

SEGMENT COMPLETION REPORT

FILE

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-3-R-15

Region 3-B Fisheries Studies

Job No. C-1 Pollution Studies

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ABSTRACT

Investigations of reported pollution activities were made on three Region 3-B streams this segment.

A limited fish kill on Little Cypress Bayou in Harrison County was attributed to oxygen depletion during drought conditions in late August, 1967.

Investigation of pollution in an unnamed tributary of Striker Creek in Rusk County was made on October 28, 1967. Influx of the pollutant was traced upstream to the Sinclair Oil refinery number 19 near Turnertown. Plant supervisor, Mr. S. R. Pyler accompanied department personnel during the investigation.

A pollution investigation was made on the Sabine River in Harrison, Rusk, Panola and Gregg Counties on October 23-24, 1967. A large mass of dark water containing very little dissolved oxygen was evidently released just ahead of a fresh water rise. Efforts to trace the influx of the pollutant upstream were thwarted by the fresh water moving downstream. Many affected fish were revived by this fresh water.

It is recommended that this job be continued to provide investigation of future pollution activities in the waters of Region 3-B.

SEGMENT COMPLETION REPORT

State of Texas

Project No. F-3-R-15

Name: Region 3-B Fisheries Studies

Job No. C-1 (Cont.)

Title: Pollution Studies

Period Covered: February 1, 1967 - January 31, 1968

OBJECTIVES:

To determine the source and nature of natural or man-made pollutants which effect fish populations in the waters of Region 3-B.

TECHNIQUES:

When pollution was reported or evidence indicating pollution was found, a search was made to determine the source and nature of the pollutant. Standard water analyses were made to determine water quality and type of pollution. These analyses included pH, total alkalinity, chlorides, dissolved oxygen, sulfates, phosphates and turbidity. A portable Hach DR EL chemistry kit was used in the field. Stream analyses were made above and below the polluted area for comparison of water quality and to trace the influx of the pollutant into the stream.

FINDINGS:

Investigations were made on three streams in Region 3-B this segment, the Sabine River, Little Cypress Bayou and an unnamed tributary of Striker Creek that drains into Lake Striker in Rusk County.

Little Cypress Bayou

On August 28, 1967, a fish kill on Little Cypress Bayou in Harrison County was reported by Mr. R. R. Hampton. Upon investigation it was determined that this was a total fish kill but confined to a very small area. Due to drought conditions the bayou was not flowing and a heavy concentration of fish were trapped in a small area of water. The ensuing oxygen depletion resulted in a fish kill. Other than a lack of dissolved oxygen, water analysis data recorded in the field indicated normal water quality.

Striker Creek Tributary

On October 28, 1967, pollution of a small tributary of Striker Creek in Rusk County was reported to the project leader by Warden Bill Daniel. An investigation was made of the polluted area, below the Sinclair Oil Refinery No. 19 near Turnertown. Several drains from the refinery empty into the headwaters of the creek. This creek is the only source of water for cattle in pastures below the refinery. Landowners, upon noting the dark water in the creek, became alarmed. This tributary supports only limited aquatic life but pollution of this area could be a detriment to downstream fisheries of Striker Creek and Striker Lake.

Water analyses were made at various sites within the reported polluted area of the creek. A point on the creek approximately one mile below the Sinclair Refinery was designated site 1. The creek contained very dark water at site 1 which contained a strong odor similar to crude oil. Analysis revealed a pH of over 10, chlorides 200 p.p.m. and total alkalinity 650 p.p.m. Additional tests for sulfates and phosphates could not be determined due to the dark stain.

A point immediately below the Sinclair Refinery was designated as site 2. The creek was flowing freely in this area and the water was relatively clear in comparison to site 1. Analysis revealed improved water quality with pH 9.1, chlorides 20 p.p.m. and total alkalinity 150 p.p.m.

Mr. S. R. Pyler, plant supervisor for the Sinclair Refinery, was contacted and accompanied Department personnel to three water release sites upstream from site 2 on the creek. These releases were termed drain 1, drain 2 and pit outlet.

Chemical analysis of drain 1 revealed the following: pH 8.7, chlorides 55 p.p.m., total alkalinity 410 p.p.m., phosphates 4.0 p.p.m. and sulfates 450 p.p.m.

Analysis of a sample of drain 2 effluent revealed a pH of 8.7, chlorides 15 p.p.m., total alkalinity 150 p.p.m., sulfates 70 p.p.m. and phosphates 1.2 p.p.m.

The pit outlet effluent contained a pH of 9.5, chlorides 40 p.p.m., sulfates 90 p.p.m., total alkalinity 40 p.p.m. and phosphates 0.55 p.p.m. The water was clear at all of the release sites when the investigation was made. Mr. Pyler reviewed the dark water downstream and agreed that it had entered the creek from the refinery although he did not know how or why. Department personnel were assured every effort would be made to trace its origin and prevent any reoccurrence.

In comparing the water quality criteria from the three refinery outlets it was concluded that the dark water had entered the creek through drain 1. This effluent, although clear, contained very high sulfates, phosphates and total alkalinity.

No dead fish or other aquatic life was observed during this investigation.

Sabine River - Shelby County

On September 13, 1967, a reported fish kill in the upper reaches of Toledo Bend Reservoir on the Sabine River in Shelby County was investigated. Only a few small gizzard shad (Dorosoma cepedianum) were observed. Large numbers of dead fish had been reported by area fishermen. Chemical water analysis revealed normal water quality as follows: pH 7.1, chlorides 75 p.p.m., total alkalinity 60 p.p.m., dissolved oxygen 8 p.p.m. and turbidity 30 jackson turbidity units. No evidence of pollution was found.

Sabine River - Gregg, Harrison, Rusk and Panola Counties

On October 23-24, 1967, an investigation of the Sabine River in Gregg, Harrison, Rusk and Panola Counties was made in an effort to locate the source of pollution reported by Mr. Clyde Curry of Marshall.

On October 22, 1967, a rise of approximately three vertical feet reached the Highway 43 bridge on the Sabine River in Harrison County. In front of this fresh water the river was polluted with a greenish-black precipitate containing a strong musky odor. This dark water was first observed at Highway 59 bridge in Harrison County. As contained in Table 1, dissolved oxygen was very low and phosphates were high. Numerous fish were in distress and a few dead fish were observed.

Table 1

Station Location (October 23, 1967)	pH	Chlorides p.p.m.	Total Alkalinity p.p.m.	Dissolved Oxygen p.p.m.	Sulfates p.p.m.	Ortho-phosphates p.p.m.
Highway 59 Bridge *	6.8	125	80	2.0	90	1.80
Highway 43 Bridge **	6.5	135	35	6.0	40	1.20
(October 24, 1967)						
Highway 79 Bridge *	6.8	125	80	1.0	85	3.60
Big Eddy (a mi. below Hwy. 59)	7.0	110	30	5.0	45	1.00
Highway 59 Bridge **	7.2	130	20	5.0	50	0.82
Highway 149 (Gregg)	7.0	25	40	5.0	30	1.20
Massey Rock (Gregg)	6.8	25	50	5.0	30	0.90
Interstate 20 (Gregg) (below sewage plant)	7.5	20	50	-	25	0.70
FM 2087 (below sewage plant)	7.1	15	50	-	27	0.50

* Water dark green precipitate, strong musky odor.

** No odor or color in water, some dead fish noted.

This dark water was again observed and analyzed as it passed Highway 79 bridge in Panola County on October 24. Many species of fish were in distress and swimming into the banks of the river. A strong odor was present and a very fine black precipitate was noted on sand bars. Checks upstream revealed that the fresh water behind the pollutant was reviving many of the distressed fish.

The river was investigated at numerous points upstream in Harrison and Gregg Counties in an effort to locate the source of the pollutant. Possible industrial or municipal effluents in this area include Texas Eastman Company, Joseph Schlitz Brewery of Longview and the Longview Sewage Treatment Plant. Due to the rising fresh waters flowing downstream chemical analyses revealed no abnormalities in water quality. Fortunately, this supply of fresh water revived many affected fish and reduced the toxicity of the pollutant.

CONCLUSIONS AND RECOMMENDATIONS:

Although the tracing of stream pollution to its source is often difficult and not always accomplished, continued efforts must be made to protect the fisheries of public waters. It is recommended that this job be continued to investigate future pollution activities in Region 3-B waters.

Prepared by Joe E. Toole Project Leader
 Approved by Maxion Toole Coordinator
 Date February 16, 1968
Charles E. Gray Fisheries Supervisor

* Water dark green precipitate, strong musky odor.
 ** No odor or color in water, some dead fish noted.
 This dark water was again observed and analyzed as it passed Highway 79 bridge in Panola County on October 14. Many species of fish were in distress and swimming into the banks of the river. A strong odor was present and a very fine black precipitate was noted on sand bars. Checks upstream revealed that the fresh water behind the pollutant was reviving many of the distressed fish.
 The river was investigated at numerous points upstream in Harrison and Gregg Counties in an effort to locate the source of the pollutant. Possible industrial or municipal effluents in this area include Texas Eastman Company, Joseph Schlitz Brewery of Longview and the Longview Sewage Treatment Plant. Due to the rising fresh waters flowing downstream chemical analyses revealed no abnormalities in water quality. Fortunately, the supply of fresh water revived many affected fish and reduced the toxicity of the pollutant.