

JOB PROGRESS REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-6-R-20

FISHERIES INVESTIGATIONS REGION 5-B

Job No. VI, Pollution Investigations

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May 7, 1973

SUMMARY

Water monitoring stations were established and utilized on the Guadalupe, Aransas, Atascosa, Frio, San Antonio, and Nueces Rivers and their tributaries in areas where industrial or agricultural pollution might occur. No serious water quality problems were encountered during the semiannual surveys. The Texas Water Quality Board has expanded its monitoring program to include areas of rivers sampled by this project; therefore, the extensive monitoring program conducted by project personnel during segment 20 is no longer needed and should be discontinued.

As in past years, project personnel participated in the U. S. Fish and Wildlife Service National Pesticide Monitoring Program on Lake Corpus Christi. No instances of pollution or fish die-offs were observed by department personnel or reported by outside sources and no special pollution investigations were necessary.

JOB PROGRESS REPORT

State Texas

Project No. F-6-R-20

Project Title: Fisheries Investigations
Region 5-B

Job No. VI

Job Title: Pollution Investigations

Period Covered: January 1, 1972 to December 31, 1972

Project Statement Objective:

To determine the source and nature of natural or man-made pollutants which affect fish populations.

Segment Objectives:

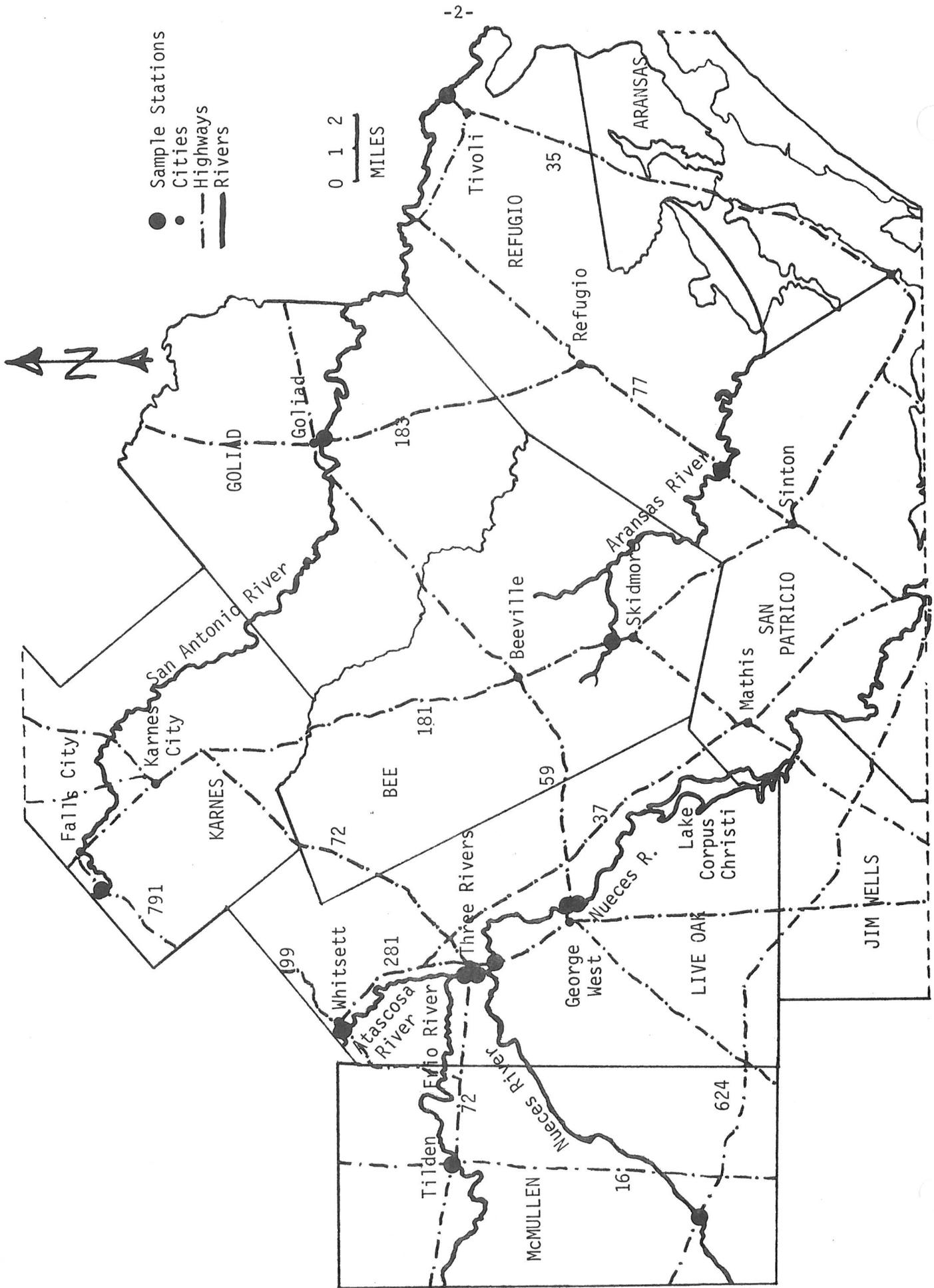
1. To conduct reconnaissance along rivers and tributaries for the purpose of locating sampling sites in areas where industrial and/or agricultural pollution might occur.
2. To establish and utilize sampling stations, based on information obtained by reconnaissance, for the purpose of monitoring water quality in areas where pollution might occur.
3. To investigate incidences of pollution or fish die-offs when observed by departmental personnel or when reported by other interested citizens and to report the findings to the appropriate authorities.
4. Confirmed cases of detrimental pollution will be referred to the appropriate enforcement agency.

Procedures and Findings:

Reconnaissance work was conducted on the Guadalupe, Aransas, Atascosa, Frio, San Antonio, and Nueces Rivers and their tributaries for the purpose of locating sampling sites in areas where industrial and/or agricultural pollution might occur.

On the basis of information obtained during preliminary reconnaissance, sampling stations were selected and utilized in a semiannual water monitoring survey. Water sampling sites were established above and below points of confluence in areas where pollution was most likely. The locations of the 13 selected stations were plotted on county maps (Figure 1). Two stations involved monitoring of effluents from municipal sewage treatment plants at their junctions with river systems. These stations were located on the Frio

Figure 1. Location of Water Monitoring Stations.



River at Three Rivers and the Nueces River at George West. No problems in water quality were observed at the Three Rivers sampling station. Water analyses conducted at George West in April showed low oxygen and high carbon dioxide contents. The Texas Water Quality Board conducted an investigation of the area and plans for improving the George West sewage treatment facilities have been implemented.

Surface and bottom water samples were taken during each of the two surveys. In shallow areas only surface samples were taken. Analyses included dissolved oxygen, carbon dioxide, pH, ph-th alkalinity, total alkalinity, chlorides, and total hardness. Air and water temperatures were also recorded. Results of these analyses are presented in Table 1. No detrimental conditions were observed during the surveys; likewise, no incidences of pollution or fish die-offs were observed by project personnel or reported by outside sources, and no in-depth investigations were necessary.

As in past years, assistance was given to the U. S. Fish and Wildlife Service in its annual pesticide monitoring survey of Lake Corpus Christi. The survey was conducted on November 6-7. Selected fish samples were frozen and shipped to the appropriate laboratory for analyses. At the time of writing of this paper, the results of the 1972 analyses have not been received. The segment 19 (1971) analyses showed no harmful amounts of pesticides to be present in the Lake Corpus Christi fish samples (Table 2). Those samples were tested for lipids, 11 organochlorine insecticides (DDE, TDE, DDT, dieldrin, aldrin, endrin, BHC, heptachlor epoxide, chlordane, and toxaphene), PCB (polychlorinated biphenyls), and selected metals (mercury, lead, arsenic, and cadmium).

Recommendations:

The Texas Water Quality Board has expanded its monitoring program to include areas of rivers and tributaries where pollution might occur. Therefore, the extensive monitoring program conducted by project personnel during segment 20 should be discontinued. It is recommended that this job be limited to the investigation of pollution or fish die-offs when observed by departmental personnel or when reported by outside sources. As in previous years, findings should be reported to the appropriate authorities. Confirmed cases of detrimental pollution should be referred to the appropriate enforcement agency.

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Assistant Project Leader

Approved by *David L. Pritchard*

Date May 7, 1973

E. M. C. Dietz
Regional Director for Inland Fisheries

Table 1. Summary of Water Quality Monitoring - 1972

Station	Date	Depth	Air Temp °F	Water Temp °F	O ₂ ppm	CO ₂ ppm	ph-th Alk. ppm	M.O. Alk. ppm	Jack.		Total	
									Turb. JTU	Cl ⁻ ppm	pH	Hardness ppm
Nueces R. Hwy. 624 Crossing	4-24	Surface	88°	81°	7.0	2.5	0	110	13.0	1350	7.2	980
		5'		76°	9.0	2.5	0	110	42.5	1525	7.0	1200
	10-12	Surface	84°	80°	8.0	2.5	0	150	42.0	125	7.2	180
Nueces R. Hwy. 281 Crossing Three Rivers		4.5'		80°	8.0	2.5	0	150	55.0	125	7.3	250
	4-24	Surface	83°	74°	9.0	2.5	0	200	48.0	570	7.1	540
		3'		72°	8.0	2.5	0	200	52.0	575	7.4	610
Nueces R. Hwy. 59 Crossing George West	10-16	Surface	88°	86°	9.0	2.5	0	195	30.0	215	7.3	310
		4.5'		85°	9.0	2.5	0	200	45.0	225	7.2	300
	4-14	Surface	90°	85°	8.0	2.5	0	220	15.0	585	7.2	620
Nueces R. Below Sewage Plant George West		13'		83°	6.0	5.0	0	220	75.0	565	7.5	530
	10-12	Surface	86°	86°	11.0	2.5	0	180	10.0	210	7.0	310
		14'		80°	8.0	2.5	0	185	40.0	208	6.9	300
Nueces R. Below Sewage Plant George West	4-14	Surface	90°	85°	4.0	8.0	0	220	25.0	625	7.2	620
		10'		83°	6.0	7.5	0	220	40.0	585	6.9	620
	10-12	Surface	86°	85°	12.0	2.5	0	180	15.0	205	7.1	300
San Antonio R. Hwy. 791 Crossing Falls City		12'		81°	7.0	5.0	0	185	32.0	200	7.2	270
	5-5	Surface	82°	77°	4.0	2.5	0	230	20.0	90	6.9	290
		10'		76°	4.0	2.5	0	240	55.0	90	7.0	280
San Antonio R. Hwy. 183 Crossing Goliad	10-11	Surface	90°	82°	8.0	2.5	0	235	20.0	100	7.4	310
		9'		82°	7.0	2.5	0	235	25.0	95	7.1	310
	5-5	Surface	80°	75°	7.0	2.5	0	180	95.0	95	7.2	260
Frio R. Hwy. 16 Crossing Tilden		4.5'		74°	7.0	2.5	0	200	105.0	95	7.0	280
	10-11	Surface	94°	81°	8.0	2.5	0	250	55.0	130	7.1	470
		5'		81°	8.0	2.5	0	235	65.0	125	7.4	460
Frio R. Hwy. 16 Crossing Tilden	4-19	Surface	93°	81°	5.0	2.5	0	130	40.0	765	7.2	900
	10-12	Surface	93°	79°	7.0	2.5	0	190	25.0	265	7.1	320
Frio R. Hwy. 72 Crossing Three Rivers	4-19	Surface	92°	84°	8.0	2.5	0	200	25.0	625	7.4	730
		9'		81°	4.0	5.0	0	220	55.0	650	7.0	800
	10-12	Surface	92°	80°	10.0	2.5	0	220	20.0	220	7.2	330
Frio R. Below Sewage Plant Three Rivers		8.5'		82°	9.0	5.0	0	220	40.0	225	7.1	320
	4-19	Surface	92°	83°	6.0	2.5	0	210	25.0	650	7.0	760
	10-12	Surface	92°	81°	10.0	2.5	0	220	10.0	220	7.2	340

Table 1. (Continued)

Station	Date	Depth	Air		Water		CO ₂ ppm	ph-th Alk. ppm	M.O. Alk. ppm	Jack		Total	
			Temp °F	Temp °F	Temp °F	Temp °F				Turb. J.T.U.	Cl- ppm	pH	Hardness ppm
Aransas R. Hwy. 181 Crossing Skidmore	5-18	Surface	87°	84°	7.0	2.5	2.5	0	90	250.0	9	6.9	80
	10-11	Surface	90°	82°	5.0	2.5	0	250	20.0	45	7.2	260	-
Aransas R. Hwy. 77 Crossing Sinton- Woodsboro	5-17	Surface	82°	79°	6.0	2.5	0	120	45.0	23	6.8	120	110
	10-10	Surface	88°	82°	6.0	2.5	0	130	50.0	23	6.8	250	280
Atascosa R. Hwy. 99 Crossing Whitsett	4-24	Surface	89°	74°	8.0	2.5	0	235	10.0	100	7.0	250	280
	10-12	Surface	86°	78°	8.0	2.5	0	230	15.0	100	7.1	420	270
Guadalupe R. Hwy. 35 Crossing Tivoli	5-17	Surface	84°	76°	6.0	2.5	0	480	28.0	475	7.4	420	100
	10-10	Surface	88°	81°	6.0	2.5	0	250	270.0	15	7.2	100	110
		20'		76°	6.0	2.5	0	120	240.0	15	7.0	270	270
		12'		81°	6.0	2.5	0	225	40.0	75	7.3	270	270

Table 2. Pesticide Analyses of Lake Corpus Christi Fish Samples, 1971.

Field Sample No. Species	1120755		1120756		1120757		1120758		1120759		1120760		1120760*	
	Black Crappie	2.32	White Crappie	1.41	Blue Catfish	2.48	Blue Catfish	4.25	Gizzard Shad	1.33	Gizzard Shad	0.95	Gizzard Shad	-
% Lipid														
DDE (ppm)	0.061		0.14		0.15		0.098		0.086		0.040			
DDD (ppm)	0.017		0.021		0.028		0.023		0.010		0.010			
P, P' -DDT (ppm)	0.019		0.030		0.032		0.022		0.017		0.010			
Dieldrin (ppm)	<0.005		<0.005		0.009		<0.005		<0.005		<0.005			
Endrin (ppm)	--		<0.005		--		<0.005		--		--			
BHC (ppm)	0.005		<0.005		0.006		0.006		0.005		<0.005			
Est. PCB (ppm)	0.06		0.06		0.008		0.06		0.06		0.05			
Arsenic (ppm)	0.16		0.14		≈ 0.02		≈ 0.03		0.10		0.12			0.16
Mercury (ppm)	0.06		0.13		0.11		0.10		0.06		0.02			0.02
Cadmium (ppm)	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05			<0.05
Lead (ppm)	<0.10		0.11		0.13		0.16		0.10		0.10			0.15

A

B

A= Analyses conducted by Warf Institute, Inc.

B= Analyses conducted by Denver Wildlife Research Center

*= Results of analysis check on sample 1120760.