

Report of Fisheries Investigations
Inventory of Species Present in Lake Trammell near
Sweetwater, Texas.

by

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Dingell-Johnson Project F-5-R-6, Job B-24
April 16, 1958 - April 15, 1959

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Job Completion Report

State of TEXAS

Project No. F-5-R-6

Name: Fisheries Investigations and Surveys of
the Waters of Region 3-B.

Job No. B-24

Title: Inventory of Species Present in Lake
Trammell near Sweetwater, Texas.

Period Covered:

April 16, 1958 - April 15, 1959

Abstract:

The results of the netting and seining samples indicate that channel catfish (Ictalurus punctatus) and bluegill sunfish (Lepomis macrochirus) are the most abundant game species in Lake Trammell and that the abundance of black bullheads (Ictalurus melas) is the principal "rough fish" problem. It was also concluded that most of the members of the family Centrarchidae (black basses and sunfishes) occurring in the lake are overpopulated and therefore stunted. The only recommendation made was to introduce yellow catfish (Pylodictus olivaris).

Objectives:

To determine the species present and their relative abundance as well as to determine the ecological factors influencing their distribution.

Procedure:

Six netting stations were established on Lake Trammell. Each station, with the exception of station one, was netted three times. Station one was netted twice in June but could not be used in August because the water level was lower than in June and the station was too shallow. A total of seventeen netting collections were obtained. All nets used were experimental type nylon gill nets, measuring 125 feet long by eight feet deep and made up in five, 25 foot sections. Mesh sizes for these nets increased progressively in each following section, at half-inch intervals, beginning with a one-inch square mesh section and terminating with a three-inch square mesh section. Locations of the netting stations used are shown on Map No. 1.

All fish caught in the gill nets were weighed, measured, and their sex and condition determined. Some species were checked for stomach contents and parasites.

Only two seining stations were established due to factors discussed elsewhere in this report. Several seining drags were made at each station during both the June and August trips to Lake Trammell and the composite of these drags at each station for each trip was counted as one seining collection. A total of four seining collections were obtained. The seines used were 20 feet long by four feet deep, with $\frac{1}{4}$ inch mesh.

All fish caught in seines were preserved in a 10% formalin solution and taken to the laboratory for identification.

A water sample was taken and analyzed. The results of these analyses are presented in Table VI. Surface temperature, pH, and turbidity were measured and recorded for each trip. Notations concerning the description and general ecological conditions of the lake and surrounding terrain were recorded. Further ecological and hydrological information was obtained from the City of Sweetwater.

Findings:

Physical Characteristics - Lake Trammell is located on Sweetwater Creek approximately seven miles southwest of the City of Sweetwater and is a part of the Brazos River System. The contributing watershed above the Lake Trammell Dam drains an area of 54 square miles (Map No. 2). The dam was constructed in 1914 as a water supply for the City of Sweetwater. When built the lake could contain 3,183 acre feet of water or 1,039,952,812 gallons at maximum capacity. The maximum capacity of this lake is probably not as great today, due to siltation which has occurred during the last forty-five years. When full Lake Trammell covers approximately 230 surface acres.

Excess water pumped from Oak Creek Reservoir near Blackwell, Texas, is stored in Lake Trammell. Oak Creek Reservoir is, incidentally, the chief source of water for the City of Sweetwater. Another source of water is Lake Sweetwater which is located approximately nine miles east of Lake Trammell.

The recorded pH for Lake Trammell is 7.6. The water temperatures ranged between 32 degrees Fahrenheit and 84 degrees Fahrenheit. The water is relatively clear most of the time with a measured light penetration of 6 feet (Secchi).

The area surrounding Lake Trammell is composed of rolling uplands, with broad level valleys and plateaus and is interspersed with prairies and mesquite and cedar woodlands. The soil is chiefly dark red loams and stony soils of limestone origin. There appears to be only a small portion of the Lake Trammell Watershed in cultivation.

Most cover is mesquite-grassland and cedar-grassland association, with button willows and desert willows abundant along the creek bed.

Aquatic Vegetation - The principle types of vegetation in and around the lake shore are smartweed (Polygonum sp.), mud plantain (Heteranthera sp.) (probably Heteranthera dubia), pondweed (Potamogeton sp.), stonewort (Chara sp.), and coontail (Ceratophyllum sp.). Various types of algae occur as "blooms" and filamentous sheets.

Copper sulfate is applied to the lake by the City of Sweetwater nearly every summer as a means of vegetation control. This treatment has only a temporary effect apparently since the lake characteristically contains profuse aquatic vegetation.

Pollution - There are a number of pumping oil wells on the lake shore and in the lake's watershed. At the present time no petroleum or saltwater pollution can be detected in the lake and it is believed that none exists. Other pollutants such as cotton insecticides and organic debris which might wash into the lake in times of heavy rains do not appear to have ever been concentrated enough to cause serious fish kills. This is probably due to the limited watershed and the small amount of land in cultivation on the drainage area. Some minor fish kills have been reported by local observers. These can possibly be attributed to natural oxygen depletion occurring when the plankton bloom is heavy and when several cloudy, still days occur. No oxygen depletions were noted during the course of the survey.

Recent History - Lake Trammell went dry in the summer of 1953 due to the severe and prolonged drouth but was filled by spring rains in 1954 and restocked by the state fish hatchery. The lake was closed to fishing until April of 1956. When first opened in 1956, bass fishing was good but at present bass are rather hard to catch. Small sunfish and crappie are fished for rather heavily by local anglers, with a high degree of success. Trotlines are allowed in the lake but are not employed too frequently. Many bullhead catfish are caught from the shore.

Netting - Tables I, II and III give the statistical data obtained from the netting collections. A total of 342 netted specimens were collected. Of these, 210 were game species and 132 were rough and/or forage species.

Only 16 fish were collected per 100 linear feet of net. Two factors probably account for this sparseness of specimens. One is the fact that the water in the lake was very clear during the times netting collections were being made (6 feet Secchi). The other is the fact that many of the fish in Lake Trammell are apparently stunted and only a small portion of each of the experimental nets used had small enough mesh to catch such small fish.

Descriptions of Netting Stations

Station No. 1 - The water was approximately 8 feet deep on June 4th and 5th, 1958, and only about 3 feet deep on August 20th. This station was not netted on August 20th because of the shallowness of the water. This station is over the creek channel but the channel is badly silted and sanded in. There are partially inundated willow trees along the edge of this channel which the nets were tied to. Across the channel from these willows is a sandy shore covered with smartweed. These plants were blooming during the June trip.

Station No. 2 - The water was approximately 12 feet deep at this station during the June netting and only about 7 feet deep during the August netting. This station is very similar to station No. 1 since it lies about 75 yards down the creek bed from it and is bordered by willow trees on one edge of the channel and a sandy shore covered with profuse growths of smartweed on the other.

Station No. 3 - The water was approximately 12 feet deep at this station during the June netting and about 7 feet deep during the August netting. This station is at the mouth of a small slough. The net was tied to a large willow tree at one end and the other end was stretched towards the slightly sloping shore which was covered with mud plantain and smartweed. The bottom was soft mud and silt covered in the shallows with various types of submerged aquatic vegetation.

Station No. 4 - The water was approximately 14 feet deep at this station during the June netting and about 9 feet deep during the August netting. This station is in open water except for four large posts emerging from the water in a rectangular pattern about 10 feet apart. One end of the net was tied to one of these posts and the other end was stretched towards the west shore.

Station No. 5 - The water was approximately 15 feet deep at this station during the June netting and about 10 feet deep during the August netting. One end of the net was tied to a large rock emerging from the water near the bank. The bank consists of a rapidly declining gravel and clay bottom at the base of a sheer red clay cliff. The other end of the net was in open water.

Station No. 6 - The water was approximately 13 feet deep at this station during the June netting and about 8 feet deep during the August netting. One end of the net was tied to a large rock lying among some larger sandstone rocks on an erratically declining bank. The other end of the net was in open water.

Seining - The use of seining as a sampling method for inventory of fish species was very limited in Lake Trammell. Factors which hindered the catching of fish by means of seines include: 1. the extreme slope of much of the shoreline; 2. the thick mats of both emerged and submerged vegetation in areas of shallow water; and 3. the relative clearness of the water.

Only two areas were productive enough to be considered as seining stations. Attempts to sample the fish population by seining were made in several other areas besides those listed as seining stations, but with little or no results due to the aforementioned "natural" conditions of the lake. Due to the inadequate seining sample there are probably several small species of fish in the lake which were not collected at all.

Table IV gives the statistical data obtained from the seining sample.

Descriptions of Seining Stations

Station No. 1 - The water ranged from approximately 4 feet in depth out about 15 feet from the water's edge to about 1 inch in depth at the shoreline. The bottom was fairly firm being composed of sand, gravel and rubble. There were a few scattered plants of smartweed but not enough to seriously interfere with seining activities. This station is also the lake's boat launching area.

Station No. 2 - The water ranged from approximately 4 feet in depth out about 10 feet from the shoreline to about 1 inch in depth at the shoreline. The bottom was sand and silt covered with various forms of aquatic vegetation. This vegetation impeded seining to a certain extent. This station was along the shoreline in a small slough.

Discussion of Fishery Population - The pertinent information obtained concerning the fishery population in Lake Trammell can best be discussed by means of the following annotated checklist of species.

Annotated Species List

Cyprinidae (Shiners and minnows)

Notemigonus crysoleucas (golden shiner) - Collected by netting only, this species has apparently outgrown its utility. The individuals obtained in the netting sample were so large that only a large largemouth bass could forage on them. Some observers believe this species is destructive to largemouth bass spawning nests. For these reasons it is concluded that this species as it appears in Lake Trammell is fairly undesirable.

Notropis lutrensis (redhorse shiner) - Only three individuals of this species were collected by seining. It is believed that this species is much more prevalent than this sample would indicate since a number of shiners were observed in the lake that could not be successfully seined. This species is considered to be desirable since its size never becomes large enough to prevent it from being consumed by other fish.

Ameiuridae (Freshwater catfishes)

Ictalurus punctatus (channel catfish) - Sixty-five individuals were collected by netting which indicates that this species is the most abundant large game fish in the lake. These fish composed over 19 percent of the netting sample by number and over 74 percent by weight, with an average weight of 2 pounds and 2 ounces. Not many catfish are taken from the lake by anglers according to the lake keeper although trotlines are allowed in the lake. The probable reasons for this condition are that not many trotlines are set and there is an abundance of small fish in the lake which provide many natural baits for the catfish, and also a large amount of aquatic vegetation which they utilize for food. Most specimens collected had visceral roundworms.

Ictalurus melas (black bullhead) - Collected both by netting and seining, these fish appear to be the most abundant species in the lake. The netting sample contained 107 specimens of this species which composed over 31 percent by number. They are fished for by a segment of the anglers but, in general, are considered to be highly undesirable. Lake Trammell contains no yellow catfish which apparently serve as a partial control on the bullhead population in other West-Texas lakes.

Poeciliidae (Mosquitofishes)

Gambusia affinis (common mosquitofish) - *Gambusia* composed only 10 percent of the seining sample but are known to be extremely common since schools of these fish were observed on the surface of the water in many areas. This species does not appear to be a preferred food of other fish but is sometimes consumed in the absence of other more desirable forage fish.

Centrarchidae (Black basses and sunfishes)

Micropterus salmoides (largemouth bass) - This species was collected by both netting and seining. Lake Trammell appears to have a large supply of small largemouth bass but no large ones were obtained in fish collections and not many large ones are reported caught by anglers. The natural reproduction of this species appears to be great in this lake and the state fish hatchery also stocks this species in the lake nearly every year. Most specimens obtained ranged in total length between 55 and 165 millimeters. The data collected and observations made of these fish somewhat indicate that many of the individuals of this species are slightly stunted.

Lepomis cyanellus (green sunfish) - This species was collected by seining only. Most individuals taken from Lake Trammell were very small. Probably due to the large size of their mouths, these fish seem to compete directly with the small bass for small minnows and similar forage.

Lepomis microlophus (redeer sunfish) - Redear were collected by seining only. There were some very large individuals of this species observed in the clear waters of Lake Trammell. These fish are apparently subdominant to other species of sunfish but possibly due to different feeding habits attain a much larger size.

Lepomis macrochirus (bluegill sunfish) - Bluegills collected both by netting and seining composed over 17 percent of the netting sample and over 50 percent of the seining sample. This species is probably the most numerous game species in the lake and also appears to be an important forage fish for other species. This species is over-populated in Lake Trammell and does not reach a large enough size to be considered a highly desirable game fish. However, there are a great number of sunfish fishermen who take large strings of the stunted sunfish from the lake.

Pomoxis annularis (white crappie) - Collected only in netting, these fish composed over 24 percent of the sample. This is another species that appears to be over-populated and consequently stunted. Individual crappie averaged only 2 ounces in weight.

Percidae (perches and darters)

Percina caprodes (logperch) - Though collected sparsely in seining, are probably more abundant than the sample would indicate. This statement is made because this species is usually on the bottom of the lake or around obstructions and normally cannot be seined in significant numbers. They are considered to be relatively unimportant to the ecology of the lake.

Conclusions and Recommendations:

All the desirable species of fish in Lake Trammell with the exception of redear sunfish and channel catfish appear to be over-populated, and as a result, stunted. One reason advanced for this condition, besides the fact that members of the family Centrarchidae are naturally very prolific in most West-Texas waters, is that the profuse beds of aquatic vegetation in Lake Trammell afford too much cover for the small fish and therefore their numbers are not reduced enough by larger fish to prevent over-population.

The only really undesirable species found in the lake were black bullheads and golden shiners. It cannot be concluded then, at this time, that the lake's fishery population is enough out of balance or that the rough fish numbers are great enough to recommend a complete eradication of fish species. However, since the water from Lake Trammell can be pumped out rather quickly and used for the City of Sweetwater's water supply and then the lake can be refilled from Oak Creek Reservoir. It might be feasible at some future date to substantially reduce the amount of water as described and perform a complete eradication on the remaining pools. This procedure could be done only when the condition of the fishery population warrants it and then only with the full cooperation of the City of Sweetwater.

It is then concluded that the only immediate recommendation that can be made is that yellow catfish (Pylodictus olivaris) be introduced in the lake when available as a partial means for the control of the black bullhead population and for the benefits to anglers inherently derived from the presence of this species.

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Approved by Marion Toole
Director Inland Fisheries Division

Date May 8, 1959

Table No. I - Results of Netting Collections at Individual Stations taken from Lake Trammell from April 16, 1958 through April 15, 1959. **

Species	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Totals
	June Aug.						
Golden shiners	0 *	7 0	0 0	0 0	15 3	0 0	25
Channel catfish	3 *	4 3	5 10	1 4	5 21	3 6	65
Black bullheads	0 *	9 0	0 3	0 17	16 12	28 22	107
Largemouth bass	0 *	0 0	0 0	0 0	0 0	2 0	2
Bluegill sunfish	2 *	3 15	0 0	0 10	5 5	14 6	60
White crappie	0 *	5 0	0 0	0 30	0 28	3 17	83
Totals	5 *	28 18	5 13	1 61	41 69	50 51	342

* Water at this station was too shallow to net in August.

** Nets were set two nights during June and one night in August.

Table II. Results of Netting Collections taken from Lake Trammell from April 16, 1958 through April 15, 1959.

Species	No.	Percent by No.	Total Wt. Lbs.	Ozs.	Avg. Wt. Lbs.	Ozs.	Percent by Wt.	Avg. "K"
Golden shiners	25	7.31	4	11	3	3	2.54	1.89
Channel catfish	65	19.01	138	2	2	2	74.71	1.66
Black bullheads	107	31.29	20	1	3	3	10.85	2.43
Largemouth bass	2	.58		6	3	3	.20	1.95
Bluegill sunfish	60	17.54	11	4	3	3	6.09	3.82
White crappie	83	24.27	10	6	2	2	5.61	2.55
Totals	342	100.00	184	14			100.00	

Table III. A Comparison of Rough and/or Forage Species to Game Species Collected by Netting from Lake Trammell from April 16, 1958 through April 15, 1959.

	No.	Percent by No.	Total Wt. Lbs.	Ozs.	Percent by Wt.
Rough and/or forage species (bullhead catfish & golden shiners)	132	38.59	24	12	13.38
Game species (Channel catfish, largemouth bass, bluegill sunfish & white crappie)	210	61.41	160	2	86.62
Totals	342	100.00	184	14	100.00

Table IV. Results of Seining Collections taken from Lake Trammell from April 16, 1958 through April 15, 1959.

Species	Station No. 1		Station No. 2		Total	Percent by No.
	June	Aug.	June	Aug.		
Redhorse shiners	3	0	0	0	3	2.54
Black bullheads	2	1	0	0	3	2.54
Common mosquitofish	0	4	5	3	12	10.17
Largemouth bass	6	4	5	8	23	19.49
Bluegill sunfish	18	25	11	6	60	50.85
Green sunfish	4	1	2	1	8	6.78
Redear sunfish	0	0	1	2	3	2.54
Logperch	0	0	2	4	6	5.09
Totals	33	35	26	24	118	100.00

Table V. A Check List of Fish Species Caught by Netting and Seining
from Lake Trammell from April 16, 1958 through April 15, 1959.

Scientific Name	Common Name
<u>Cyprinidae</u> (Shiners and minnows)	
<u>Notemigonus crysoleucas</u>	golden shiner
<u>Notropis lutrensis</u>	redhorse shiner
<u>Ameiuridae</u> (Freshwater catfishes)	
<u>Ictalurus punctatus</u>	channel catfish
<u>Ictalurus melas</u>	black bullhead
<u>Poeciliidae</u> (Mosquitofishes)	
<u>Gambusia affinis</u>	common mosquitofish
<u>Centrarchidae</u> (Black basses and sunfish)	
<u>Micropterus salmoides</u>	largemouth bass
<u>Lepomis cyanelus</u>	green sunfish
<u>Lepomis microlophus</u>	redeer sunfish
<u>Lepomis macrochirus</u>	bluegill sunfish
<u>Pomoxis annularis</u>	white crappie
<u>Percidae</u> (Perches and darters)	
<u>Percina caprodes</u>	logperch

Table VI. Chemical Analysis of Lake Trammell Water taken
December 18, 1958. *

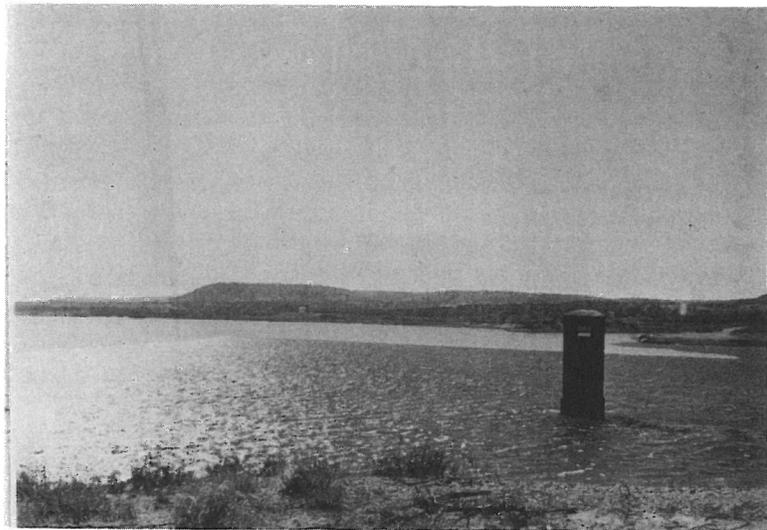
	P.P.M.
Calcium (Ca)	61
Magnesium (Mg)	12
Iron (Fe)	.04
Mangnaese (Mn)	.05
Sodium (Na)	9
Carbonate (CO ₃)	0
Bicarbonate (HCO ₃)	187
Sulphate (SO ₄)	26
Chloride (Cl)	20
Fluoride (F)	1
Nitrate (NO ₃)	.4
Specific Conductance Micromhos/cm	420
Dissolved Residue (T.S.) Calculated	252
Phenolphthalein Alkalinity as CaCO ₃	0
Total Alkalinity as CaCO ₃	153
Total Hardness as CaCO ₃	204

* Chemical analysis ran by Texas State Department of Health.



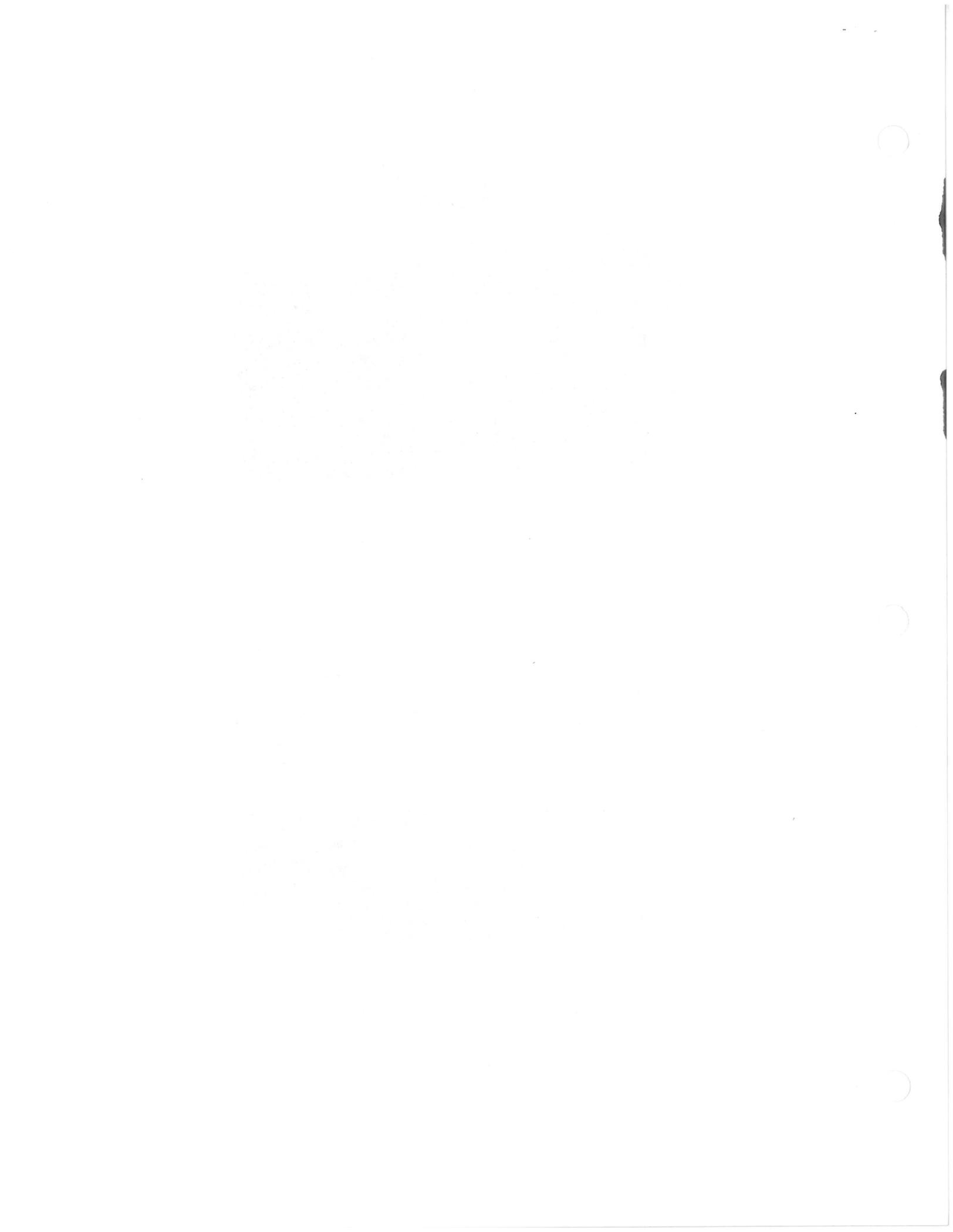
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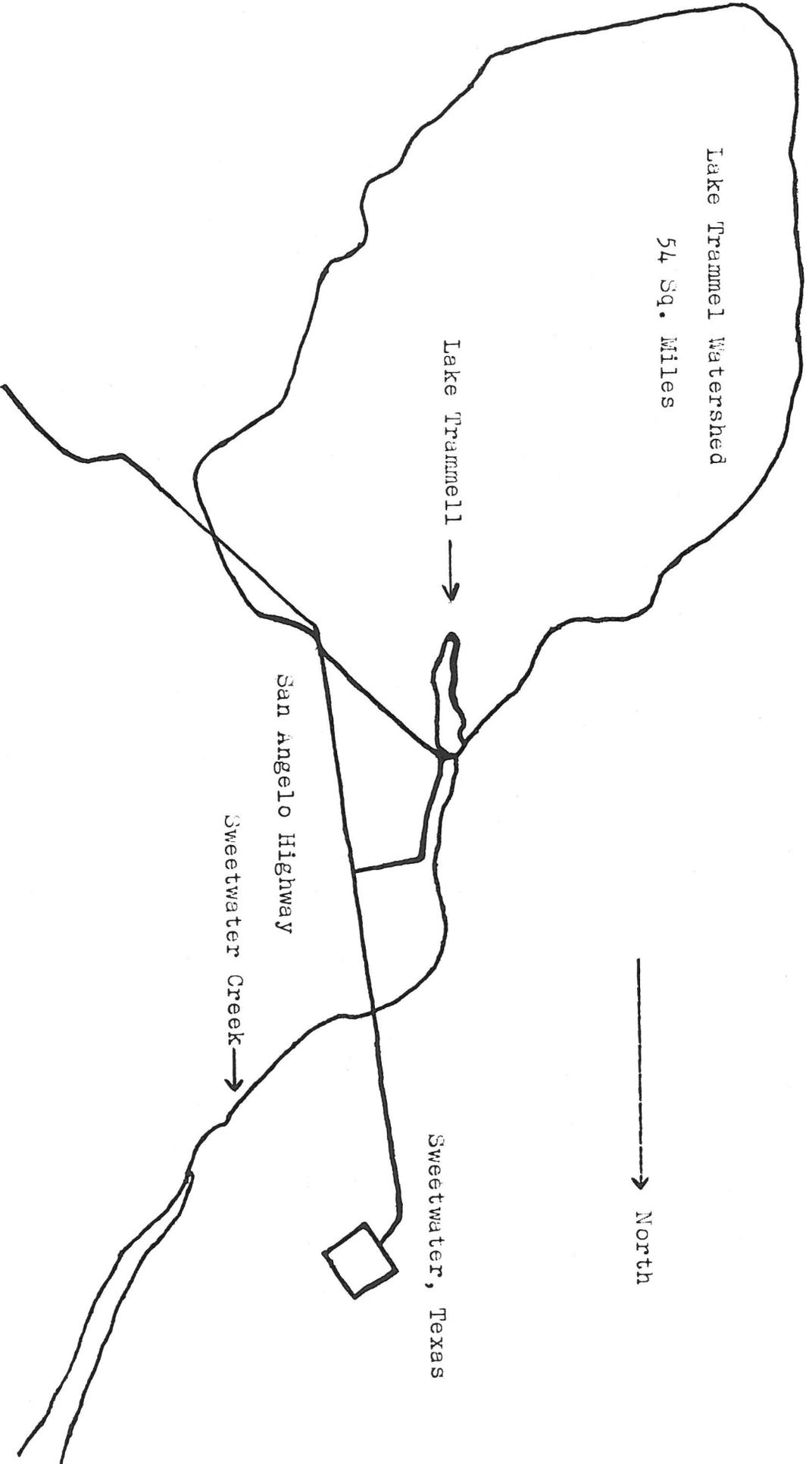
Sign near Lake Trammell Dam



Picture Number 2.

Lake Trammell with partial ice-cap (in background).





Lake Trammell Watershed
54 Sq. Miles

Lake Trammell →

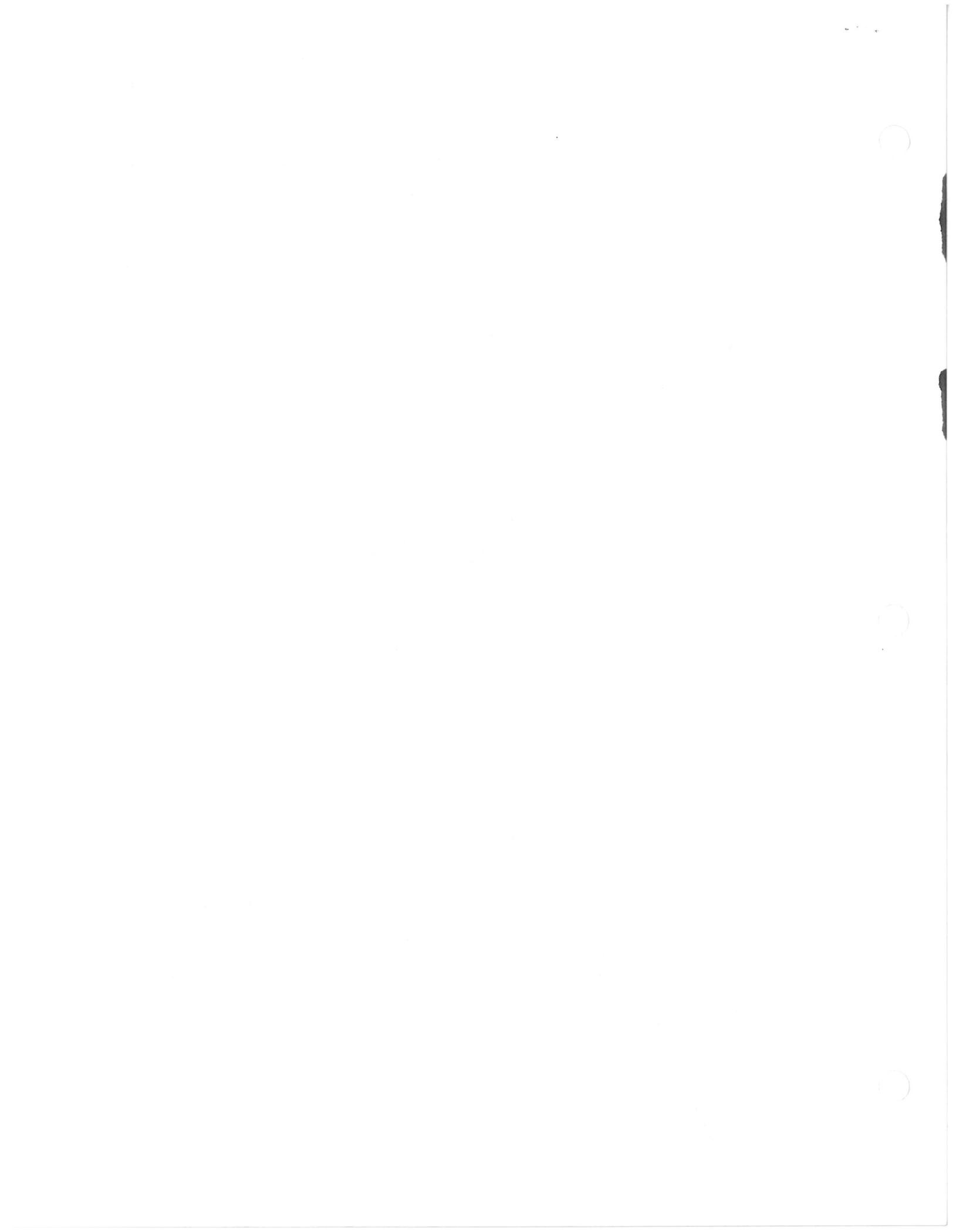
San Angelo Highway

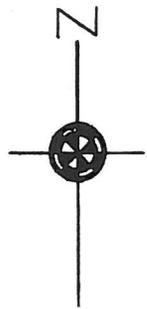
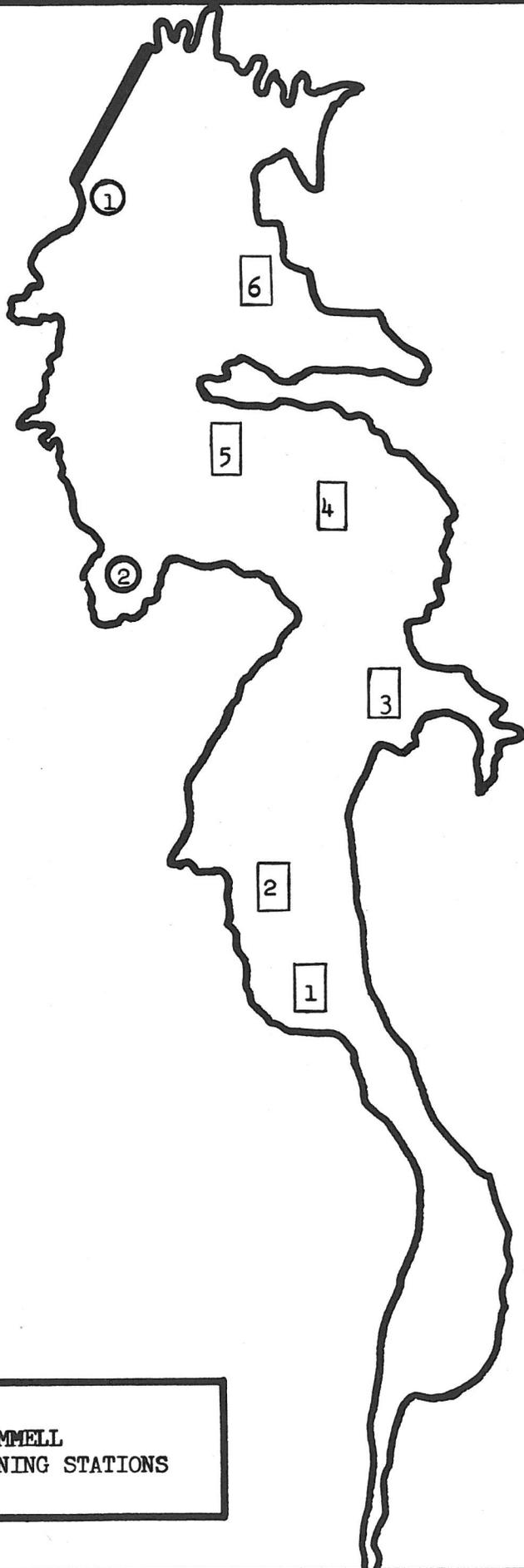
Sweetwater Creek →

Sweetwater, Texas

→ North

1 inch = 3 mi





LAKE TRAMMELL
NETTING AND SEINING STATIONS

- Seining station
- Netting station

