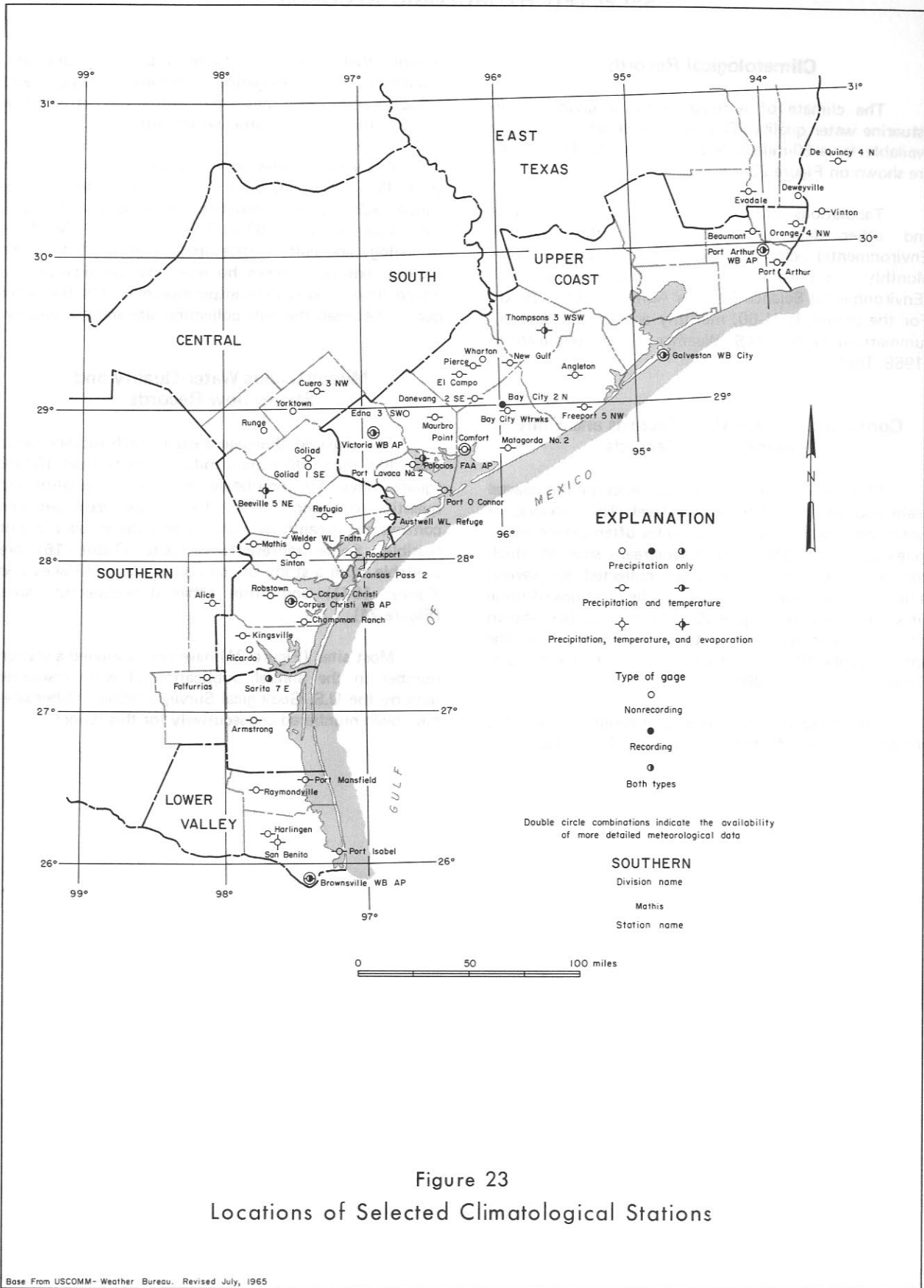
streams that enter an estuary. Intervening drainage, diversions for irrigation, return flows, and evapotranspiration may all influence streamflow between the measuring site and the estuary.

Analyses of water collected daily from continuous streamflow measuring sites (Figure 22) are given in the annual publication of water-resources data by the U.S. Geological Survey (1969b). These data 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.

Miscellaneous Water-Quality and Streamflow Records

The un-gaged 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. Some representative data (Table 16) are available from a study of the coastal basins (Blakey and Kunze, 1971) and from other data-collection sites (Figure 24).

Most sites (Figure 24) have been assigned a station number in the annual publication of water-resources data by the U.S. Geological Survey (1969a). Other sites have been numbered consecutively for this report.



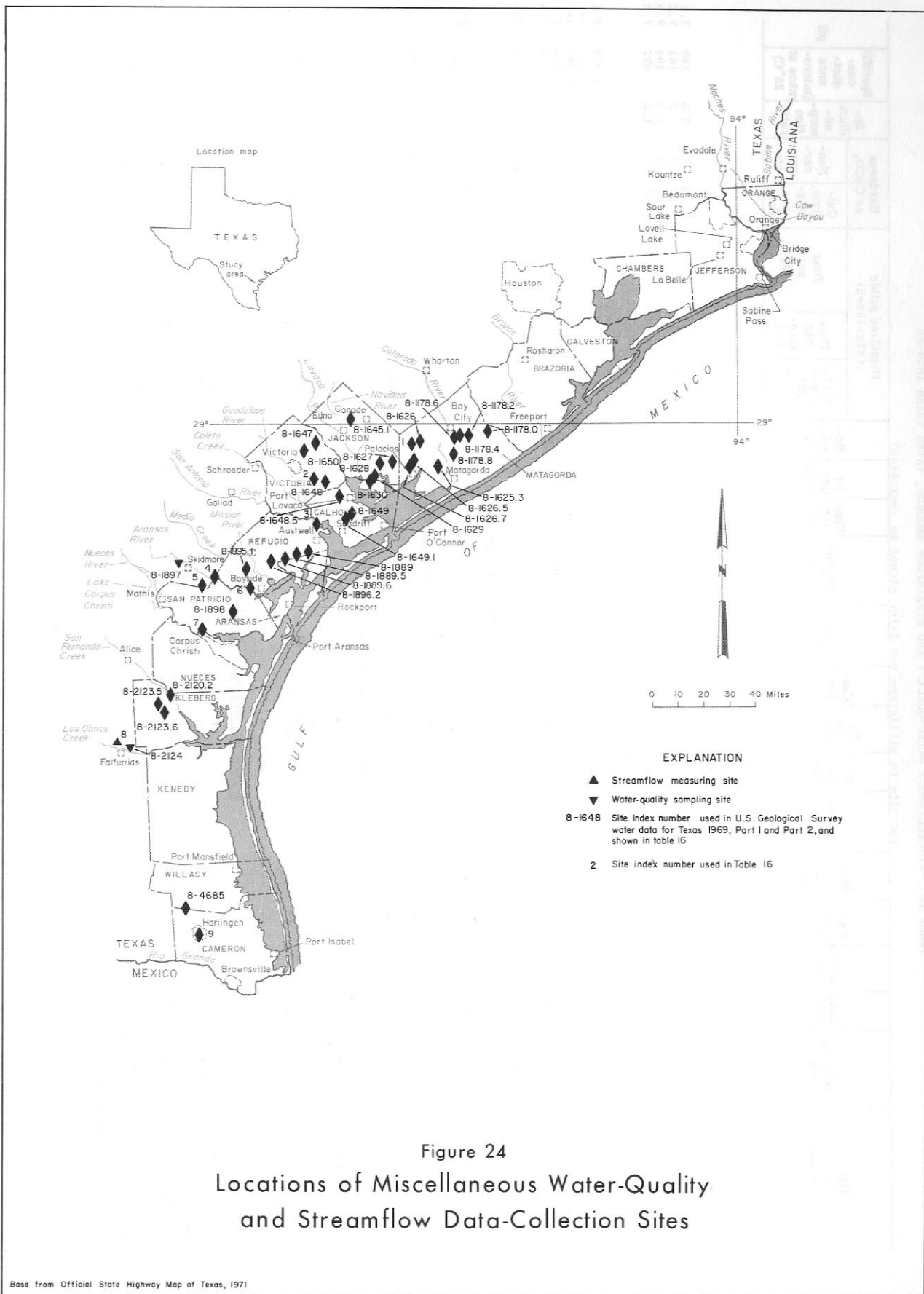


Figure 24
 Locations of Miscellaneous Water-Quality
 and Streamflow Data-Collection Sites

Base from Official State Highway Map of Texas, 1971

TABLE 16. -MISCELLANEOUS WATER-QUALITY AND STREAMFLOW RECORDS, WATER YEARS 1959-69

(Results in milligrams per liter except as indicated)

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K) a/	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (Calculated)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Milligrams per liter	Tons per acre-foot	Tons per day	Calcium, Magnesium	Non-carbonate			
TRIBUTARIES TO EAST MATAGORDA ESTUARY																						
8-1178.0 Live Oak Bayou near Cedar Lane																						
May 17, 1968	15.5	13		22	4.7	9.0		80	0	7.6	11	1.1	2.5	--	110	0.15		74	9	0.5	189	7.1
June 26	124	13		20	4.1	6.3		76	0	3.6	8.1	.9	.8	--	94	.13		67	4	.3	161	7.2
Aug. 7	9.46	11		50	14	32		196	0	22	46	.9	.4	--	272	.37		182	22	1.0	494	7.9
Sept. 4	22.4	40		50	13	38		193	0	20	56	1.1	.7	--	314	.43		178	20	1.2	527	7.3
8-1178.2 Bucks Bayou near Bay City																						
Nov. 29, 1967	2.60	22		64	26	166	--	334	0	96	178	.7	.0	--	717	.98		266	0	4.4	1,230	7.6
Jan. 22, 1968	164	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
Apr. 16,	1.01	--		--	--	--	--	--	--	153	222	--	--	--	--	--		--	--	--	1,480	--
May 16	24.0	17		26	6.0	15	--	84	0	20	17	1.0	7.5	--	150	.20		90	21	.7	248	7.4
June 27	138	18		22	5.2	14	--	88	0	11	14	1.0	2.0	--	130	.18		76	4	.7	216	7.0
Aug. 7	15.4	17		60	17	52		232	0	35	74	1.0	.2	--	370	.50		220	30	1.5	649	7.5
8-1178.4 Cottonwood Creek near Bay City																						
Nov. 29, 1967	2.29	22		63	15	152		284	0	20	161	5.8	66	--	645	.88		218	0	4.5	1,110	6.7
Jan. 22, 1968	81.2	13		19	3.9	12		70	0	8.4	14	.1	5.0	--	109	.15		63	6	.7	185	7.3
Apr. 16	4.01	--		--	--	--	--	--	--	28	146	--	--	--	--	--		--	--	--	1,110	--
May 16	21.5	18		28	6.0	35		121	0	13	31	1.9	12	--	205	.28		95	0	1.6	355	7.5
June 27	62.7	20		24	4.7	11		87	0	8.8	14	.9	1.8	--	128	.17		79	8	.5	209	7.5
Aug. 7	8.63	16		54	14	78		234	0	23	86	2.2	22	--	410	.56		192	0	2.4	713	7.6
8-1178.6 Liveoak Slough near Bay City																						
Jan. 22, 1968	78.3	12		19	3.6	6.5		69	0	5.2	9.4	.1	1.2	--	91	.12		62	6	.4	157	7.3
Apr. 16	1.73	--		--	--	--	--	--	--	26	46	--	--	--	--	--		--	--	--	482	--
May 16	8.24	2.4		44	8.0	20		126	9	26	26	.9	2.2	--	200	.27		143	24	.7	358	8.5
June 26	124	14		32	5.2	11		113	0	11	12	.9	1.2	--	143	.19		101	9	.5	245	7.3
Aug. 7	8.29	10		48	14	34		187	0	25	50	.4	.2	--	274	.37		178	24	1.1	485	7.9
Sept. 4	38.7	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
8-1178.8 Big Boggy Creek near Wadsworth																						
Jan. 16, 1968	1.52	7.0		11	3.8	9.1		38	0	10	14	.1	1.6	--	76	.10		43	12	.6	142	7.0
Jan. 22	211	7.3		6.5	2.1	6.9		30	0	5.0	5.5	.4	1.4	--	50	.07		25	0	.6	87	6.9
Apr. 17	.37	--		--	--	--	--	--	--	15	20	--	--	--	--	--		--	--	--	240	--
May 17	10.8	16		18	4.6	10		70	0	7.0	12	1.1	2.0	--	105	.14		64	6	.5	179	6.9
June 26	135	16		16	3.9	6.2		58	0	4.6	10	.9	.8	--	87	.12		56	8	.4	145	7.3
Aug. 7	20.6	10		46	14	28		170	0	22	49	.9	.2	--	254	.35		172	33	.9	465	7.3
Mar. 13, 1969	.58	--		--	--	--	--	--	--	--	31	--	2.4	--	--	--		--	--	--	286	--

See footnotes at end of table.

TABLE 16.-MISCELLANEOUS WATER-QUALITY AND STREAMFLOW RECORDS, WATER YEARS 1959-69--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K) a/	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (Calculated)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Milligrams per liter	Tons per acre-foot	Tons per day	Calcium, Magnesium	Non-carbonate			
TRIBUTARIES TO LAVACA-TRES PALACIOS ESTUARY																						
8-1625.3 Little Robbins Slough near Matagorda																						
Mar. 13, 1969	0.69	--	--	--	--	--	--	--	--	--	202	--	1.8	--	--	--	--	--	--	--	1,040	--
July 22	b20	--	--	--	--	--	--	--	--	--	70	--	.4	--	--	--	--	--	--	--	512	--
Aug. 19	21.2	--	--	--	--	--	--	--	--	--	111	--	.2	--	--	--	--	--	--	--	773	--
8-1626 Tres Palacios Creek near Midfield																						
Sept. 12, 1967	38.1	40	48	15	60	5.0	247	0	12	72	0.6	.8	--	--	347	0.47	--	182	0	1.9	615	7.7
Feb. 6, 1968	28.3	12	47	12	80	--	185	0	16	119	.6	3.0	--	--	381	.52	--	167	16	2.7	701	7.8
May 2	50.9	16	42	11	35	--	167	0	15	50	.5	1.4	--	--	253	.34	--	150	13	1.2	453	7.4
July 24	101	19	44	12	40	--	182	0	15	56	.4	.4	--	--	276	.38	--	159	10	1.4	493	7.3
Mar. 13, 1969	24.2	--	--	--	--	--	--	--	--	96	--	4.6	--	--	--	--	--	--	--	--	644	--
July 22	b60	--	--	--	--	--	--	--	--	89	--	.3	--	--	--	--	--	--	--	--	683	--
Aug. 19	8.57	--	--	--	--	--	--	--	--	128	--	.1	--	--	--	--	--	--	--	--	904	--
1 Juanita Creek near Midfield																						
Feb. 21, 1968	b20	9.6	36	10	129	4.4	153	0	11	195	.5	2.5	0.15	--	473	.64	--	132	6	4.9	905	7.5
8-1626.5 Cashes Creek near Blessing																						
Mar. 13, 1969	1.21	--	--	--	--	--	--	--	--	144	--	1.8	--	--	--	--	--	--	--	--	897	--
July 22	4.68	--	--	--	--	--	--	--	--	104	--	.4	--	--	--	--	--	--	--	--	745	--
Aug. 19	.09	--	--	--	--	--	--	--	--	170	--	.5	--	--	--	--	--	--	--	--	1,100	--
8-1626.7 Turtle Creek near Palacios																						
Mar. 12, 1969	.57	--	--	--	--	--	--	--	--	81	--	.0	--	--	--	--	--	--	--	--	506	--
July 22	b15	--	--	--	--	--	--	--	--	99	--	.3	--	--	--	--	--	--	--	--	659	--
Aug. 19	1.18	--	--	--	--	--	--	--	--	146	--	.3	--	--	--	--	--	--	--	--	996	--
8-1627 East Carancahua Creek near Blessing																						
Sept. 12, 1967	12.0	46	43	19	101	5.0	285	0	12	115	.8	.5	--	--	482	.66	--	186	0	3.2	800	7.6
Feb. 6, 1968	11.7	10	32	12	39	--	143	0	17	54	.4	1.3	--	--	236	.32	--	129	12	1.5	425	7.7
May 21	36.2	20	28	8.6	38	--	133	0	11	46	.4	.8	--	--	218	.30	--	105	0	1.6	380	7.5
July 24	73.8	20	30	10	36	--	145	0	9.6	45	.4	.4	--	--	222	.30	--	116	0	1.5	387	7.9
8-1628 West Carancahua Creek near LaWard																						
Sept. 12, 1967	11.0	50	70	19	67	7.4	284	0	13	113	.5	.8	--	--	481	.65	--	252	20	1.8	798	7.6
Feb. 6, 1968	1.87	9.6	31	6.8	38	--	121	0	11	53	.4	1.2	--	--	211	.29	--	105	6	1.6	388	7.4
Feb. 21	8.8	9.0	24	5.2	25	6.2	94	0	12	36	.6	2.4	.04	--	167	.23	--	81	4	1.2	289	7.0
May 21	7.97	23	32	6.8	20	--	137	0	6.6	21	.6	1.0	--	--	178	.24	--	108	0	.8	296	7.6
July 24	61.1	20	30	7.0	21	--	115	0	6.2	34	.3	.3	--	--	176	.24	--	104	9	.9	306	7.3

See footnotes at end of table.

TABLE 16.-MISCELLANEOUS WATER-QUALITY AND STREAMFLOW RECORDS, WATER YEARS 1959-69--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (Calculated)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Milligrams per liter	Tons per acre-foot	Tons per day	Calcium, Magnesium	Non-carbonate			
TRIBUTARIES TO LAVACA-TRES PALACIOS ESTUARY--continued																						
<u>8-1629 Kellers Creek near LaWard</u>																						
Sept. 13, 1967	0.32	67		40	13	43	6.4	223	0	5.2	43	0.5	0.5	--	329	0.45		154	0	1.5	480	7.7
Feb. 6, 1968	.17	.6		18	4.0	9.5	--	70	3	4.4	10	.3	.2	--	84	.11		61	0	.5	165	8.4
May 21	.25	12		27	6.2	18	--	125	0	4.0	16	.4	1.8	--	146	.20		93	0	.8	266	7.1
July 24	.60	13		21	4.6	21	--	98	0	2.4	24	.4	.4	--	135	.18		71	0	1.1	244	7.5
<u>8-1630 Huisache Creek near Lolita</u>																						
Sept. 13, 1967	.05	15		34	7.6	124	6.5	211	0	21	135	1.3	6.2	--	455	.62		116	0	5.0	835	7.6
Feb. 6, 1968	.21	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
May 21	.86	16		16	3.8	13	--	80	0	1.0	9.7	.6	1.4	--	100	.14		56	0	.8	172	7.5
July 24	1.33	15		16	4.2	12	--	78	0	2.6	10	.9	.8	--	100	.14		57	0	.7	170	7.0
<u>8-1645.1 West Mustang Creek near Ganado</u>																						
Aug. 24, 1967	1160	30		32	6.1	25	7.3	108	0	9.6	48	.3	1.0	--	212	.29		105	16	1.1	351	6.9
Sept. 12	61.8	46		60	12	46	5.5	200	0	16	88	.4	.5	--	372	.51		199	35	1.4	609	7.8
Sept. 24	3940	15		13	2.7	7.1	3.5	51	0	4.0	11	.2	.2	--	82	.11		44	2	.5	125	7.0
Oct. 25	34.4	19		25	4.2	14	4.8	93	0	7.6	22	.2	--	--	143	.19		80	3	.7	234	7.2
Nov. 21	4.53	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
Dec. 29	.38	15		41	6.6	30	--	116	0	24	49	--	7.2	--	230	.31		129	34	1.1	416	7.4
<u>8-1647 Arenosa Creek near Inez</u>																						
Oct. 27, 1960	--	5.3		3.2	1.3	2.3	1.7	16	0	.2	4.0	.1	.2	--	26	.04		13	0	.3	40	6.2
Sept. 13, 1961	--	7.9		6.1	1.4	6.7	3.4	30	0	2.4	8.2	.1	.0	--	51	.07		21	0	.6	78	6.1
Apr. 21, 1965	40.1	13		27	7.0	52	--	127	0	22	57	.5	1.8	--	242	.33		96	0	2.3	436	6.7
June 29	4.24	24		34	9.0	60	--	168	0	11	73	.4	.8	--	295	.40		122	0	2.4	524	6.6
Nov. 15	12.4	9.6		16	5.4	20	--	88	0	7.2	18	.3	.5	--	120	.16		62	0	1.1	220	6.3
Jan. 26, 1966	40.0	7.0		7.7	2.9	9.9	3.5	39	0	8.6	10	.2	.8	--	70	.10		31	0	.8	116	6.3
Mar. 9	.82	15		46	9.0	47	4.6	200	0	3.8	64	.3	.2	--	288	.39		152	0	1.7	523	7.2
May 11	91.7	16		13	2.5	10	3.5	58	0	3.6	11	.2	1.0	--	90	.12		43	0	.7	141	6.7
Dec. 7	.01	38		84	18	95	4.1	438	0	14	84	.4	.2	--	553	.75		284	0	2.5	925	7.5
Oct. 25, 1967	12.6	26		28	6.4	40	4.0	138	0	5.6	49	.2	1.8	--	229	.31		96	0	1.8	385	7.5
Nov. 21	.93	21		47	9.9	62	--	210	0	5.2	81	.4	.7	--	330	.45		158	0	2.1	588	7.5
Dec. 28	.13	29		72	15	96	--	322	0	4.0	128	.4	.7	--	503	.68		241	0	2.7	887	7.7
Jan. 1, 1968	--	--		22	4.7	--	--	98	0	--	29	--	--	--	--	--		74	0	--	305	7.6
Feb. 19	250	7.0		8.0	2.1	7.8	2.9	28	0	6.0	10	.3	2.6	0.04	61	.08		29	6	.6	92	7.1
Apr. 1	8.75	17		58	14	113	--	294	0	31	121	.4	3.5	--	503	.68		202	0	3.5	895	7.5
May 13	2860	4.6		5.0	1.5	3.5	--	24	0	.4	3.7	.1	1.0	--	32	.04		19	0	.3	60	6.4
June 21	306	12		13	3.8	23	--	68	0	7.0	23	.2	1.3	--	116	.16		48	0	1.4	203	6.7
July 24	18.2	25		39	9.8	67	--	196	0	11	78	.3	.7	--	327	.44		138	0	2.5	577	7.2
March 12, 1969	6.30	--		--	--	--	--	--	--	--	64	--	1.7	--	--	--		--	--	--	482	--
July 22	3.2	--		--	--	--	--	--	--	--	146	--	.6	--	--	--		--	--	--	932	--
Aug. 19	1.16	--		--	--	--	--	--	--	--	192	--	.0	--	--	--		--	--	--	1,220	--

See footnotes at end of table.

TABLE 16.-MISCELLANEOUS WATER-QUALITY AND STREAMFLOW RECORDS, WATER YEARS 1959-69--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K) a/	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (Calculated)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Milligrams per liter	Tons per acre-foot	Tons per day	Calcium, Magnesium	Non-carbonate			
TRIBUTARIES TO LAVACA-TRES PALACIOS ESTUARY--continued																						
8-1650 Garcitas Creek near Inez																						
Apr. 20, 1965	1.10	5.2		32	7.8	72	--	154	0	23	83	0.5	0.2	--	300	0.41		112	0	3.0	549	7.3
May 21	43.3	14		15	2.3	15	--	66	0	4.2	14	.2	.5	--	97	.13		47	0	1.0	157	7.0
Nov. 15	7.65	17		21	3.8	15	--	87	0	5.6	15	.4	1.5	--	122	.17		68	0	.8	206	6.4
Jan 26, 1966	38.4	8.6		7.2	1.8	8.6	2.5	32	0	6.2	9.2	.2	.2	--	60	.08		25	0	.7	97	6.3
May 11	37.2	--		--	--	--	--	90	0	11	--	--	--	--	--	--		77	3	--	204	6.9
June 17	.25	23		64	8.3	36	2.1	220	0	32	44	.4	.2	--	318	.43		194	13	1.1	536	7.5
Oct. 25, 1967	6.79	23		54	5.5	24	2.4	164	0	32	29	.3	.8	--	252	.34		157	23	.8	410	7.5
Nov. 21	1.81	17		49	4.8	26	--	152	0	23	35	.3	.3	--	230	.31		142	17	.9	397	7.3
Dec. 28	.31	19		58	8.0	35	--	171	0	47	45	.3	.1	--	296	.40		178	38	1.1	501	7.9
Jan. 31, 1968	6.84	--		42	4.8	--	--	135	0	--	27	--	--	--	--	--		125	14	--	368	7.5
Apr. 9	3.83	16		66	8.2	47	--	206	0	43	60	.3	.4	--	342	.47		198	29	1.5	579	7.3
May 13	971	6.8		7.8	1.5	1.9	--	29	0	.6	2.9	.1	1.3	--	37	.05		26	2	.2	67	6.7
June 21	151	10		14	2.5	8.7	--	54	0	4.8	9.6	.2	1.0	--	78	.11		45	1	.6	134	6.6
July 24	5.70	26		64	6.6	25	--	206	0	30	29	.3	.4	--	282	.38		187	18	.8	465	7.3
2 Lone Tree Creek near Dacosta																						
Feb. 19, 1968	38.4	9.6		13	2.6	13	3.9	44	0	8.6	13	.6	9.0	0.07	95	.13		43	7	.9	138	7.0
8-1648 Placedo Creek near Placedo																						
Sept. 13, 1967	.56	27		71	11	226	6.8	198	0	12	385	.7	2.8	--	839	1.14		222	60	6.6	1,530	7.3
Feb. 6, 1968	1.11	18		150	22	271	--	229	0	36	585	.3	3.3	--	1,200	1.63		464	277	5.5	2,270	7.5
May 21	8.89	15		61	8.7	97	--	129	0	13	197	.2	2.0	--	457	.62		188	82	3.1	876	7.3
July 25	1.59	26		194	28	360	--	273	0	26	800	.4	2.2	--	1,570	2.14		599	376	6.4	2,900	7.5
8-168.5 Chocolate Bayou near Port Lavaca																						
Sept. 13, 1967	1.97	34		30	4.5	25	7.2	113	0	.4	41	.6	1.5	--	200	.27		94	1	1.1	321	7.3
Feb. 7, 1968	.75	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
Feb. 19	45.6	15		18	3.2	12	4.3	42	0	13	12	.5	28	.05	127	.17		58	24	.7	190	7.0
May 22	8.04	24		20	3.3	12	--	72	0	1.2	19	.2	2.3	--	117	.16		63	4	.7	198	6.8
July 25	2.27	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
8-1649 East Coloma Creek near Port Lavaca																						
March 12, 1969	.26	--		--	--	--	--	--	--	--	2,500	--	.2	--	c4,700	6.39		--	--	--	8,640	--
July 22	b20	--		--	--	--	--	--	--	--	92	--	.4	--	--	--		--	--	--	714	--
Aug 20	10.2	--		--	--	--	--	--	--	--	144	--	.4	--	--	--		--	--	--	1,050	--
8-1649.1 West Coloma Creek near Seadrift																						
March 12, 1969	.35	--		--	--	--	--	--	--	--	2,050	--	1.6	--	3,920	5.33		--	--	--	7,210	--
July 23	b20	--		--	--	--	--	--	--	--	102	--	.2	--	--	--		--	--	--	771	--
Aug. 20	21.1	--		--	--	--	--	--	--	--	130	--	.0	--	--	--		--	--	--	945	--

See footnotes at end of table.

TABLE 16.-MISCELLANEOUS WATER-QUALITY AND STREAMFLOW RECORDS, WATER YEARS 1959-69--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (Calculated)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Milligrams per liter	Tons per acre-foot	Tons per day	Calcium, Magnesium	Non-carbonate			
TRIBUTARY TO GUADALUPE ESTUARY																						
3 Guadalupe River near Tivoli																						
Oct. 1, 1967	23,300	11	--	--	--	--	--	122	0	11	63	--	--	--	--	--	--	108	8	--	231	7.5
TRIBUTARIES TO MISSION-ARANSAS ESTUARY																						
8-1889 Artesian Creek near Tivoli																						
Sept. 14, 1967	12.0	46		39	3.9	18	7.4	148	0	19	9.8	0.5	3.0	--	220	0.30		113	0	0.7	305	7.3
Feb. 7, 1968	.80	12		36	4.5	53		148	0	37	43	.4	2.4	--	261	.35		108	0	2.2	449	7.8
May 22	34.7	30		30	2.6	6.6		108	0	.6	6.4	.1	1.8	--	131	.18		86	0	.3	204	7.2
July 25	.69	18		34	3.4	24		124	0	23	15	.3	3.7	--	182	.25		99	0	1.0	293	7.1
8-1889.5 Salt Creek near Refugio																						
Sept. 14, 1967	8.41	49		24	4.2	10	6.2	106	0	.4	8.2	.4	1.5	--	156	.21		77	0	.5	198	7.1
Feb. 7, 1968	.11	3.2		35	5.4	23		130	0	5.4	32	.1	2.8	--	171	.23		110	3	1.0	328	7.3
May 22	18.1	--		--	--	--	--	72	0	12	--	--	--	--	--	--		56	0	--	164	6.8
July 25	5.89	23		16	3.3	7.2		68	0	.8	7.9	.1	1.5	--	93	.13		53	0	.4	140	7.1
8-1889.6 Copano Creek near Refugio																						
Sept. 14, 1967	20.9	35		12	2.6	21	6.1	66	0	5.2	23	.5	1.8	--	139	.19		41	0	1.4	204	7.0
Feb. 7, 1968	3.28	8.2		16	3.8	43		73	0	24	43	.2	2.6	--	177	.24		56	0	2.5	314	6.7
May 22	132	--		--	--	--	--	40	0	--	41	--	--	--	--	--		34	1	--	215	6.5
July 26	15.0	17		12	2.7	18		51	0	6.6	21	.1	2.0	--	104	.14		41	0	1.2	172	6.7
8-1895.1 Sous Creek near Woodsboro																						
Sept. 15, 1967	1.26	2.1		25	3.8	14	6.8	89	0	5.8	25	.4	1.2	--	147	.20		78	5	.7	239	7.0
Feb. 7, 1968	.12	17		200	70	553		250	0	179	1,130	.2	4.3	--	2,280	3.10		787	582	8.6	3,440	7.2
May 22	16.4	17		28	4.7	24		95	0	10	36	.1	2.4	--	169	.23		89	11	1.1	292	7.1
July 26	2.73	17		48	7.9	46		150	0	18	77	.2	1.5	--	290	.39		152	30	1.6	518	7.2
8-1896.2 Melon Creek near Refugio																						
Sept. 24, 1967	10.2	22		22	3.3	21	4.6	98	0	.8	25	.4	1.5	--	149	.20		68	0	1.1	244	7.2
Feb. 7, 1968	4.94	10		25	4.2	33		107	0	9.6	36	.1	2.4	--	173	.24		80	0	1.6	311	6.9
May 22	96.8	14		10	2.3	12		42	0	.8	17	.1	2.2	--	79	.11		34	0	.9	144	6.7
July 26	34.8	--		--	--	--	--	60	0	--	17	--	--	--	--	--		46	0	--	163	6.7
8-1897 Aransas River near Skidmore																						
Nov. 28, 1961	.30	9.8		27	7.3	518	--	564	0	37	508	2.0	1.5	--	1,390	1.89		98	0	23	2,440	7.9
Jan. 3, 1962	.53	4.4		25	6.4	431	--	462	14	33	415	1.6	.2	--	1,160	1.58		89	0	20	2,090	8.3
Jan. 30	b.4	1.6		24	7.8	511	--	490	28	39	500	1.8	6.7	--	1,360	1.85		92	0	23	2,450	8.5
Sept. 26	1.56	16		49	6.6	191	--	344	0	15	188	.6	.5	--	c675	.92		150	0	6.8	1,110	7.2
Jan. 10, 1963	b.7	81		36	5.3	124	--	218	0	15	132	.5	1.2	--	429	.58		112	0	5.1	792	7.0
Mar. 21	.45	3.6		22	7.7	440	--	490	0	30	430	1.4	1.8	--	1,180	1.60		86	0	21	2,100	8.0
Oct. 9	30	14		31	4.5	62	--	182	0	6.0	52	.3	1.8	--	261	.35		96	0	2.8	482	6.6
Dec. 18	2.17	8.8		25	.6	64	--	148	0	5.8	52	.3	2.2	--	232	.32		65	0	3.4	430	6.8

See footnotes at end of table.

TABLE 16.-MISCELLANEOUS WATER-QUALITY AND STREAMFLOW RECORDS, WATER YEARS 1959-69--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (Calculated)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Milligrams per liter	Tons per acre-foot	Tons per day	Calcium, Magnesium	Non-carbonate			
TRIBUTARIES TO LAGUNA MADRE ESTUARY--continued																						
8-2120.2 San Fernando Creek at Kingsville--continued																						
Oct. 4, 1967	65	14		66	14	138	12	190	0	110	195	0.3	2.5	--	645	0.88		222	66	4.0	1,110	7.4
Oct. 10	16.8	19		72	10	188	14	306	0	122	195	1.0	4.8	--	776	1.06		220	0	5.5	1,290	8.2
Nov. 14	5.68	45		190	18	406	--	156	0	620	460	1.2	5.4	--	1,820	2.48		548	420	7.6	2,770	7.2
Dec. 20	3.13	39		143	17	679	--	266	0	576	770	--	.5	--	2,360	3.21		427	209	14	3,690	6.9
Feb. 1, 1968	3.73	--		66	6.2	--	--	652	0	--	482	--	--	--	--	--		190	0	--	2,900	7.2
May 10	733	14		40	6.4	56	--	192	0	28	40	1.7	2.0	--	282	.38		126	0	2.2	475	7.8
8-2123.5 Santa Gertrudis Creek near Kingsville																						
Nov. 1, 1961	.01	15		400	251	2,790	--	257	0	1,470	4,500	--	--	--	9,680	13.16		2,030	1,820	27	14,300	7.6
Nov. 6	b.05	16		440	263	2,900	--	314	0	1,540	4,700	--	--	--	10,000	13.60		2,180	1,920	27	14,700	7.0
Dec. 4	b.03	15		430	300	2,880	--	296	0	1,570	4,750	.6	--	--	10,100	13.74		2,310	2,060	26	15,200	6.8
Jan. 10, 1962	b.02	15		430	264	2,970	--	273	0	1,580	4,780	--	--	--	10,200	13.87		2,160	1,940	28	14,800	6.9
Feb. 1	b.01	--		--	--	--	--	149	0	--	5,620	--	--	--	--	--		2,640	2,520	--	17,400	7.6
Sept. 10	b.1	24		128	50	778	--	252	0	678	925	--	.2	--	2,710	3.69		525	318	15	3,740	7.0
July 21, 1964	b.05	15		640	424	3,880	--	228	0	1,850	6,850	--	--	--	13,800	18.77		3,340	3,150	--	19,700	6.7
Apr. 1, 1965	.01	24	1,300	925	7,960	--	400	0	3,840	14,200	--	--	--	--	28,400	38.62		6,920	6,720	--	39,600	7.0
May 2, 1966	2.94	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	13,500	--
Sept. 5, 1967	6.14	11		131	79	732	16	124	0	408	1,250	--	3.0	--	2,690	3.66		652	550	12	4,590	7.1
Oct. 4	21.0	24		123	52	415	20	161	0	288	730	--	4.2	--	1,740	2.37		521	389	7.9	3,020	7.3
Oct. 10	1.95	17		345	216	1,760	27	242	0	960	3,150	--	--	--	6,590	8.96		1,750	1,550	--	10,800	7.7
Nov. 14	.70	3.8		348	240	1,990	--	274	0	1,120	3,400	--	--	--	7,240	9.85		1,860	1,630	--	11,700	7.6
Dec. 21	.47	3.5		462	344	3,010	--	312	0	1,670	5,050	--	--	--	10,700	14.55		2,570	2,310	--	16,500	7.6
Feb. 1, 1968	.43	--		468	368	--	--	280	0	--	5,400	--	--	--	--	--		2,680	2,450	--	16,900	7.8
May 10	66.0	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
8-2123.6 Escondido Creek at Kingsville																						
Nov. 7, 1961	--	9.8		300	65	371	--	140	0	160	1,090	.4	4.5	--	2,070	2.82		1,020	902	5.0	3,790	6.5
Nov. 2, 1962	--	.8		148	49	556	--	216	0	522	750	.4	.0	--	2,130	2.90		571	394	10	3,490	7.2
May 2, 1966	0	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
Oct. 4, 1967	83.5	15		26	5.5	33	12	102	0	31	41	.2	1.8	--	216	.29		87	4	1.5	373	7.3
Oct. 10	28.6	15		36	7.7	50	13	123	0	43	70	.3	2.2	--	297	.40		121	21	2.0	513	7.6
Nov. 14	.03	4.9		238	68	467	--	252	0	286	980	2.7	2.7	--	2,170	2.95		874	667	6.9	3,780	7.7
Dec. 12	.32	5.4		328	121	839	--	215	0	516	1,720	--	1.8	--	3,640	4.95		1,320	1,140	10	6,100	7.5
Feb. 1, 1968	.10	--		490	188	--	--	274	0	--	2,560	--	--	--	--	--		2,000	1,770	--	8,720	7.5
May 10	112	--		--	--	--	--	78	0	--	81	--	--	--	--	--		116	52	--	467	7.0

See footnotes at end of table.

TABLE 16.-MISCELLANEOUS WATER-QUALITY AND STREAMFLOW RECORDS, WATER YEARS 1959-69--Continued

(Results in milligrams per liter except as indicated)

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K) a/	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (Calculated)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Milligrams per liter	Tons per acre-foot	Tons per day	Calcium, Magnesium	Non-carbonate			
TRIBUTARIES TO LAGUNA MADRE ESTUARY--continued																						
<u>8-2124 Los Olmos Creek near Falfurrias</u>																						
Sept. 24, 1967	6,030	6.0		11	1.4	2.0	5.3	46	0	0.8	2.3	0.1	1.0	--	53	0.07		33	0	0.2	87	6.9
Sept. 29	13.8	13		28	4.2	52	8.8	105	0	30	67	.2	1.9	--	256	.35		87	1	2.4	447	7.0
<u>8 Palo Blanco Creek at State Highway 285, near Falfurrias</u>																						
Sept. 23, 1967	16,600	--		--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
<u>8-4685 North Floodway near Sebastian</u>																						
Sept. 26, 1967	59,100	11		42	5.0	29	3.6	112	0	61	24	.3	2.8	--	234	.32		125	34	1.1	383	7.6
<u>Arroyo Colorado at Highway 77 in Harlingen</u>																						
Sept. 26, 1967	55,200	9.7		43	5.7	33	3.4	115	0	69	26	.3	2.8	--	250	.34		131	36	1.3	414	7.7
Sept. 27	54,800	9.4		46	6.0	31	3.4	120	0	68	25	.3	4.2	--	252	.34		139	41	1.1	417	7.7
Sept. 28	50,000	9.3		50	6.4	30	3.4	123	0	76	23	.3	6.8	--	265	.36		151	50	1.1	436	7.9
Sept. 29	31,000	10		52	6.7	30	3.6	129	0	78	25	.3	4.9	--	274	.37		157	52	1.0	448	7.9

- a. Included in sodium-ion concentration where no leader shown.
- b. Estimated.
- c. Residue on evaporation at 180°C.

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