TEXAS
WATER
DEVELOPMENT
BOARD

REPORT 59

GROUND-WATER RESOURCES OF JASPER AND NEWTON COUNTIES, TEXAS

SEPTEMBER 1967

TEXAS WATER DEVELOPMENT BOARD

REPORT 59

GROUND-WATER RESOURCES OF JASPER AND NEWTON COUNTIES, TEXAS

By

J. B. Wesselman
United States Geological Survey

Prepared by the U.S. Geological Survey
in cooperation with the
Texas Water Development Board
Sabine River Authority of Texas
and
Jasper and Newton Counties

September 1967

Published and distributed
by the
Texas Water Development Board
Post Office Box 12386
Austin, Texas 78711

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd.)

TABLE OF CONTENTS (Cont'd.)

TABLES

FIGURES

TABLE OF CONTENTS (Cont'd.)

Page

GROUND-WATER RESOURCES OF JASPER AND NEWTON COUNTIES, TEXAS

ABSTRACT

Large quantities of fresh water are present in the aquifers of Jasper and Newton Counties. Depth from the land surface to the base of fresh water--water containing less than 1,000 ppm (parts per million) of dissolved solids--varies from possibly zero in a small area of northwestern Jasper County to more than 3,000 feet in the central parts of both counties, and is about 1,000 feet along the southern boundary of the report area. About 45 percent of the sediments to these depths are sands that will yield fresh water to wells.

Under present conditions (1966), it is estimated that an average of at least 500 mgd (million gallons per day) of fresh water infiltrates the outcrops of the aquifers. This recharge is discharged as spring flow to streams, or is transmitted downdip into the artesian parts of the aquifers. It is estimated that at least this much water is available for development in Jasper and Newton Counties on a sustained yield basis by the proper construction and placement of well fields.

Use of the ground water in the report area was about 52 mgd in 1965. Approximately 40 mgd was produced by one well field in the southwestern part of Jasper County. Over 400 mgd remains undeveloped.

The geologic and hydrologic units that yield fresh or slightly saline water (water containing 1,000 to 3,000 ppm of dissolved solids) to wells in Jasper and Newton Counties are: the Yegua Formation; the Jackson Group; the Catahoula Sandstone; and the Jasper, Evangeline, and Chicot aquifers. The Jasper and Evangeline aquifers are separated by the Burkeville aquiclude. The Jasper, Evangeline, and Chicot aquifers crop out in the report area.

The average coefficients of permeability range from 260 to 1,322 gpd (gallons per day) per square foot. The average for the Jasper aquifer is 545 gpd; the Evangeline, 260 gpd; and the Chicot, 1,322 gpd. The difference in permeability is one of the criteria used to differentiate the Evangeline and Chicot aquifers.

Water levels in all the aquifers have been lowered to some extent. The greatest decline, about 200 feet, has been in the Evangeline aquifer in the southwestern part of Jasper County. This decline has caused a local subsidence of the land surface of from 1 to 2 feet.

The chemical quality of most of the ground water in the report area is excellent. Many users of the water have had "iron" problems, but workable

remedies are being applied. Contamination is and has been a minor problem. Large quantities of slightly to very saline water exist downdip from the fresh water. Waters of this type move updip when the pressure head of the fresh-water-bearing part of the aquifers is reduced. The rate and magnitude of this movement could be observed by the construction of observation wells near and in the interface between the fresh and slightly saline water.

The program of ground-water observation needs to be expanded in the report area. The expanded program should include an annual inventory of new wells and pumpage, pumping tests of new wells, collection of quality of water and water-level data, and collection of new subsurface data as it becomes available. Also needed is an expanded net of bench marks and a periodic releveling program to measure the subsidence of the land surface. Much of the hydrologic data probably will be analyzed by the use of an analog model. A preliminary analog model of southeast Texas and southwest Louisiana is being constructed. Data from the recommended program will be needed to refine this model.

GROUND-WATER RESOURCES OF JASPER AND NEWTON COUNTIES, TEXAS

INTRODUCTION

Location and Extent of Area

Jasper and Newton Counties, located along the eastern border of Texas near the Gulf of Mexico (Figure 1), are almost equal to each other in size. Their combined area is 1,879 square miles, and their length is approximately twice their combined width. The western edge of Newton County adjoins the eastern edge of Jasper County. Newton County is bordered on the east by Calcasieu, Beauregard, Vernon, and Sabine Parishes of Louisiana. Jasper County is bordered on the west by Hardin and Tyler Counties, and on the north by Angelina and San Augustine Counties. Both Jasper and Newton Counties are bordered on the north by Sabine County and on the south by Orange County.

Purpose and Scope of Investigation

The investigation of the ground-water resources of Jasper and Newton Counties, begun in September 1963, was a cooperative project of the two counties, the Sabine River Authority of Texas, the Texas Water Development Board, and the U.S. Geological Survey. The purpose of the project was to determine the occurrence, availability, dependability, quality, and quantity of ground-water resources in both counties. Particular emphasis was placed on evaluating sources of water for public supply, industry, and irrigation.

Furthermore, the scope of the project necessitated including in the final report an analytical discussion of the area geology and hydrology as related to the ground water, plus tables of basic data and figures to illustrate conditions shown by these data. The following subjects were to be discussed or recommendations made: the construction and operating characteristics of existing wells in the county, the contamination of ground water, the subsidence of the land surface as a consequence of ground-water removal, and the establishment of a continuing program for collecting water-level and water-quality data.

Methods of Investigation

The 570 wells inventoried in this investigation included those for industrial, public supply, and irrigation use, as well as a representative number for livestock and domestic use (Table 5). Locations of wells inventoried during this and previous investigations are shown on Figure 27.

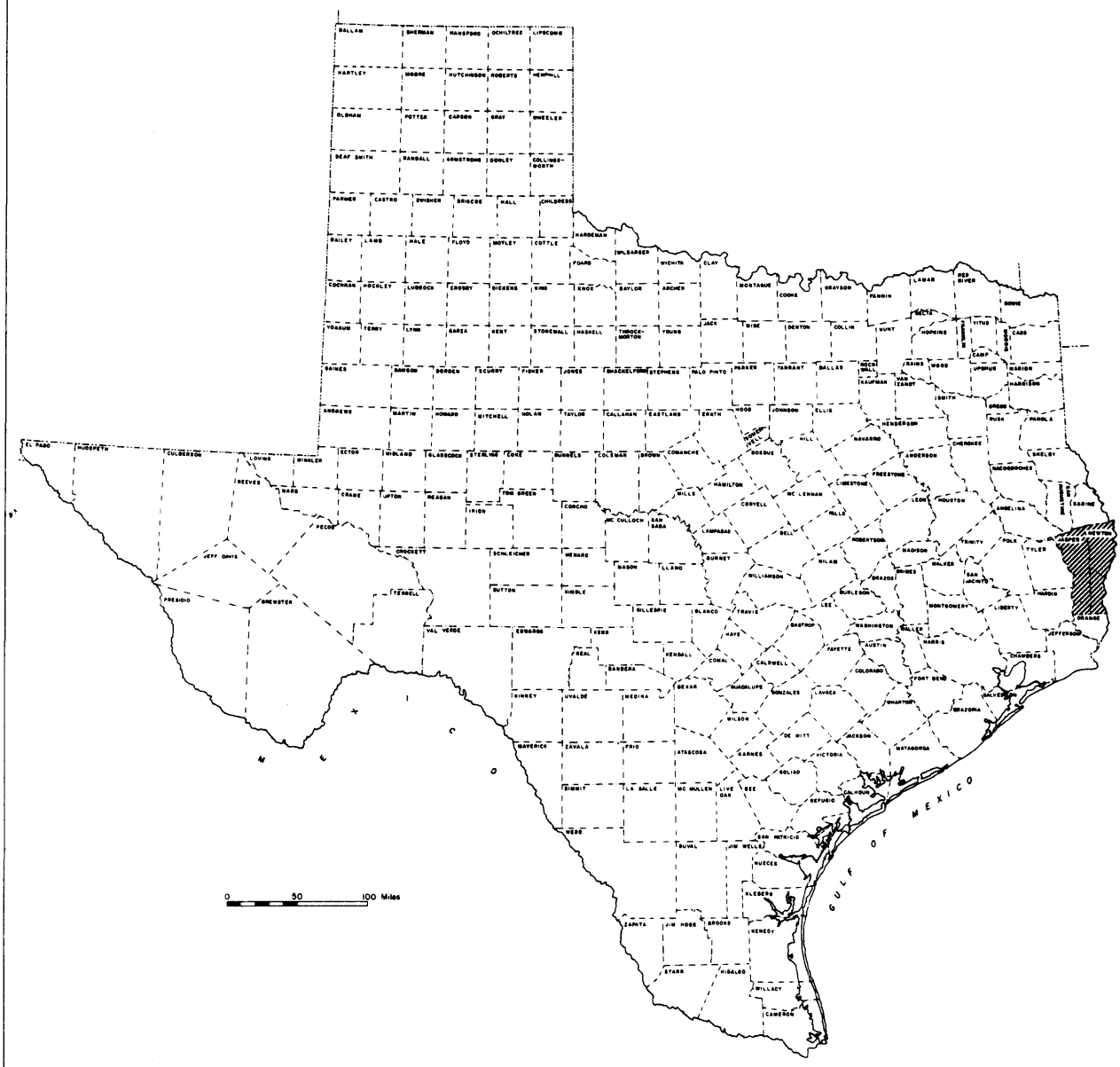


Figure 1

Location of Jasper and Newton Counties

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Drillers' logs of 52 wells are presented in Table 6. Electric logs of 178 oil tests and 2 stratigraphic test holes were used in the correlation and evaluation of the subsurface characteristics of the water-bearing sands. The electric logs, together with the drillers' logs of selected water wells, were used in determining the total thickness of sand containing fresh water.

Samples of water were collected from wells to determine the chemical quality of the water. The results of analyses are presented in Table 7. Pumping tests were made to determine the hydraulic characteristics of the fresh-water-bearing sands, and results of the tests are presented in Table 4. Measurements of water levels in wells made during this and previous investigations were used to determine the effect of pumpage on water levels.

Municipal, industrial, and irrigation pumpage was inventoried. Part of the inventory was based on data from the U.S. Department of Agriculture and the Texas Water Development Board. Surface elevations were obtained from the topographic maps of the U.S. Geological Survey.

Previous Investigations

In his study of the coastal plain of Texas, Taylor (1907) included wells in Jasper and Newton Counties. Deussen (1914), in a reconnaissance investigation of the southeastern part of the Texas Coastal Plain, discussed the geology and ground water of Jasper and Newton Counties and included a list of wells and springs with drillers' logs of wells.

Cromack's report (1942) included inventories of 161 wells in Jasper County and 121 wells in Newton County, 215 chemical analyses of water samples, and drillers' logs of 29 wells. Most of his well data are included in this report. The well numbers used by Cromack and the corresponding numbers used in this report are listed in Table 1.

A report by Wood, Gabrysch, and Marvin (1963) discussed the ground-water supplies available from the principal water-bearing formations in the Gulf Coast region of Texas, including Jasper and Newton Counties. Parts of these counties were likewise included in similar reconnaissance reports (Baker and others, 1963a, and 1963b) on the Sabine and Neches River basins.

Measurements of water levels in wells have been made in Jasper and Newton Counties since 1949 as part of the observation-well program in Texas. Records of these measurements are maintained by the Texas Water Development Board. Records of water levels in selected wells in Jasper and Newton Counties have been published by the U.S. Geological Survey in reports on the water levels and artesian pressures in the United States (Hackett, 1962, p. 165-166).

Economic Development

In 1960 (U.S. Census Bureau data), the population of Jasper County was 22,100 and the population of Jasper, the county seat, was 4,889. Other population and commercial centers in the county are Kirbyville, Buna, and Evadale. Bessmay and Call are former lumber centers. In 1960, Newton County had a population of 10,372 and Newton, the county seat, had a population of 1,233. Other population centers in the county include the towns of Burkeville, Wiergate, Bon Wier, and Deweyville.

Table 1.--Well numbers used in this report and corresponding numbers used in the report by G. H. Cromack (1942)

Jasper County

Old number	New number	Old number	New number	Old number	New number	Old number	New number
1	PR-37-61-801	31	PR-36-57-801	61	PR-61-16-102	91	PR-62-17-903
2	PR-37-61-901	32	PR-36-57-903	62	PR-61-15-601	92	PR-62-17-905
3	PR-37-62-703	33	PR-62-01-103	63	PR-61-16-201	93	PR-62-17-907
4	PR-37-62-702	34	Not used	64	PR-61-16-501	94	PR-62-17-902
5	PR-37-63-703	35	PR-62-01-201	65	PR-61-16-602	95	PR-62-17-901
6	PR-61-07-102	36	PR-62-01-302	66	PR-61-16-301	96	PR-62-17-509
7	PR-61-07-202	37	PR-62-01-602	67	PR-62-09-103	97	PR-62-17-403
8	PR-61-07-306	38	PR-62-01-603	68	PR-62-09-104	98	PR-61-24-607
9	PR-37-63-801	39	PR-62-01-905	69	PR-62-01-704	99	PR-61-24-905
10	PR-37-63-802	40	PR-62-01-906	70	PR-62-09-501	100	PR-61-32-301
11	PR-37-63-501	41	PR-62-01-501	71	PR-62-10-401	101	PR-62-17-706
12	PR-37-63-601	42	PR-62-01-408	72	PR-62-09-602	102	PR-62-17-802
13	PR-37-64-701	43	PR-62-01-502	73	PR-62-09-901	103	PR-62-25-307
14	PR-61-08-105	44	PR-62-01-409	74	PR-62-09-802	104	PR-62-25-303
15	PR-61-08-106	45	PR-61-08-902	75	PR-62-09-702	105	PR-62-25-604
16	PR-61-08-101	46	PR-61-16-305	76	PR-61-16-904	106	PR-62-25-302
17	PR-61-08-202	47	PR-61-08-803	77	PR-61-24-202	107	PR-62-25-504
18	PR-61-08-301	48	PR-61-08-505	78	PR-61-24-203	108	PR-62-25-505
19	PR-61-08-504	49	PR-61-08-506	79	PR-61-24-503	109	PR-62-25-102
20	PR-61-08-601	50	PR-61-08-503	80	PR-61-24-605	110	PR-61-32-302
21	PR-62-01-407	51	PR-61-08-502	81	PR-62-17-402	111	PR-62-25-404
22	PR-36-57-701	52	PR-61-08-401	82	PR-62-17-101	112	PR-61-32-601
23	PR-36-57-402	53	PR-61-07-601	83	PR-61-24-301	113	PR-61-32-907
24	PR-37-64-301	54	PR-61-07-610	84	PR-61-24-303	114	PR-61-40-304
25	PR-37-56-902	55	PR-61-07-603	85	PR-62-17-206	115	PR-62-33-106
26	PR-36-49-802	56	PR-61-07-611	86	PR-62-17-207	116	PR-62-25-802
27	PR-36-57-103	57	PR-61-07-604	87	PR-62-17-507	117	PR-62-33-210
28	PR-36-57-202	58	PR-61-08-703	88	PR-62-17-201	118	PR-62-33-203
29	PR-36-57-203	59	PR-61-07-904	89	PR-62-17-302	119	PR-62-33-202
30	PR-36-57-501	60	PR-61-16-107	90	PR-62-17-508	120	PR-62-33-201

(Continued on next page)

Table 1.--Well numbers used in this report and corresponding numbers used in the report by G. H. Cromack (1942)--Continued

Old number	New number	Old number	New number	Old number	New number	Old number	New number
121	PR-62-33-406	132	PR-62-33-803	142	PR-61-48-704	152	PR-62-41-904
122	PR-61-40-603	133	PR-62-33-802	143	PR-61-48-401	153	PR-62-09-703
123	PR-61-40-502	134	PR-62-41-203	144	PR-61-48-501	154	PR-62-01-802
124	PR-61-40-503	135	PR-62-41-201	145	PR-61-48-801	155	PR-61-08-903
125	PR-61-40-804	136	PR-61-48-215	146	PR-61-48-903	156	PR-61-16-202
126	PR-61-40-902	137	PR-61-48-214	147	PR-62-41-402	157	PR-61-07-801
127	PR-62-33-701	138	PR-61-48-216	148	PR-62-41-401	158	PR-61-07-103
128	PR-62-33-407	139	PR-61-48-217	149	PR-62-41-702	159	PR-37-61-903
129	PR-62-33-408	140	PR-61-48-503	150	PR-62-41-803	160	PR-37-61-904
130	PR-62-33-501	141	PR-61-48-405	151	PR-62-41-902	161	PR-37-63-602
131	PR-62-33-804						

Newton County

1	TZ-36-50-702	20	TZ-62-02-101	39	TZ-62-02-501	58	TZ-62-11-401
2	TZ-36-50-801	21	TZ-62-02-202	40	TZ-62-02-402	59	TZ-62-11-202
3	TZ-36-50-901	22	TZ-62-02-301	41	TZ-62-02-401	60	TZ-62-11-604
4	TZ-36-51-701	23	TZ-36-59-701	42	TZ-62-02-803	61	TZ-62-11-605
5	TZ-36-58-401	24	Not used	43	TZ-62-02-703	62	TZ-62-12-401
6	TZ-36-58-102	25	Not used	44	TZ-62-03-702	63	TZ-62-11-904
7	TZ-36-58-301	26	TZ-36-59-803	45	TZ-62-11-201	64	TZ-62-11-501
8	TZ-36-58-302	27	TZ-36-59-901	46	TZ-62-11-102	65	TZ-62-11-402
9	TZ-36-59-101	28	TZ-62-03-203	47	TZ-62-11-103	66	TZ-62-10-504
10	TZ-36-52-401	29	TZ-62-03-304	48	Not used	67	TZ-62-10-402
11	TZ-36-52-802	30	TZ-62-03-305	49	TZ-62-10-311	68	TZ-62-10-803
12	TZ-36-52-503	31	TZ-62-04-103	50	TZ-62-10-310	69	TZ-62-10-701
13	TZ-36-60-208	32	TZ-62-04-503	51	TZ-62-10-201	70	TZ-62-18-101
14	TZ-36-60-603	33	TZ-62-03-601	52	TZ-62-10-101	71	TZ-62-18-201
15	TZ-36-60-702	34	TZ-62-04-701	53	TZ-62-10-102	72	TZ-62-18-202
16	TZ-36-60-404	35	TZ-62-03-902	54	TZ-62-10-502	73	TZ-62-18-304
17	TZ-36-59-601	36	TZ-62-03-501	55	TZ-62-10-503	74	TZ-62-19-401
18	TZ-36-59-503	37	TZ-62-03-401	56	TZ-62-10-601	75	TZ-62-19-102
19	TZ-36-57-904	38	TZ-62-02-601	57	TZ-62-10-602	76	TZ-62-19-202

(Continued on next page)

Table 1.--Well numbers used in this report and corresponding numbers used in the report by G. H. Cromack (1942)--Continued

Old number	New number	Old number	New number	Old number	New number	Old number	New number
77	TZ-62-11-802	89	TZ-62-18-804	100	TZ-62-25-305	111	TZ-62-34-805
78	TZ-62-19-307	90	TZ-62-18-807	101	TZ-62-26-104	112	TZ-62-42-101
79	TZ-62-19-308	91	TZ-62-18-901	102	TZ-62-26-404	113	TZ-62-42-503
80	TZ-62-19-301	92	TZ-62-19-402	103	TZ-62-26-506	114	TZ-62-43-405
81	TZ-62-19-605	93	TZ-62-19-701	104	TZ-62-26-614	115	TZ-62-43-404
82	TZ-62-18-601	94	TZ-62-27-103	105	TZ-62-26-903	116	TZ-62-42-905
83	TZ-62-18-505	95	TZ-62-26-301	106	TZ-62-42-601	117	TZ-62-42-906
84	TZ-62-18-403	96	TZ-62-26-204	107	TZ-62-33-602	118	TZ-62-42-907
85	TZ-62-18-404	97	TZ-62-26-103	108	TZ-62-34-501	119	Not used
86	TZ-62-18-704	98	TZ-62-25-306	109	TZ-62-34-602	120	Not used
87	TZ-62-18-705	99	TZ-62-25-304	110	TZ-62-34-801	121	TZ-62-18-102
88	TZ-62-18-805						

Jasper County is 85 percent forested and Newton County is 95 percent forested. The economy of both counties is based primarily on forest products. The large paper mill at Evadale is the only major industry located in the area.

Oil has also been important to the economy during the last three decades. Production of oil amounted to 3,267,338 barrels (1928-60) in Jasper County, and to 11,786,110 barrels (1937-60) in Newton County.

The raising of beef and chickens is an important source of income. Some rice is irrigated in the southern part of the counties, and small amounts of feed grains and vegetables are grown. Minnows and catfish are raised commercially in a few places.

Recreation is becoming an important industry because of the development of lakes in the area on the Angelina, Sabine, and Neches Rivers. Many of the workers from the fast-growing petrochemical center known as the Golden Triangle of Orange and Jefferson Counties are buying land in Jasper and Newton Counties. This added stimulation of the economy will complement the growth that will occur as new industries are attracted to Jasper and Newton Counties by the large water supply and the undeveloped land.

Physiography and Drainage

Jasper and Newton Counties are a part of the physiographic province of the West Gulf Coastal Plain. The land surface ranges in elevation above mean sea level from less than 10 feet (where the Neches and Sabine Rivers flow south out of the counties) to more than 600 feet (in northwest Newton County). Lowlands border the rivers and range in width from 0 to about 6 miles except where they occupy a strip about 10 miles wide at the southern end of both counties. In the northern parts of Jasper and Newton Counties, the rivers breach a northward-facing escarpment known as the Kisatchie Wold (Veatch, 1906).

The upland areas can be divided into several land surfaces which have been used in mapping the geology of the area. Three upland surfaces are distinct and have been mapped by Bernard (1950), and by Bernard and LeBlanc (1965), as the Montgomery, Bentley, and Willianna Formations of Pleistocene age. The lowest of the upland surfaces is in the vicinity of Buna and Kirbyville where it is mostly clay and comparatively treeless.

Jasper and Newton Counties are drained by the Sabine and Neches Rivers. The rivers empty south of the two counties into Sabine Lake, a salt-water body, extending inland from the Gulf of Mexico.

Climate

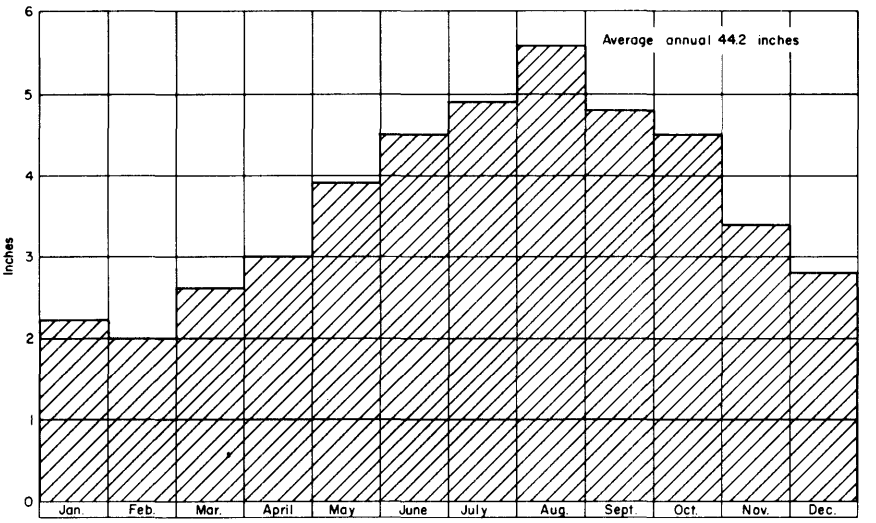
The climate in Jasper and Newton Counties is warm and humid as indicated by the records of temperature, precipitation, and evaporation in the report area and adjacent counties (Figures 2, 3, and 4). The precipitation is fairly well distributed throughout the year. The average annual temperature at Beaumont is about 70°F. Temperatures below freezing occur on the average of 12 days per year, and temperatures above 100°F are unusual. Approximate dates of the first and last killing frosts are December 2 and March 2, respectively; hence the growing season is about 275 days. Because of their higher altitudes,

Figure 2

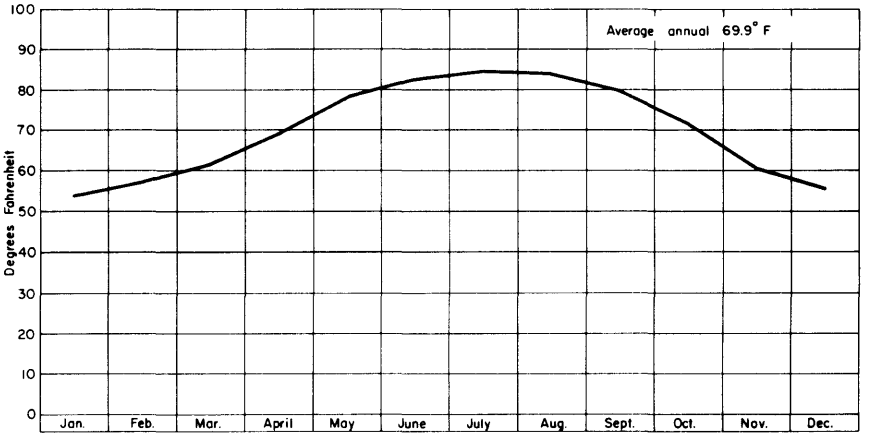
Annual Precipitation at Beaumont, Jefferson County

(From records of U.S. Weather Bureau)

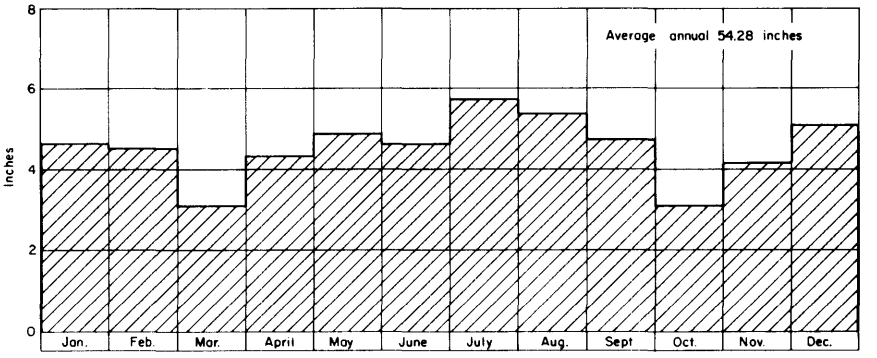
U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties



Average monthly gross lake surface evaporation in Jasper and Newton Counties, Texas, 1940-57



Average monthly temperature at Beaumont, Texas, 1931-62



Average monthly precipitation at Beaumont, Texas, 1931-62

Figure 3

Average Monthly Precipitation and Temperature at Beaumont, and Average Monthly Gross Lake Surface Evaporation in Jasper and Newton Counties

(From records of U.S. Weather Bureau, and Lowry, 1960)

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

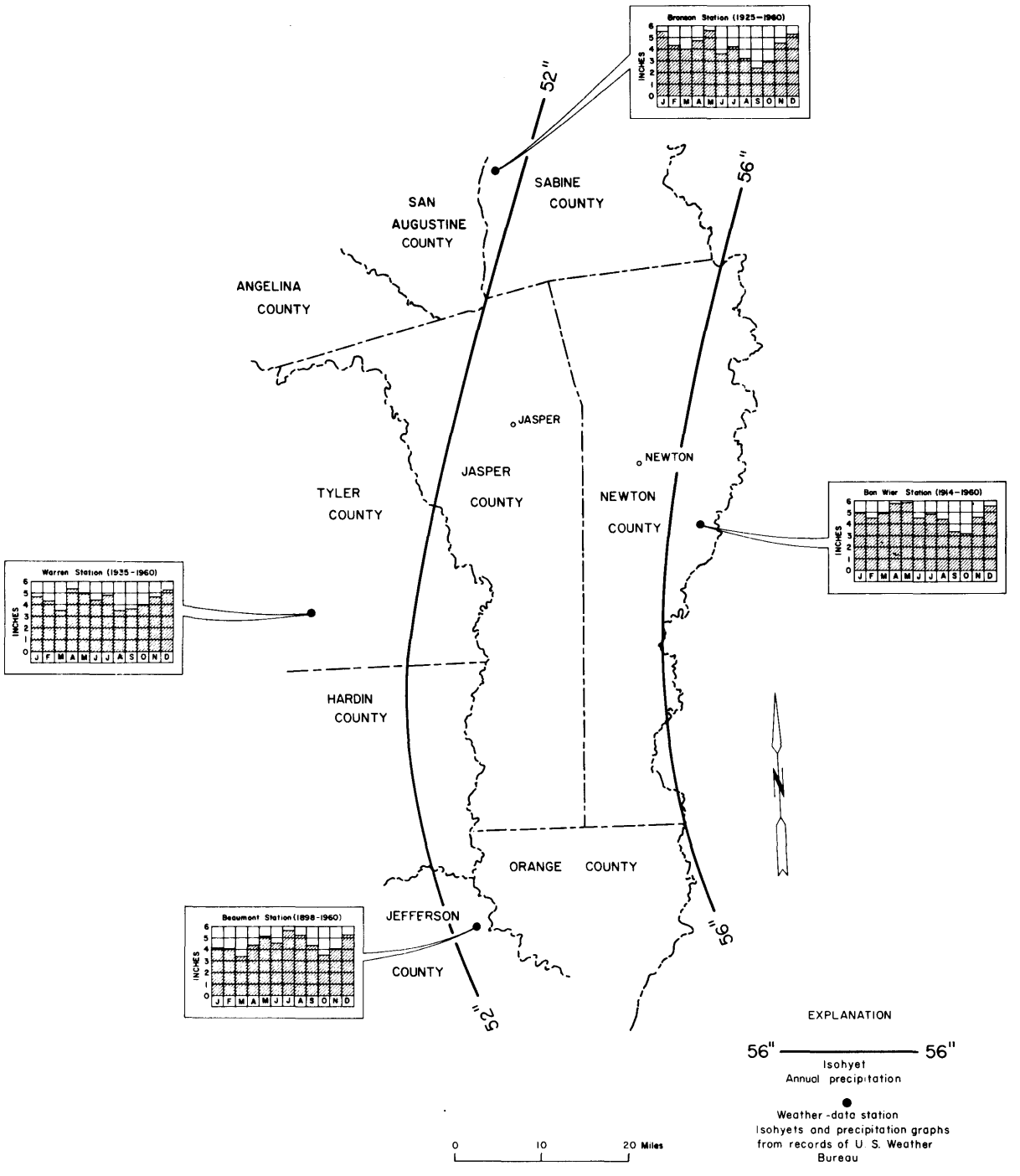


Figure 4

Average Annual Precipitation 1931-60, and Average Monthly Precipitation for Period of Record at Selected Stations in Jasper and Newton Counties and Adjacent Areas

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

the northern parts of the counties have earlier frosts, more freezing days, a shorter growing season, and a greater daily and seasonal variation in temperature.

The average annual net lake surface evaporation rate in the report area was about 3 inches from 1940 to 1957 and about 10 inches from 1950 to 1956 (Lowry, 1960, pls. 2 and 3). These evaporation rates were derived by subtracting the effective rainfall from the gross lake surface evaporation.

Well-Numbering System

The well-numbering system in this report is the one adopted by the Texas Water Development Board for statewide use and is based on latitude and longitude.

Under this system, each 1-degree quadrangle in the State is given a number consisting of two digits. These are the first two digits in the well number which are indicated on Figure 27 by the large double-lined numbers: 36, 37, 61, and 62. The 1-degree quadrangles are divided into 7-1/2 minute quadrangles, which are given two-digit numbers from 01 to 64. These are the third and fourth digits of the well number which are shown in the northwestern corner of each 7-1/2 minute quadrangle on Figure 27. Each 7-1/2 minute quadrangle is subdivided into 2-1/2 minute quadrangles and given a single digit number from 1 to 9. This is the fifth digit of the well number. The wells within a 2-1/2 minute quadrangle are given two-digit numbers as they are inventoried, beginning with 01. These are the last two digits of the number used to identify each well. The last three digits are given at the well location on Figure 27. A two-letter prefix is used to identify the county. Prefixes for Jasper, Newton, and adjacent counties are as follows:

County	Prefix	County	Prefix
Jasper	PR	Hardin	LH
Newton	TZ	San Augustine	WT
Orange	UJ	Sabine	WS
Tyler	YJ		

Acknowledgements

Appreciation is expressed to all who contributed information and assistance in the collection of field data and in the preparation of the report. Officials of municipalities and of the Jasper County Water Control District No. 1 (Buna) gave freely of their records and time. Particular thanks are due to the owners of irrigation wells and to the Water District for support and aid in conducting pumping tests; to the East Texas Paper and Pulp Company for supplying records of their wells, subsidence data, and testing program; and to the city of Jasper for making available the results of its testing program.

Well drillers generously supplied drillers' logs, electrical logs, and well-completion data. All landowners contacted granted access to their lands, wells, and records.

GEOLOGY AS RELATED TO THE OCCURRENCE OF GROUND WATER

General Stratigraphy and Structure

Geologic units discussed in this report are, in order of decreasing age: the Yegua Formation and Jackson Group of Eocene age, rocks of Oligocene age equivalent to the Vicksburg Formation in Louisiana, the Catahoula Sandstone of Miocene(?) age, the Oakville Sandstone of Miocene age, the Lagarto Clay of Miocene(?) age, the Goliad Sand of Pliocene age, the Willis Sand of Pliocene(?) age, the Lissie Formation and Beaumont Clay of Pleistocene age, and the alluvium of Recent age. The physical characteristics and water-bearing properties of the geologic units are summarized in Table 2. The geologic and hydrologic units in this report are correlated with the units in related reports (Table 3). The geology and locations of wells are included in a map of the report area (Figure 27). On this map the geology is shown in two subdivisions (from Bernard, 1950): formations of Tertiary age--which include the Catahoula Sandstone, the Lagarto Clay and Oakville Sandstone, and the Goliad Sand; and formations of Quaternary age--which include the Willis Sand, the Lissie Formation, the Beaumont Clay, and the alluvium. Figures 28, 29, 30, and 31 are sections showing geologic and hydrologic units. The regional strike of the beds is generally east-northeast and parallel to the coastline of the Gulf of Mexico. The beds dip toward the Gulf of Mexico, and most of them thicken in the downdip direction (Figure 28). Consequently, the formations form a homocline, with the older beds dipping at steeper angles than younger beds. The Yegua Formation and the Jackson Group crop out north of Jasper and Newton Counties; the younger formations crop out in the report area. The Tertiary formations are overlain by gently dipping beds of Pleistocene and Recent age in all of the southern and central parts of the report area and in much of the northern part (Figure 27).

Sand, gravel, silt, clay, shale, and marl comprise most of the sediments in the report area, but locally they contain minor amounts of limestone, lignite, and volcanic ash. They were deposited by rivers as valley deposits or as coalescing deltas or lagoonal deposits on or near a migrating shoreline, or as marine deposits near or offshore from the coast. Petrified wood is common in some of the sand deposits, and marine fossils are common in some clay and marl units. In general, coarser materials are found updip; but downdip the material tends to become finer and grade into clays or marls. Some clay beds, such as those in the Lagarto Clay and the Catahoula Sandstone, are of marine origin. The beds of sand and clay are lenticular and are difficult, if not impossible, to trace. However, entire zones of alternating clay and sand can often be traced over extended areas.

Faults are common in both counties. Oil fields have been developed along faults at several localities in both counties. Traces of faults can be observed at the surface, particularly in the outcrop areas of Tertiary rocks. Downdip from the Tertiary outcrops, surface traces tend to be obscured by the overlying Pleistocene deposits. Bernard (1950, p. 134-136), however, reports a prominent set of strike faults, averaging N. 80° E. on the Pleistocene surface in the report area. Most of the faults are normal and downthrown to the south. No hydrologic effect from a specific fault or system of faults was recognized in the report area. However, faulting probably causes some of the anomalous changes in the altitude of the base of fresh water shown on Figures 5, 7, and 9.

Table 2.--Physical characteristics and water-bearing properties of the geologic units

System	Series	Geologic unit	Composition	Water-bearing properties and distribution of supply
Quaternary	Recent	Alluvium	Gravel, sand, silt, and clay.	CHICOT AQUIFER. Capable of yielding large[2] quantities of fresh water[3] to wells in most of the southern part of the report area.
	Pleistocene	Beaumont Clay	Gravel and clay.	
		Lissie Formation	Gravel, sand, silt, and clay.	
Tertiary(?)	Pliocene(?)	Willis Sand	Gravel and sand.	
Tertiary	Pliocene	Goliad Sand	Sand, silt, and clay. Sand comprises 35-50 percent of the formation.	EVANGELINE AQUIFER. Capable of yielding large quantities of fresh water to wells in the southern part of the report area.
	Miocene(?) and Miocene	Lagarto Clay and Oakville Sandstone	Upper clay, 200-300 ft thick; contains minor amounts of sand.	BURKEVILLE AQUICLUDE.
			Calcareous clay and silt interbedded with sand. Maximum thickness of individual sand beds is 200 ft. Locally sand beds grade into conglomerate.	JASPER AQUIFER. Capable of yielding large quantities of fresh water to wells in the central and much of the northern part of the report area.
	Miocene(?)	Catahoula Sandstone	Sand in lower part, sand and shale in the middle, and clay in the upper part.	Capable of yielding small to large[2] quantities of fresh to slightly saline[3] water to wells in the northern part of the report area.
	Oligocene	[1]	Clay, with a few thin beds of sand.	Capable of yielding small quantities of fresh to slightly saline water to wells in the northern part of the report area.
	Eocene	Jackson Group		Capable of yielding small quantities of fresh to slightly saline water in the northwestern part of Jasper County.
		Yegua Formation	Sand, silt, and clay.	Capable of yielding small quantities of slightly to moderately saline water[3] to wells near the northern boundary of the report area.

[1] Rocks of Oligocene age equivalent to the Vicksburg Formation in Louisiana.
[2] Yield of wells: small, less than 100 gpm (gallons per minute); large, more than 1,000 gpm.
[3] Quality of water as ppm (parts per million) of dissolved solids: fresh, less than 1,000 ppm; slightly saline, 1,000-3,000 ppm; moderately saline, 3,000-10,000 ppm. (From table in section on quality of ground water.)

Table 3.--Stratigraphic and hydrologic units used in this report and in recent reports of adjacent areas

		Harder (1960)		Rogers and Calandro (1965)		Baker and others (1963a & b)		Baker (1964)		Wesselman (1965)		This report			
System[1]	Series[1]	Formation	Hydrologic unit	Group or Formation	Hydrologic unit	Group or Formation	Hydrologic unit	Formation	Hydrologic unit	Formation	Hydrologic unit	Group or Formation	Hydrologic unit	Series	System
Quaternary	Recent	Alluvium		Alluvium	Alluvium	Alluvium		Flood Plain and Terrace Deposits		Alluvium	Upper aquifer	Alluvium		Recent	Quaternary
	Pleistocene	Prairie formation Montgomery formation Bentley formation Williana formation	Chicot aquifer	Stream terrace and upland deposits	Stream terrace and upland deposits	Beaumont Clay	GULFCOAST AQUIFER	Beaumont Clay	GULFCOAST AQUIFER	Beaumont Clay	Upper aquifer	Beaumont Clay	Chicot aquifer	Pleistocene	
						Lissie Formation		Lissie Formation		Lissie Formation	Middle aquifer	Lissie Formation			
						Willis Sand		Willis Sand		Willis Sand	Lower aquifer	Willis Sand		Pliocene(?)	Tertiary(?)
Tertiary	Pliocene	Foley formation	Evangeline aquifer	?	Blounts Creek Member ?	Goliad Sand		Goliad Sand		Goliad Sand		Goliad Sand	Evangeline aquifer	Pliocene	Tertiary
	?	? ? ?		Fleming Formation of Kennedy (1892)	Castor Creek Member	Lagarto Clay		Lagarto Clay				Lagarto Clay	Burkeville aquiclude	Miocene(?)	
	Miocene	Fleming formation of Fisk (1940)			Williamson Creek Member	Oakville Sandstone		Oakville Sandstone				Oakville Sandstone	Jasper aquifer	Miocene	
					Dough Hills Member										
					Carnahan Bayou Member										
					Lena Member	Catahoula Sandstone						Catahoula Sandstone	Catahoula Sandstone	Miocene(?)	
		Catahoula formation		Catahoula Formation	Catahoula Formation										
	Oligocene			Vicksburg Group	Sandel Formation of Anderson (1960)							[2]	[2]	Oligocene	
	Eocene			Jackson Group	Jackson Group	Jackson Group	Jackson Group					Jackson Group	Jackson Group	Eocene	
				Cockfield Formation	Cockfield Formation	Yegua Formation	Yegua Formation					Yegua Formation	Yegua Formation		

[1] Applicable to Harder (1960) and Rogers and Calandro (1965)
[2] Rocks of Oligocene age equivalent to the Vicksburg Formation in Louisiana.

Deep salt intrusions are probably associated with some of the oil-bearing structures. Logs do not indicate the penetration of salt by oil tests in the report area, and such intrusions are believed to be too deep to have a direct effect on the fresh ground water in Jasper and Newton Counties. Emplacements of salt at shallow depth do affect the ground water in neighboring counties and parishes.

Major Hydrologic Units

An aquifer is a geologic formation, group of formations, or part of a formation that is water-bearing. An aquiclude is an impermeable or relatively impermeable rock that may contain water but is incapable of transmitting an appreciable quantity. The correlations of the stratigraphic and hydrologic units are shown in Tables 2 and 3. The major hydrologic units are the Jasper aquifer, Burkeville aquiclude, Evangeline aquifer, and Chicot aquifer. The Yegua Formation, Jackson Group, and Catahoula Sandstone contain aquifers of minor importance in the report area.

Jasper Aquifer

The Lagarto Clay and Oakville Sandstone have not been differentiated on the surface in southeast Texas. In the report area, the Lagarto and Oakville comprise a thick sequence of calcareous clay and silt interbedded with sand. In the upper part of the sequence there is a clay unit, 200 to 300 feet thick, that contains minor amounts of sand. This clay unit is equivalent in part to the Castor Creek Member (Fisk, 1940) of the Fleming Formation (Kennedy, 1892) in Vernon Parish (Rogers and Calandro, 1965). (See Table 3.)

The Jasper aquifer, as named in this report, includes all the sediments between the upper clay bed of the Catahoula Sandstone and the clay unit mentioned above. The aquifer consists of about 50 percent sand and is equivalent to the Carnahan Bayou, Dough Hills, and Williamson Creek Members (Fisk, 1940) of the Fleming Formation (Kennedy, 1892) in Vernon Parish (Rogers and Calandro, 1965). (See Table 3.)

The aquifer is named for the town of Jasper. It is the principal aquifer in the report area in terms of storage, availability, quality of water, and potential for development. The approximate altitudes of the base of the Jasper aquifer and the base of fresh water, and the approximate downdip limits of fresh water and slightly saline water are shown on Figure 5. The Jasper aquifer contains fresh water to depths of more than 3,000 feet below sea level in the area east of Kirbyville. In most of the northern half of the report area, all the sands in the aquifer contain fresh water; but in the southern half, sands containing fresh water overlie and intertongue with those containing slightly saline water (Figures 28, 29, 30, and 31).

The approximate thickness of sands containing fresh water in the Jasper aquifer is shown in Figure 6. In the northern parts of Jasper and Newton Counties, the sand thickness progressively increases southward to more than 900 feet in the area between Kirbyville and Bon Wier; southward from this area, the sand thickness progressively decreases to zero in the southern part of the report area.

The Jasper aquifer furnishes the water supplies for the towns of Jasper, Newton, Kirbyville, and Burkeville and for the community of Harrisburg. It supplies the water needs for all rural users in about a third of the report area.

Burkeville Aquiclude

The Jasper and Evangeline aquifers are separated by the Burkeville aquiclude, a clay bed that is usually 200 to 300 feet thick (Figures 28, 30, and 31). This clay bed, which contains minor amounts of sand in places, crops out in the vicinity of Burkeville and is named the Burkeville aquiclude in this report. As previously discussed, the clay is in the upper part of the undivided Lagarto and Oakville Formations and is equivalent in part to the Castor Creek Member (Fisk, 1940) of the Fleming Formation of Kennedy (1892), as mapped by Rogers and Calandro (1965) in Vernon Parish (Table 3). The Burkeville aquiclude also is equivalent to "Zone 2," which directly underlies the "heavily pumped layer" in the Houston district (Wood and Gabrysch, 1965, Figure 4).

Evangeline Aquifer

The Evangeline aquifer in the report area includes all the sediments between the Burkeville aquiclude and the Chicot aquifer. It comprises the Goliad Sand and sands at the top of the Lagarto and Oakville Formations, and is equivalent to the "heavily pumped layer" in the Houston district (Wood and Gabrysch, 1965). In Louisiana, the Evangeline aquifer is equivalent to the Blounts Creek Member (Fisk, 1940) of the Fleming Formation of Kennedy (1892) in Vernon Parish (Rogers and Calandro, 1965), and the Foley Formation in Calcasieu Parish (Harder, 1960). (See Table 3.)

The approximate altitudes of the base of the Evangeline aquifer and the base of fresh water in the aquifer are shown on Figure 7. The aquifer contains fresh water to depths of more than 1,500 feet below sea level in an area near the southern boundaries of Jasper and Newton Counties. North of the line designated as "Downdip limit of aquifer containing only fresh water" on Figure 7, all the sands in the aquifer contain fresh water (Figures 28, 29, and 30); south of this line, the sands contain fresh, slightly saline, and more highly saline water (Figures 28 and 31). The downdip limit of fresh water in the aquifer is in Orange County. The estimated thickness of fresh-water sands in the Evangeline aquifer (Figure 8) is more than 500 feet in the southern parts of Jasper and Newton Counties.

In 1965, the Evangeline aquifer supplied more than 80 percent of the ground water used in Jasper and Newton Counties.

Chicot Aquifer

The Chicot aquifer comprises the Willis Sand, the Lissie Formation, the Beaumont Clay, and the Recent alluvium. The basis for the separation of the Evangeline aquifer from the overlying Chicot is their differences in lithology and permeability. No continuous clay separation exists between the two aquifers. The Chicot is equivalent to: the Williana, Bentley, Montgomery, and Prairie Formations in Calcasieu Parish (Harder, 1960), Louisiana; to the "Upper"

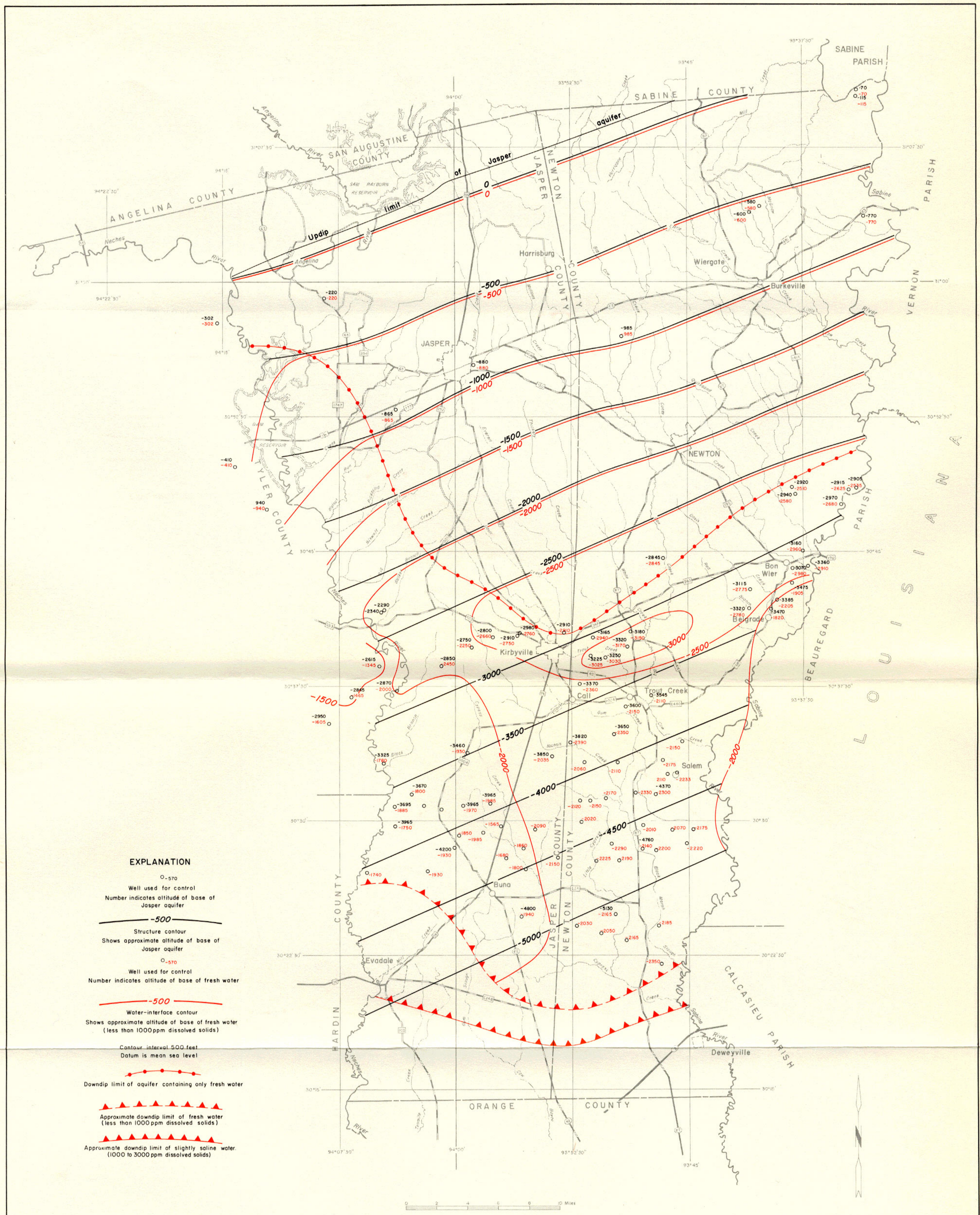


Figure 5

Approximate Altitudes of Base of Jasper Aquifer and Base of Fresh Water, and Limits of Fresh and Slightly Saline Water in the Aquifer

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Base from U. S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department

EXPLANATION

400

Well used for control

Number indicates thickness of sand containing fresh water

400

Isopach

Shows approximate thickness of sand containing fresh water (less than 1000 ppm dissolved solids)

Interval 100 feet

Figure 6

Approximate Thickness of Sand Containing Fresh Water in the Jasper Aquifer

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Base from U.S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department

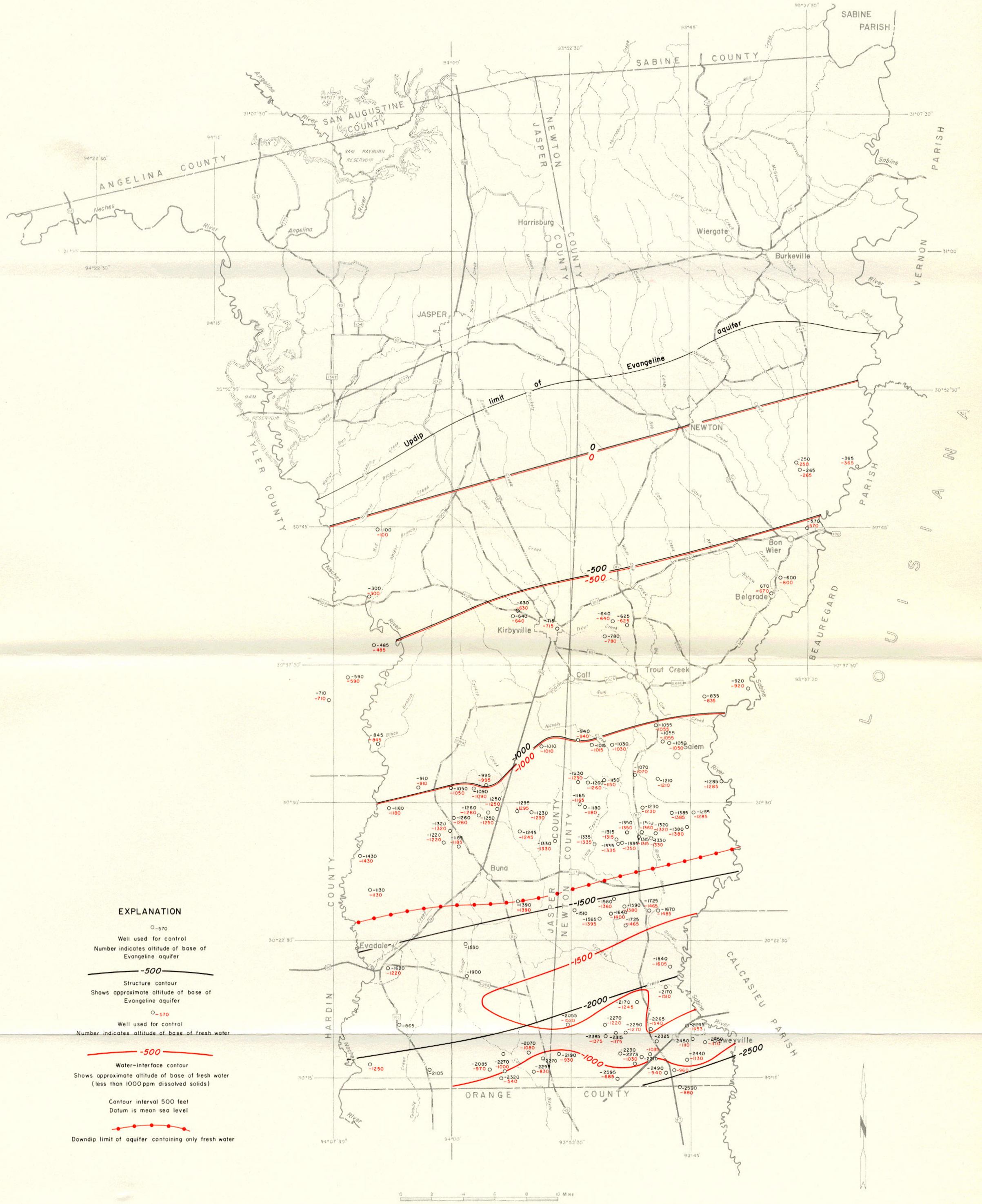


Figure 7

Approximate Altitudes of Base of Evangeline Aquifer and Base of Fresh Water in the Aquifer

U. S. Geological Survey in cooperation with the Texas Water Development Board,
Sabine River Authority of Texas and Jasper and Newton Counties

Base from U. S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department

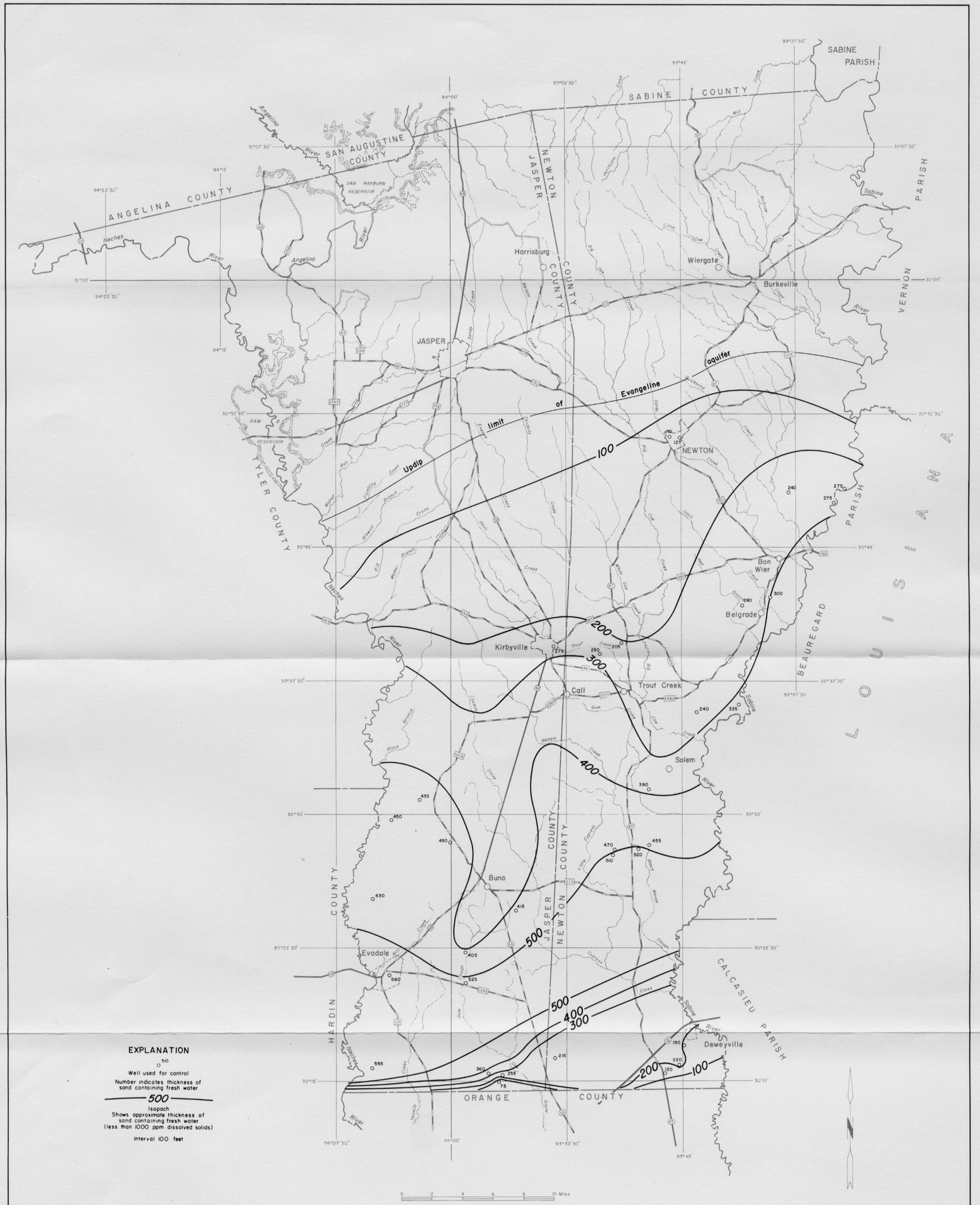


Figure 8

Approximate Thickness of Sand Containing Fresh Water in the Evangeline Aquifer

U.S Geological Survey in cooperation with the Texas Water Development Board,
Sabine River Authority of Texas and Jasper and Newton Counties

Base from U.S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department

and "Middle" aquifer units in Orange County (Wesselman, 1965), Texas; and, at least in part, to the Alta Loma Sand of Rose (1943, p. 3) in the Houston district, Texas.

The approximate altitude of the base of the Chicot aquifer is shown on Figure 9. As previously mentioned, the Recent alluvium, Beaumont Clay and Lissie Formation of Pleistocene age, and the Willis Sand of Pliocene(?) age comprise the rocks designated as the Quaternary System on Figure 27. The water-bearing beds in these formations comprise also the Chicot aquifer, the updip limit of which is shown by the line designated as the "Updip limit of Chicot aquifer" on Figure 9. South of this line the Chicot aquifer is a continuous hydraulic unit. North of the line only remnants of the formations that comprise the Chicot are present. The remnants overlie the Jasper and Evangeline aquifers and most of the water in them passes as recharge to the underlying aquifers.

The Chicot aquifer contains only fresh water in Jasper and Newton Counties. The approximate thickness of the sands in the Chicot aquifer is shown on Figure 10. These sands are more than 400 feet thick in the southern part of Newton County.

Sands of the Chicot are generally more permeable than those of the Evangeline and Jasper aquifers. In much of the report area, the electric logs show a thick, high-resistivity sand at the base of the Chicot.

The Chicot aquifer supplies water for rice irrigation and domestic use to rural dwellings in the southern parts of Jasper and Newton Counties and to the town of Buna.

Minor Hydrologic Units

Yegua Formation

The Yegua Formation is not a source of fresh water in Jasper and Newton Counties. However, it contains small quantities of slightly to moderately saline water in the extreme northern parts of either county. Deussen (1914) reported slightly saline water from a well (PR-36-49-802) in northeast Jasper County. Five sands were screened between depths of 1,037 and 1,320 feet--the uppermost of these sands is probably in the Jackson Group, but the basal sand is in the Yegua Formation.

Jackson Group

Available electric logs and well data indicate that the Jackson Group contains fresh or slightly saline water in one locality in the report area. In the northwestern part of Jasper County a flowing well (PR-37-61-901), 986 feet deep, produces fresh water with traces of oil and gas. Logs of nearby oil tests indicate that individual fresh-water-bearing sands as much as 20 feet thick occur at depths from 710 to 935 feet below land surface. The maximum sand thickness shown on one log is 40 feet. In places in northwestern Jasper County, the sandy beds in the Jackson Group are the only dependable source of fresh ground water. However, the presence or absence of these sands and the quality of the water in them can be detected only by test drilling.

Catahoula Sandstone

The sands of the Catahoula Sandstone compose a separate hydrologic unit. The approximate altitude of the base of the Catahoula Sandstone in Jasper and Newton Counties and the approximate downdip limits of fresh and slightly saline water are shown on Figure 11.

The Catahoula Sandstone is overlain by younger fresh-water sands in much of Jasper and Newton Counties. Few data are available concerning the geologic or hydrologic properties of the Catahoula. However, electric logs of oil tests in Jasper and Newton Counties indicate that 700 feet is the maximum thickness for the Catahoula in the area where it contains fresh or slightly saline water (Figure 11). According to these logs, the thickness of individual sand beds is as much as 60 feet, and a total of approximately 230 feet of sand is the maximum observed on any one log (TZ-36-59-501).

In most of the area in Jasper County where the Catahoula contains fresh water, sands containing slightly and moderately saline water are interbedded with those containing fresh water. In places in the extreme northwestern extension of Jasper County, fresh water is not available in the Catahoula Sandstone.

GROUND-WATER HYDROLOGY

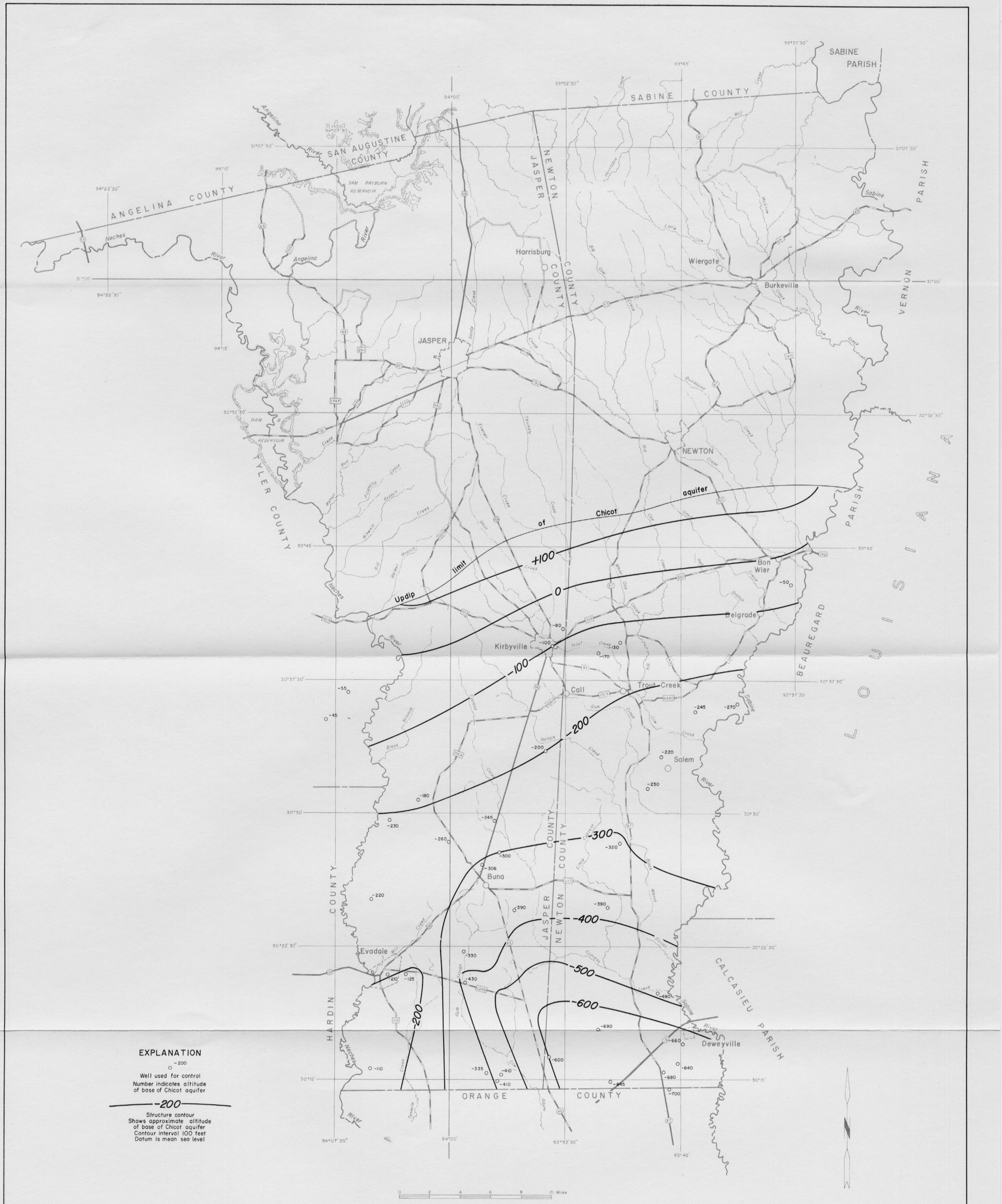
Ground water is an integral part of the hydrologic cycle as shown in Figure 12 (Piper, 1953, p. 9). In this diagram, the complex course of water is traced from precipitation to surface and ground water and to its eventual return to water vapor in the atmosphere. For a comprehensive discussion of hydrologic principles, the reader is referred to: Meinzer (1923a and 1923b), Meinzer and others (1942), Todd (1959), Tolman (1937), and Wisler and Brater (1959); for non-technical discussions, to Leopold and Langbein (1960), and Baldwin and McGuinness (1963).

The following discussion concerns the general principles of ground-water hydrology as applied in Jasper and Newton Counties.

Source and Occurrence of Ground Water

The principal source of fresh ground water is precipitation on the outcrops of the aquifers. Much of this precipitation runs off as streamflow. Part of it is evaporated at the land surface, transpired by plants, or retained by capillary forces in the soil; the remainder moves downward by gravity through the zone of aeration to the zone of saturation. In this zone, the rocks are saturated with water; that is, water fills all of the pore spaces between rock particles (such as sand grains).

Water-bearing rock units, or aquifers, are of two types--water table, or unconfined aquifers, and artesian, or confined aquifers. Unconfined water occurs where the upper surface of the zone of saturation is under atmospheric pressure only and the water is free to rise or fall in response to the changes in the volume of water in storage. The upper surface of the zone of saturation is the water table, and a well penetrating an aquifer under water-table conditions becomes filled with water to the level of the water table. Water-table conditions occur in the outcrop areas of the aquifers.



EXPLANATION

○ -200

Well used for control
Number indicates altitude
of base of Chicot aquifer

—200—

Structure contour
Shows approximate altitude
of base of Chicot aquifer
Contour interval 100 feet
Datum is mean sea level

Base from U.S. Geological Survey topographic quadrangles
and county maps of Texas State Highway Department

Figure 9

Approximate Altitude of Base of Chicot Aquifer

U.S. Geological Survey in cooperation with the Texas Water Development Board,
Sabine River Authority of Texas and Jasper and Newton Counties

EXPLANATION

320

Well used for control

Number indicates thickness of sand containing fresh water

300

Isopach

Shows approximate thickness of sand containing fresh water (less than 1000 ppm dissolved solids)

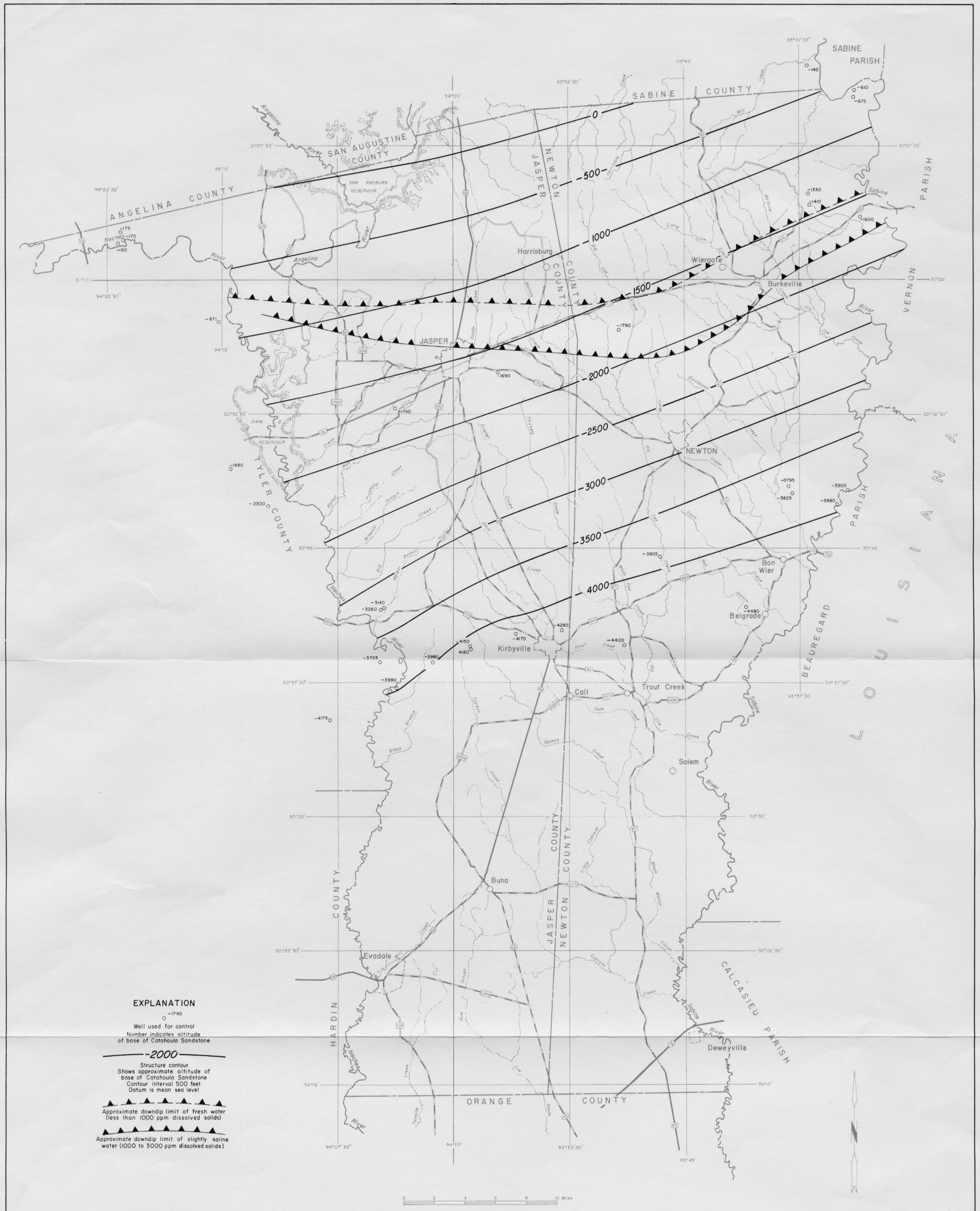
Interval 100 feet

Figure 10

Approximate Thickness of Sand Containing Fresh Water in the Chicot Aquifer

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Base from U. S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department



EXPLANATION

-1790
Well used for control
Number indicates altitude of base of Catahoula Sandstone

-2000
Structure contour
Shows approximate altitude of base of Catahoula Sandstone
Contour interval 500 feet
Datum is mean sea level

Approximate downdip limit of fresh water (less than 1000 ppm dissolved solids)

Approximate downdip limit of slightly saline water (1000 to 3000 ppm dissolved solids)

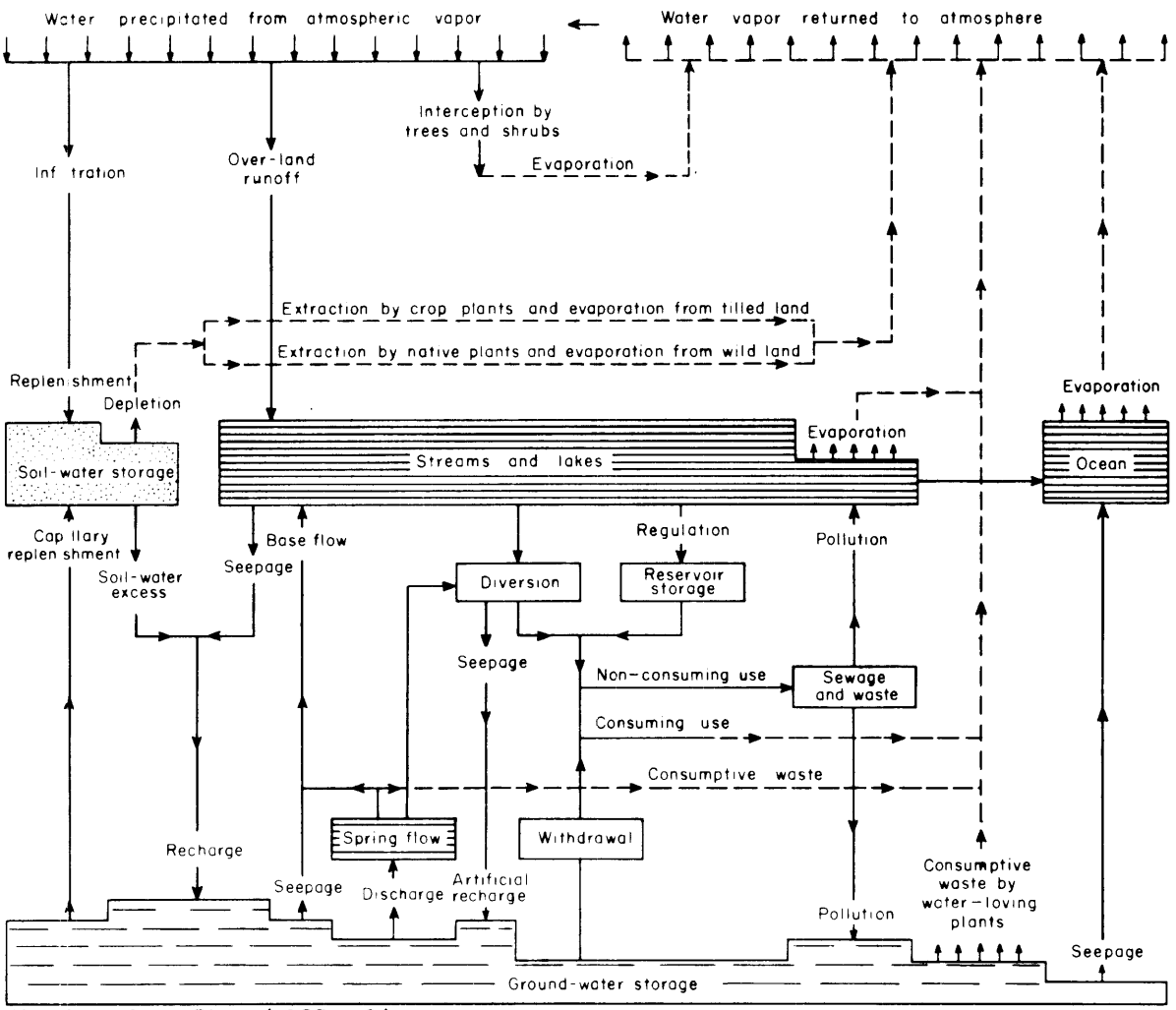
0 2 4 6 8 10 Miles

Figure 11

Approximate Altitude of Base of Catahoula Sandstone, and Limits of Fresh and Slightly Saline Water in the Formation

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Base from U. S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department



Modified from Piper (1953, p.9)

Figure 12

Hydrologic Cycle

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Confined water occurs where an aquifer is overlain by rock of lower permeability, such as clay, that confines the water under a pressure greater than atmospheric. Such artesian conditions occur downdip from the outcrop of the aquifer. A well penetrating sands under artesian pressure becomes filled with water to a level above the base of the confining layer of rock; and, if the pressure head is large enough to cause the water in the well to rise to an altitude greater than that of the land surface, the well will flow. Flowing wells are most common at the lower altitudes, especially in the valleys of the larger streams. The level or surface to which water will rise in artesian wells is called the piezometric surface.

Recharge, Movement, and Discharge of Ground Water

The main source of the recharge to the aquifers in Jasper and Newton Counties is the direct infiltration of rainfall. Small amounts of artificial recharge such as infiltration of irrigation water, industrial waste water, or sewage, occurs in local areas in Jasper and Newton Counties.

Sand and gravel cap most of the hills in the upland areas north of Kirbyville and overlie alternating beds of sand and shale. Precipitation infiltrates the caps of sand and gravel and perched ground water is usually present in the larger hills. Some of the water recharges underlying sands, but most of it is discharged as spring flow especially where the shale beds crop out in the valleys of the deeply entrenched streams.

Some of the recharge moves downdip in a southerly direction from the outcrop areas to the artesian parts of the aquifers, usually at rates of less than a foot per day under natural conditions.

In addition to recharge from outcrop areas, many artesian aquifers are supplied by the movement of water from adjacent aquifers. Under natural conditions, water moves slowly upward through the relatively impermeable confining beds into other aquifers or to the land surface. The rate of movement depends on the thickness and vertical permeability of the confining beds and the head differential of the aquifer. However, heavy withdrawals from a deep aquifer can cause a downward movement of water from an overlying aquifer. In southwestern Jasper County where there are heavy withdrawals from the Evangeline aquifer, most of the water is supplied by downward movement from the overlying Chicot aquifer.

The natural discharge of ground water in the report area consists mostly of the spring flow and evapotranspiration losses in the outcrop areas. Ground water is discharged artificially by pumping or flowing wells.

Hydraulic Characteristics of the Aquifers

"The worth of an aquifer as a fully developed source of water depends largely on two inherent characteristics: its ability to store and its ability to transmit water" (Ferris and others, 1962, p. 70). Measurements of these characteristics are the coefficients of storage and transmissibility.

The coefficient of storage of an aquifer is the volume of water it releases from or takes into storage per unit surface area of the aquifer per unit change

in the component of head normal to that surface. In the water-table aquifer, the coefficient of storage is nearly equal to the specific yield, which is the amount of water a saturated formation will yield by draining under the force of gravity. The storage coefficients of water-table aquifers range from about 0.05 to about 0.30; whereas, those of artesian aquifers range from about 0.00001 to 0.001. Where artesian conditions prevail, the coefficient of storage is a measure of the elasticity of the aquifer.

The coefficient of storage is important in any calculation of the quantity of water that could be obtained from an aquifer; but the availability of the water, especially in an artesian aquifer, depends primarily on the ability of the aquifer to transmit water. The coefficient of permeability is a measure of that ability and is defined as the rate of flow of water in gallons per day through a cross-sectional area of 1 square foot under a unit hydraulic gradient (1 foot per foot) at a temperature of 60°F. In field practice the adjustment of 60°F is commonly disregarded, and the permeability is then understood to be a field coefficient at the prevailing water temperature. The coefficient of transmissibility is the product of the field coefficient of permeability and the saturated thickness of the aquifer.

The specific capacity of a well is its yield per unit drawdown and is directly related to transmissibility. The measured specific capacity may differ from the computed theoretical specific capacity of a well because of one or more reasons. Improper well construction and development, screen losses, unfavorable local geologic conditions, screening only part of the available aquifer--all are factors which will decrease the measured specific capacity. On the other hand, in some wells the effective diameter may be increased by proper development. As a result, the measured specific capacity can be larger than the theoretical. Wood and others (1963, p. 40) reported that "...the measured specific capacities of most wells in the region [Gulf Coast] are smaller than the theoretical, indicating that many of the sands in the gravel-packed zone are poorly connected to the interior of the screen so that 'screen losses' are considerable during pumping."

The coefficients of storage and transmissibility of the aquifers were determined by aquifer tests made in wells in Jasper, Newton, Orange, and Hardin Counties. The test data were analyzed by the Theis non-equilibrium method as modified by Cooper and Jacob (1946, p. 526-534), or by the Theis recovery method (Wenzel, 1942, p. 95-97). The results of the tests and specific capacities of the wells are shown in Table 4. Because none of the wells are completed in a full section of an aquifer, and some in only a small part of an aquifer, the figures in the table are less than the aquifer's total capability.

The coefficients of transmissibility and storage may be used to predict future drawdowns in water levels caused by pumping. The theoretical relation between drawdown and distance from the center of pumping for different coefficients of transmissibility is shown in Figure 13. The calculations of drawdown are based on a withdrawal of 1 mgd (million gallons per day) for 1 year from an aquifer having coefficients of transmissibility and storage as shown. For example, if the coefficients of transmissibility and storage are 50,000 gpd (gallons per day) per foot and 0.001, respectively, the drawdown or decline in the water level would be 12 feet at a distance of 1 mile from a well or group of wells discharging 1 mgd for 1 year. If the coefficients of transmissibility and storage are 5,000 gpd per foot and 0.0001, respectively, the same pumping rate for the same time would cause 84 feet of decline at the same distance.

Table 4.--Summary of aquifer tests in Jasper, Newton, Orange, and Hardin Counties, Texas

Well	Date	Coefficient of transmissibility (gpd per ft)	Coefficient of permeability (gpd per ft^2)	Coefficient of storage	Specific capacity (gpm per ft of drawdown)	Remarks
Jasper Aquifer						
PR-61-07-302	Mar. 26, 1964	12,300	304	--	--	Recovery test. 26 ft screen, 40 ft sand.
303	do	11,100	277	1.19×10^{-3}	--	Interference test. Assumed 40 ft sand for coefficient of permeability.
62-01-401	Dec. 20, 1955	86,400	655	--	16	Recovery test. Specific capacity from 24 hour test. 132 ft screen.
402	do	59,000	760	3.82×10^{-4}	8	Interference test. Specific capacity reported by driller. 78 ft screen.
403	Dec. 21, 1955	65,500	602	5.9×10^{-4}	5	Interference test. 92 ft screen. Specific capacity reported by driller.
404	Dec. 20, 1955	58,300	730	--	10	Recovery test. 80 ft screen. Specific capacity reported by driller.
406	Dec. 17&22, 1964	89,800	550	--	39.4	Average of two drawdown and recovery tests. 163 ft screen. 2 hour specific capacity at 1,500 gallons per minute was 34.9 gpm ft.
17-901	Mar. 4, 1965	81,500	--	--	2	Recovery test.
25-601	July 8, 1964	8,000	--	--	.4	Recovery test. 61 ft screen. Has some screen opposite fine-grained sand in the Burkeville aquiclude. Did not use in computing averages.
TZ-62-10-309	Feb. 24, 1964	105,000	--	--	10	100 minute recovery test. Specific capacity from 20 hour test. 100 ft screen. Indicated T from first 20 minutes of recovery = 51,333.
26-203	Mar. 9, 1965	19,100	478	--	1.5	Recovery test. 40 ft slotted pipe.
Evangeline Aquifer						
LH-61-47-201	Dec. 1952	18,000	156	--	15.6	
202	Dec 6&7, 1952	16,000	131	--	12.8	
208	Jun 6, 1962	38,000	304	--	17.5	
55-203	Feb. 16&19, 1962	63,000	181	--	45.5	
204	May 5, 1958	65,000	188	--	37.7	
PR-61-48-202	Feb. 23, 1954	50,000	213	--	44.2	Recovery test.
203	Feb. 22, 1954	83,000	332	8.9×10^{-4}	27.2	Interference test.
204	do	111,000	300	6.3×10^{-4}	46.4	Do.
205	do	90,000	290	8.3×10^{-4}	37.3	Do.
207	Nov. 16, 1953	42,000	257	1.5×10^{-3}	18.2	Recovery test.
208	Feb. 22, 1954	94,000	362	1.3×10^{-3}	38.2	Interference test.
301	do	111,000	411	7.9×10^{-4}	35.4	Do.
TZ-64-19-802	Oct. 13, 1964	28,500	--	--	--	Recovery test. Not used to compute averages.
Chicot aquifer						
PR-62-33-401	Feb. 29, 1965	136,000	1,240	--	11	Recovery test. 24 hour specific capacity.
41-801	Apr. 15, 1964	92,500	1,130	--	--	Recovery test.
TZ-62-42-701	do	302,000	910	--	--	Do.
UT-62-50-201	June 3, 1964	510,000	1,700	--	--	Do.
49-601	May 30, 1960	490,000	1,630	--	--	Do.

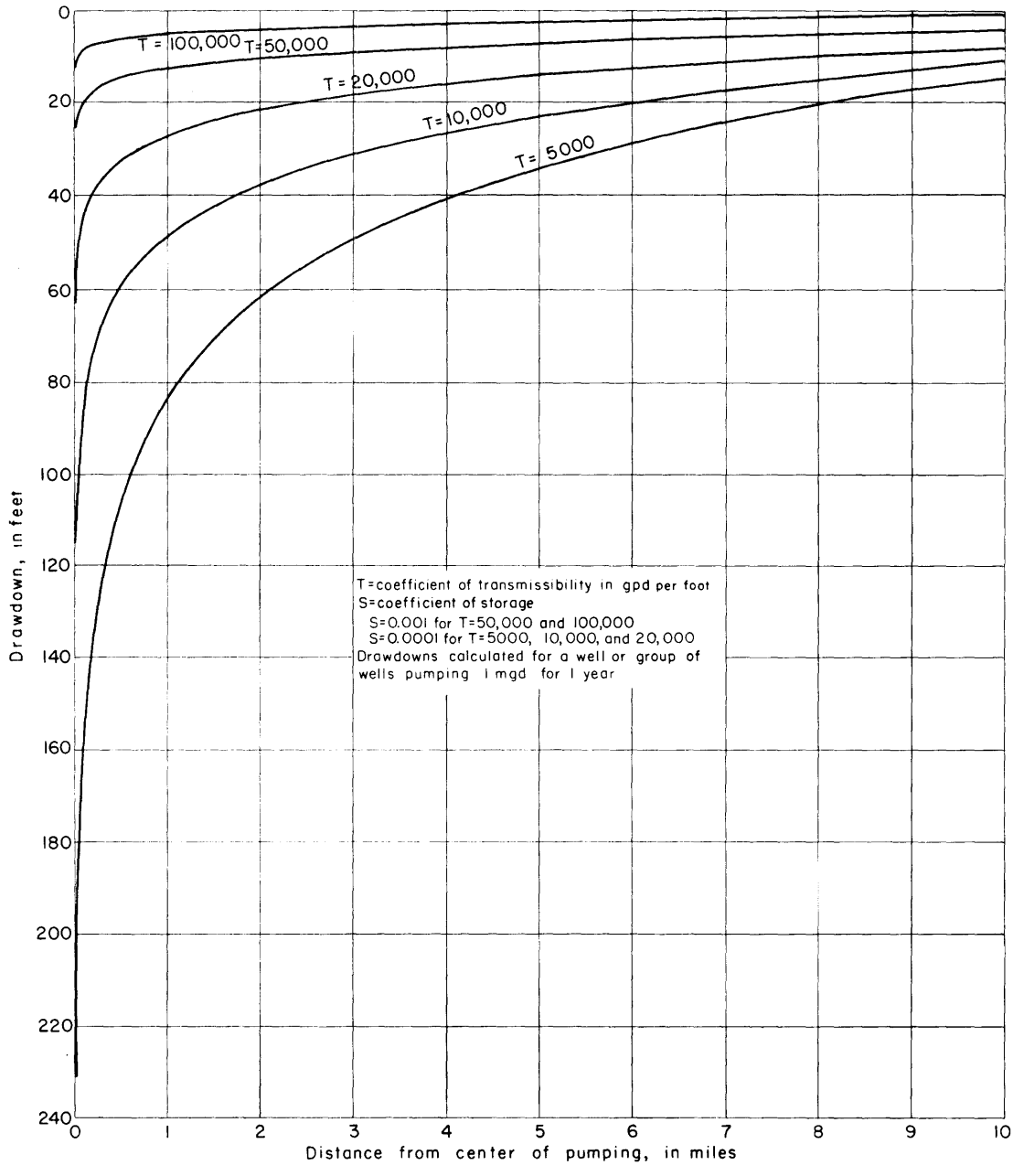


Figure 13

Relation of Drawdown to Transmissibility and Distance

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

In Figure 14 is shown the relation of drawdown to distance and time as a result of pumping from an aquifer, with characteristics similar to those of the Evangeline aquifer, where artesian conditions prevail and where infinite areal extent is assumed. Also shown is the fact that the rate of drawdown decreases with time. For example, if the drawdown at 100 feet from a well is 11 feet after 1 mgd has been pumped for 1 year, the drawdown would be about 15 feet after 1 mgd has been pumped for 100 years. The total drawdown at any one place within the cone of depression or the influence of several wells would be the sum of the influences of the several wells. The equilibrium curve illustrates the time-drawdown relation when a line source of recharge is 25 miles from the point of discharge.

Figure 15 shows the relation of drawdown to distance and time as a result of pumping from a water-table aquifer with characteristics similar to those of the Jasper and Evangeline aquifers, and with infinite areal extent being assumed. The drawdown is less than that in an artesian aquifer because of the larger coefficient of storage.

In Figure 16 is shown the relation of drawdown to distance and time due to pumping in an artesian aquifer having hydraulic properties similar to those of the Jasper and Chicot aquifers.

Overlapping of cones of depression or interference between wells may cause a decrease in yield of the wells, or an increase in pumping costs, or both. Moreover, when the pumping level declines below the top of the screen in a well, the saturated thickness of the aquifer decreases; the result is a decrease in the yield and efficiency of the well.

Major Aquifers

Jasper Aquifer

The coefficients of transmissibility from aquifer tests on 11 wells that tap the Jasper aquifer in Jasper and Newton Counties (Table 4) ranged from 8,000 gpd per foot at well PR-62-25-601 to 105,000 gpd per foot at well TZ-62-10-309. Coefficients of storage determined from three tests ranged from 0.00038 to 0.0012. The coefficients of permeability determined from the tests ranged from 277 to 760 gpd per square foot and averaged 545 gpd per square foot. Rogers and Calandro (1965) have reported a range in coefficients of permeability from 300 to 850 gpd per square foot for the three stratigraphic units in Vernon Parish which correspond to the Jasper aquifer.

Figure 6 shows the thickness of the sands containing fresh water in the Jasper aquifer. In the northern part of the report area where the sands are 550 feet thick, the transmissibility of the entire thickness of the aquifer probably would be about 300,000 gpd per foot (550 feet times 545 gpd per square foot, the average coefficient of permeability). With one exception (well TZ-62-26-203), the aquifer tests upon which permeability is based are located updip from the 500-foot contour in the northern part of Jasper County. The coefficient of permeability will probably be less downdip. This may be indicated by the 478 gpd per square foot at well TZ-62-26-203.

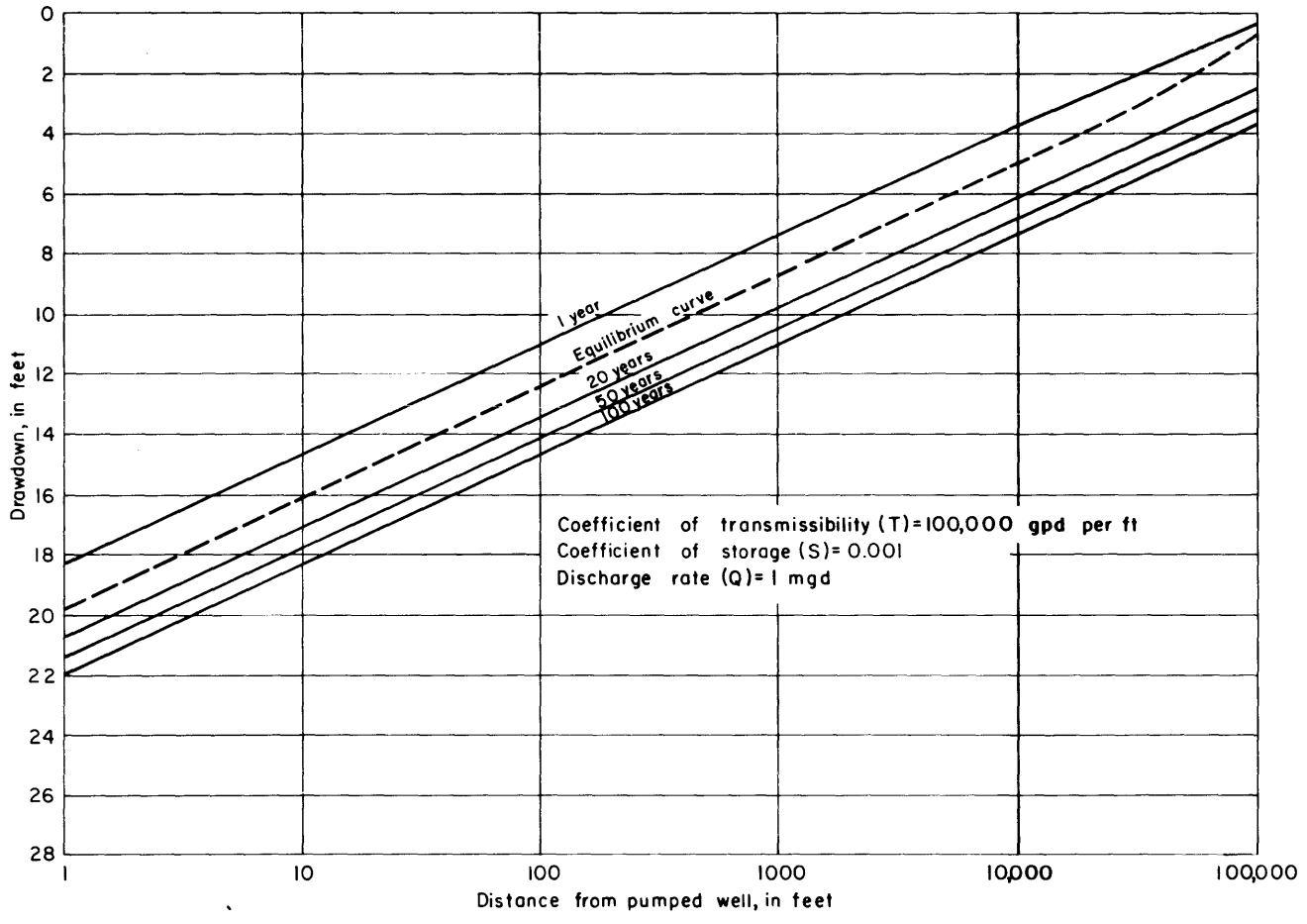


Figure 14

Relation of Drawdown to Distance and Time as a Result of Pumping from the Evangeline Aquifer Under Artesian Conditions

U S Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

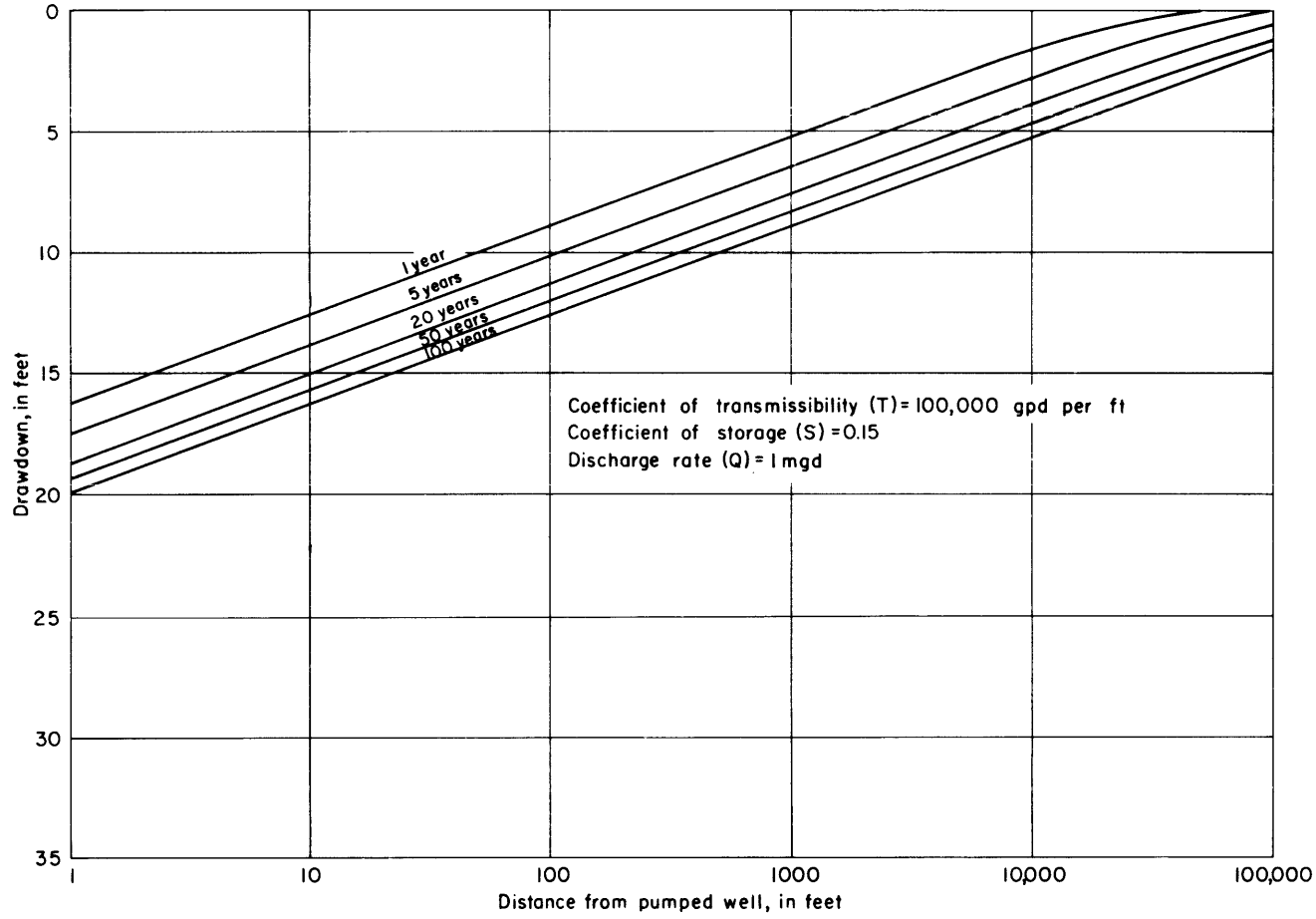


Figure 15

Relation of Drawdown to Distance and Time as a Result of Pumping from the Jasper and Evangeline Aquifers Under Water-Table Conditions

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

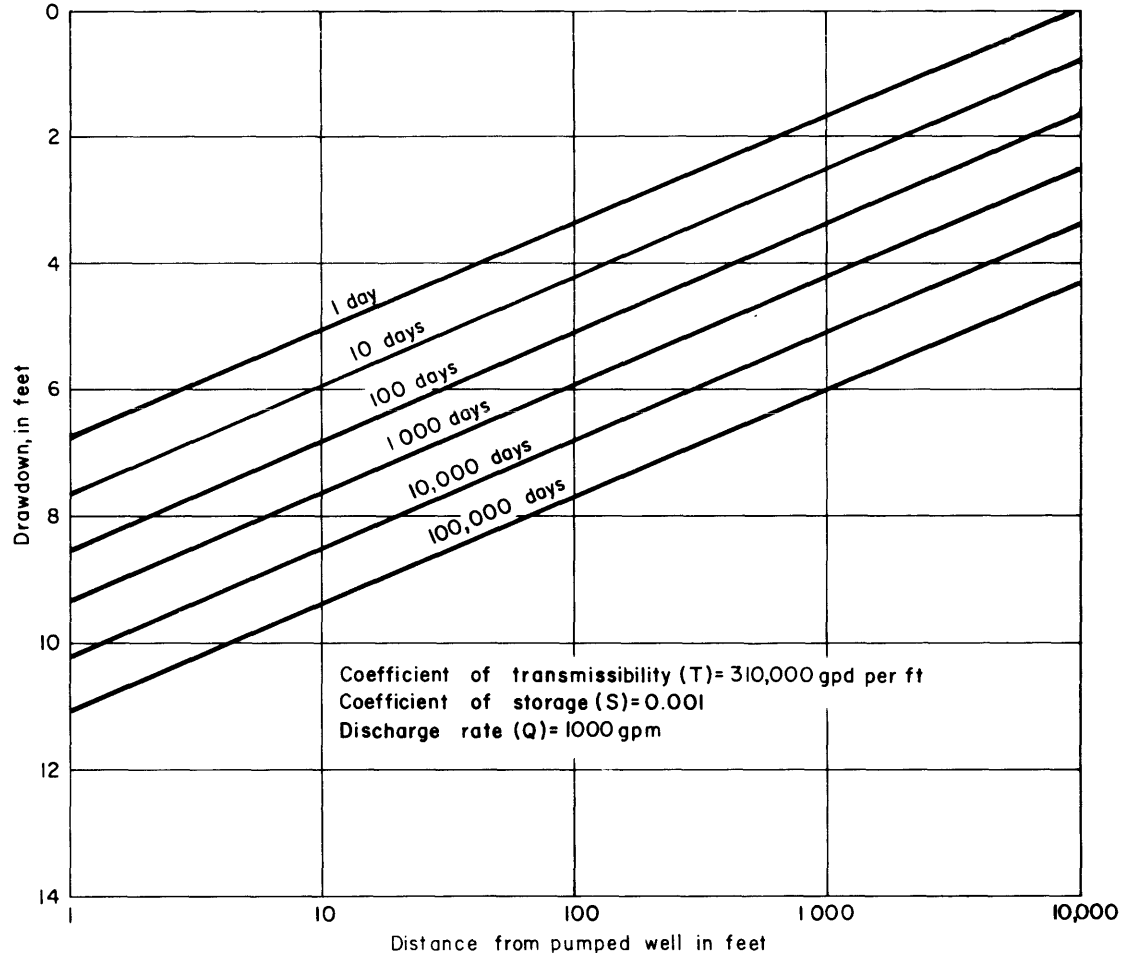


Figure 16

Relation of Drawdown to Distance and Time as a Result of Pumping from the Jasper and Chicot Aquifers Under Artesian Conditions

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

The largest specific capacity observed in a well in the Jasper aquifer was 39.4 gpm (gallons per minute) per foot in well PR-62-01-406 (163 feet of screen).

Evangeline Aquifer

The coefficients of transmissibility determined from aquifer tests of 13 wells that tap the Evangeline aquifer in Jasper, Newton, and Hardin Counties ranged from 16,000 gpd per foot at well LH-61-47-202 to 111,000 gpd per foot at wells PR-61-48-204 and PR-61-48-301 (Table 4). The average values of the coefficients of transmissibility and storage were approximately 62,000 gpd per foot and 0.001, respectively. The average coefficient of permeability was 260 gpd per square foot.

The maximum thickness of sands containing fresh water in the Evangeline aquifer is more than 500 feet in the southern parts of Jasper and Newton Counties (Figure 8). The product of the average coefficient of permeability (260 in Table 4) and the maximum sand thickness (500 feet) indicates that a coefficient of transmissibility of approximately 130,000 gpd per foot is possible in a large area in the southern parts of Jasper and Newton Counties. In southeastern Jasper County, where a coefficient of permeability of 411 gpd per square foot has been measured in well PR-61-48-301 and where the sand thickness is as great as 555 feet (well PR-61-48-701), a transmissibility of as much as 200,000 gpd per foot may be possible.

The above figures compare favorably with those reported by Wood and Gabrysch (1965) for the "heavily pumped layer" in the Houston district. They have reported that the coefficients of transmissibility ranged from 75,000 to 150,000 gpd per foot and that the coefficients of storage ranged from about 0.0001 to 0.002.

Values for the specific capacity of 12 wells in the Evangeline aquifer ranged from 12.8 to 46.4 gpm per foot (Table 4). Because the wells in the area are not screened through the entire thickness of the water-bearing sands, the specific capacities of the wells listed are less than the maximum that could be developed.

Chicot Aquifer

The coefficients of transmissibility determined from tests of five wells that tap the Chicot aquifer in Jasper, Newton, and Orange Counties ranged from 92,500 gpd per foot at well PR-62-41-801 to 510,000 gpd per foot at well UJ-62-50-201 (Table 4). The coefficients of permeability ranged from 910 to 1,700 gpd per square foot and averaged 1,322 gpd per square foot. The average of 1,322 gpd per square foot compares favorably with the average of 1,400 gpd per square foot reported from 20 aquifer tests in the "Middle" aquifer in Orange County (Wesselman, 1965, p. 22).

On the basis of sand thickness of 225 feet and an average permeability of 1,400 gpd per square foot, the composite transmissibility of the "Middle" aquifer in Orange County (approximately equivalent to the Chicot aquifer) was computed to be about 310,000 gpd per foot (Wesselman, 1965, p. 22). The transmissibility of the Chicot aquifer is even higher in southeastern Newton County

where the sand thickness is more than 400 feet (Figure 10). These determinations compare reasonably well with the composite transmissibility of the "500-" and "700-" foot sands (380,000 gpd per foot) as determined in Calcasieu Parish, Louisiana (Harder, 1960, p. 32-35).

The coefficients of storage determined in Orange County ranged from 0.00047 to 0.063 and averaged 0.0067 (Wesselman, 1965, table 2). The coefficients of storage are probably larger in Jasper and Newton Counties than in Orange County.

The measured specific capacities of eight wells in the Chicot ("Middle") aquifer in Orange County (Wesselman, 1965, table 2) and one well in Jasper County ranged from 6.6 to 29.6 gpm per foot of drawdown. Specific capacities as large as 66.2 gpm per foot of drawdown, have been reported (well TZ-62-34-201).

Minor Aquifers

Yegua Formation and Jackson Group

No aquifer tests of the Yegua Formation or the Jackson Group have been performed and little information is available on their hydraulic characteristics.

Catahoula Sandstone

No large wells have been completed in the Catahoula Sandstone; consequently, aquifer tests are not available for this aquifer in Jasper or Newton Counties. However, Rogers and Calandro (1965, p. 19) have reported on one pumping test and commented on yields in neighboring Vernon Parish:

> "A pumping test made at well V-398 (T. 4 N., R. 8 W.) in the Catahoula Formation indicated a coefficient of transmissibility of 19,000 gpd per foot and a coefficient of permeability of 320 gpd per square foot. Variation in sand size in the Catahoula is similar to younger sands for which permeabilities between 150 and 600 gpd per square foot have been determined. Therefore, the range of permeability values for the Catahoula is probably as great as the range for the younger deposits.
>
> "Nearly all the wells that have been installed in the Catahoula Formation in Vernon and nearby parishes yield less than 50 gpm. However, in 1962 well V-398 pumped 450 gpm for 8 hours and 250 gpm for 24 hours. At 250 gpm the well had a specific capacity of 8.3 gpm per foot of drawdown, from a sand having a permeability of 320 gpd per square foot."

Their results and evaluation probably are valid for the Catahoula in adjacent Newton County. The percentage of sand in the Catahoula is less and the sand is finer in Jasper County; consequently, the values of hydraulic characteristics are probably less.

Use of Ground Water

The first records of use of the ground water in Jasper and Newton Counties were included in the report on the underground waters of the Southeastern Coastal Plain by Deussen (1914). This report included records of wells from all aquifers except the Jackson Group. The records showed flowing wells in the Catahoula Sandstone and in the Jasper, Evangeline, and Chicot aquifers. Totals of the yields reported indicated a discharge of about 1 mgd from flowing wells.

The estimated use of ground water in Jasper and Newton Counties in 1965 was about 52 mgd (or about 58,300 acre-feet for the year), of which more than 40 mgd was produced by the well field that supplies the paper mill at Evadale in the southwestern part of Jasper County. This well field is supplied from the middle part of the Evangeline aquifer. Previous to the development of the well field at Evadale, the maximum use of ground water from all aquifers in the report area was less than 10 mgd.

Production of water for the paper mill at Evadale began in 1955 when the well field produced 17.8 mgd, a rate maintained in 1956 and 1957. From 1957 to 1962, as the rate of production increased, the average was about 21 mgd. Withdrawals had increased to more than 45 mgd late in 1964 and early in 1965. The average production for May, June, and July, 1965, was about 43 mgd. The reduction from the 45 mgd rate was achieved by instituting recovery methods which made possible the reuse of some of the plant's effluent. At present, work is proceeding on more new facilities which will recover even more of the water. Daily use of water is then expected to level off at or below 40 mgd. Industrial use of water, other than that at Evadale, is estimated to have been about 0.5 mgd in 1965.

In 1965, domestic use of ground water in rural areas was about 2.5 mgd. Municipal use, as reported to the Texas Water Development Board, was about 1.5 mgd.

A total of 90 wells with a combined flow of almost 4 mgd were observed in Jasper and Newton Counties in the course of the well inventory (Table 5). However, not all existing flowing wells were visited. Other flowing wells, such as the seismic test hole PR-61-16-402 which produces 480 gpm, may exist in the heavily timbered river bottoms of northern Jasper and Newton Counties. The following tabulation lists the observed discharge of flowing wells in the report area in 1965.

County		Jackson Group	Catahoula Sandstone	Jasper aquifer	Evangeline aquifer	Total
Jasper	Wells:	1	5	38	1	45
	Mgd:	.01	.18	2.28	.01	2.39
Newton	Wells:	None	None	30	15	45
	Mgd:	None	None	.90	43	1.3

Use of ground water for rice irrigation in southern Jasper and Newton Counties, which began in 1940 when an average of about 1 mgd was pumped, increased to a maximum of about 2 mgd for the 1949-54 period. Crop controls in 1955 resulted in a decrease in use to about 1 mgd, and present usage is about 1 mgd. This water is pumped from the Chicot aquifer.

Water Levels

Water-level data are presented by hydrographs and maps of the piezometric surfaces. Figures 17 and 18 are graphic presentations of water levels in wells in the Jasper, Evangeline, and Chicot aquifers. These hydrographs were prepared from records of water-level measurements made in previous investigations and as part of the observation-well program of the U.S. Geological Survey and the Texas Water Development Board. Figures 19, 20, and 21 are maps of the approximate piezometric surface in the Jasper aquifer (1964-65), and in the Evangeline and Chicot aquifers (1964).

Water-level differences aid in separating the Jasper, Evangeline, and Chicot aquifers. Comparison of the piezometric surfaces (Figures 19 and 20) shows an especially pronounced difference between the water levels of the Jasper and the Evangeline aquifers.

In 1947, at Evadale, a test hole was drilled that penetrated all three aquifers. The procedure of testing included recording the water levels of selected individual sands in each aquifer. The electric log of this test hole, the names of the hydrologic units, and the positions of the screens, packer, cement plug, and the water levels of individual sands measured in 1947 are shown on Figure 22. After the tests were made, the test hole was completed as a dual-observation well--the sands of the Evangeline aquifer between the cement plug and the packer supplying one unit (herein referred to as PR-61-48-209-B), and the sands of the Evangeline above the packer plus the sands of the Chicot supplying the other (well PR-61-48-209-A). Records of water-level measurements made in the two units are shown in Figure 18.

Jasper Aquifer

The short periods of record shown on the hydrographs of Figure 17 are not sufficient for a detailed analysis of the water levels in the Jasper aquifer. The maximum decline shown in the hydrograph of well PR-36-57-801 was about 10 feet. Water levels rose 1 foot in 1 well, PR-62-01-402, at Jasper over a period of 10 years. The two wells are in different sands in the Jasper aquifer near the outcrop. Water levels in another well (PR-62-01-401) at Jasper show a decline of about 4 feet over 11 years. Some decline would be expected in the Jasper area because of pumpage. In the outcrop of the Jasper aquifer, considerable seasonal fluctuation is reported; but, because no data are available, timing and range of this fluctuation have not been determined.

Most of the data for the construction of Figure 19, the piezometric map of the Jasper aquifer (1964-65), were from flowing wells that tapped only the upper part of the aquifer; wells in the lower part probably had a higher head than that shown by the map. Pressure declines are indicated at three localities on Figure 19: the closed contour at and near Kirbyville from pumpage in the area, the indentation of the contours east of Dam B Reservoir from the concentration of flowing wells near the reservoir, and the indentation of the contours east and southeast of Burkeville from the concentration of flowing wells along Little Cow Creek near its junction with the Sabine River.

Evangeline Aquifer

The ground-water resources of Jasper and Newton Counties were relatively undeveloped in 1955. Since 1955, the withdrawals from the industrial well field at Evadale and from the city of Beaumont's well field in southeastern Hardin County (Baker, 1964, p. 43) have created a cone of depression in the Evangeline aquifer. This cone of depression is centered in southwestern Jasper County (Figure 20) and extends across much of the southern part of the report area.

As previously discussed, water-level measurements of selected individual sands were made during the drilling of test well PR-61-48-209 (at Evadale). The water level of the lowest fresh-water sand in the Evangeline aquifer was 27.7 feet above the land surface in 1947 (Figure 22). Prior to 1947, the water level of the aquifer at this location probably had declined about 10 feet. This sand also is the lowest sand in the lower unit of the observation well PR-61-48-209-B. In August 1965 the water level of this unit was 160 feet below the land surface (Figure 18), which was a decline of about 200 feet from its original level--the largest decline known to have taken place in Jasper and Newton Counties. Ten miles from the well field, the total decline has been less than one-half of this amount. At Kirbyville, the total decline in the Evangeline aquifer probably has been about 15 feet.

Identifying a possible decline of water levels in the outcrop would be difficult, as the decline would fall into the range of seasonal variations of water levels.

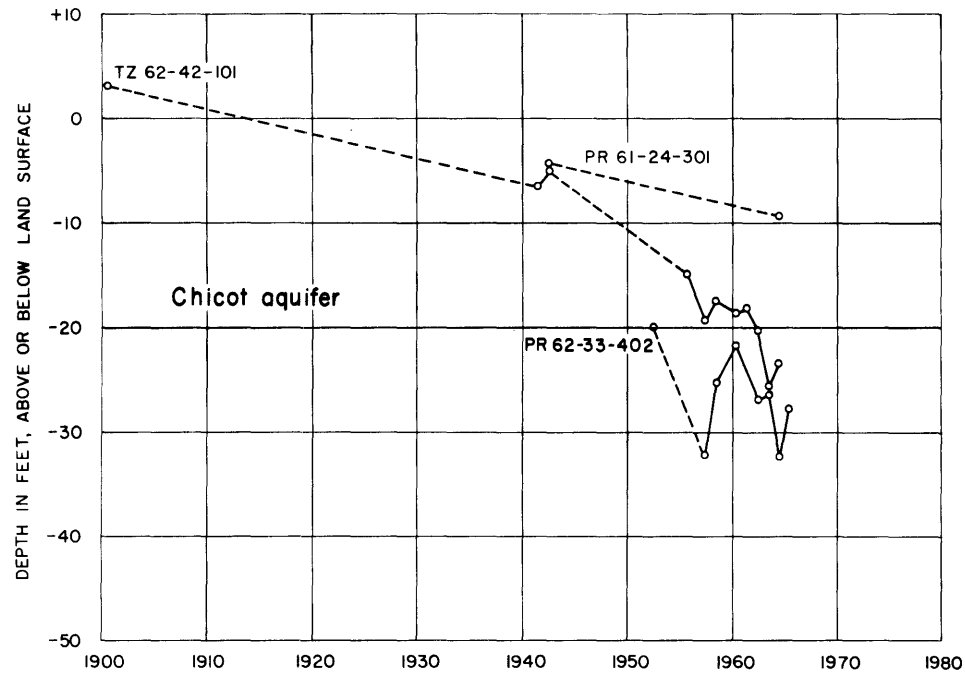
Flowing wells from this aquifer are located across the Neches River in the Spurger area of Tyler County and along the Sabine River in both Newton County and Beauregard Parish. The area of flowing wells in Newton County extends from the vicinity of Salem to about 6 miles north of Bon Wier. Pressure declines of these wells probably have been fairly small as no well owner has reported a reduction of flow since the wells were constructed. In general, flowing wells in the Sabine River bottom are completed in the basal sands of the Evangeline aquifer.

Chicot Aquifer

Most of the water-level decline in the Chicot aquifer in the report area has been caused by pumping in Orange County and in southwestern Louisiana. A decline of about 35 feet in the northeastern corner of Orange county (and the southeastern corner of Newton County) between 1941 and 1962-63 is shown by Wesselman (1964, figs. 9 and 10). The original head at this location was about 10 feet higher than in 1941, making a total decline of about 45 feet by 1962-63.

The hydrograph (Figure 17) of well TZ-62-42-101, the first to be drilled for irrigation in Jasper and Newton Counties, shows a decline in head of about 10 feet between 1942 and 1956, and about 15 feet between 1942 and 1963. The estimated decline from 1900 to 1942 was 8 feet.

The approximate boundary of the artesian part of the Chicot aquifer is shown on Figure 21 by a line that begins near the northeastern corner of Hardin County, passes north of Kirbyville and out of Newton County in the



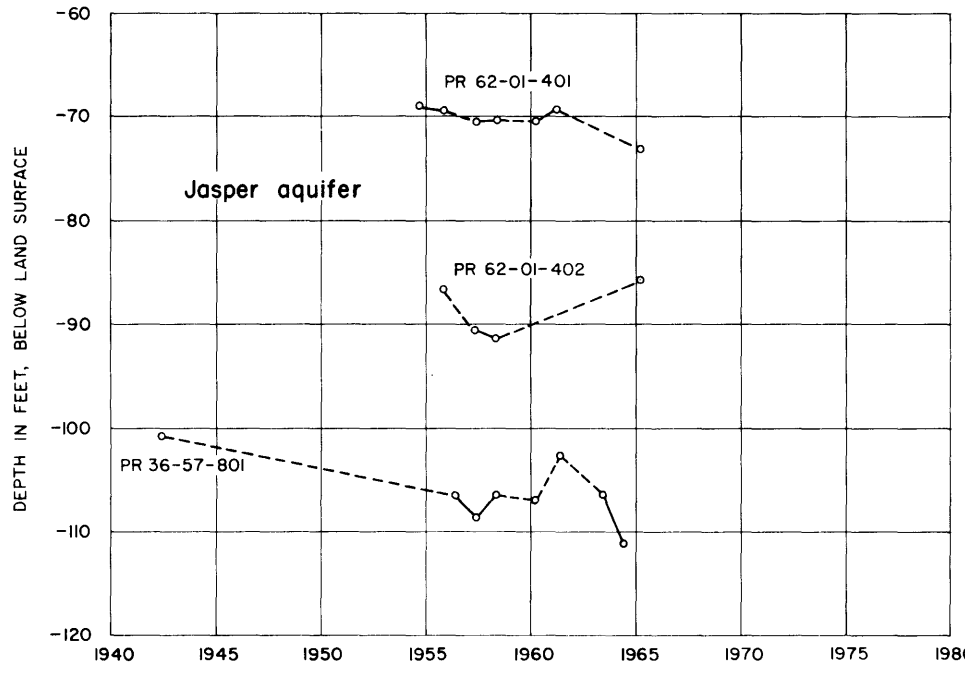


Figure 17

Water Levels in Wells Tapping the Jasper and Chicot Aquifers

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

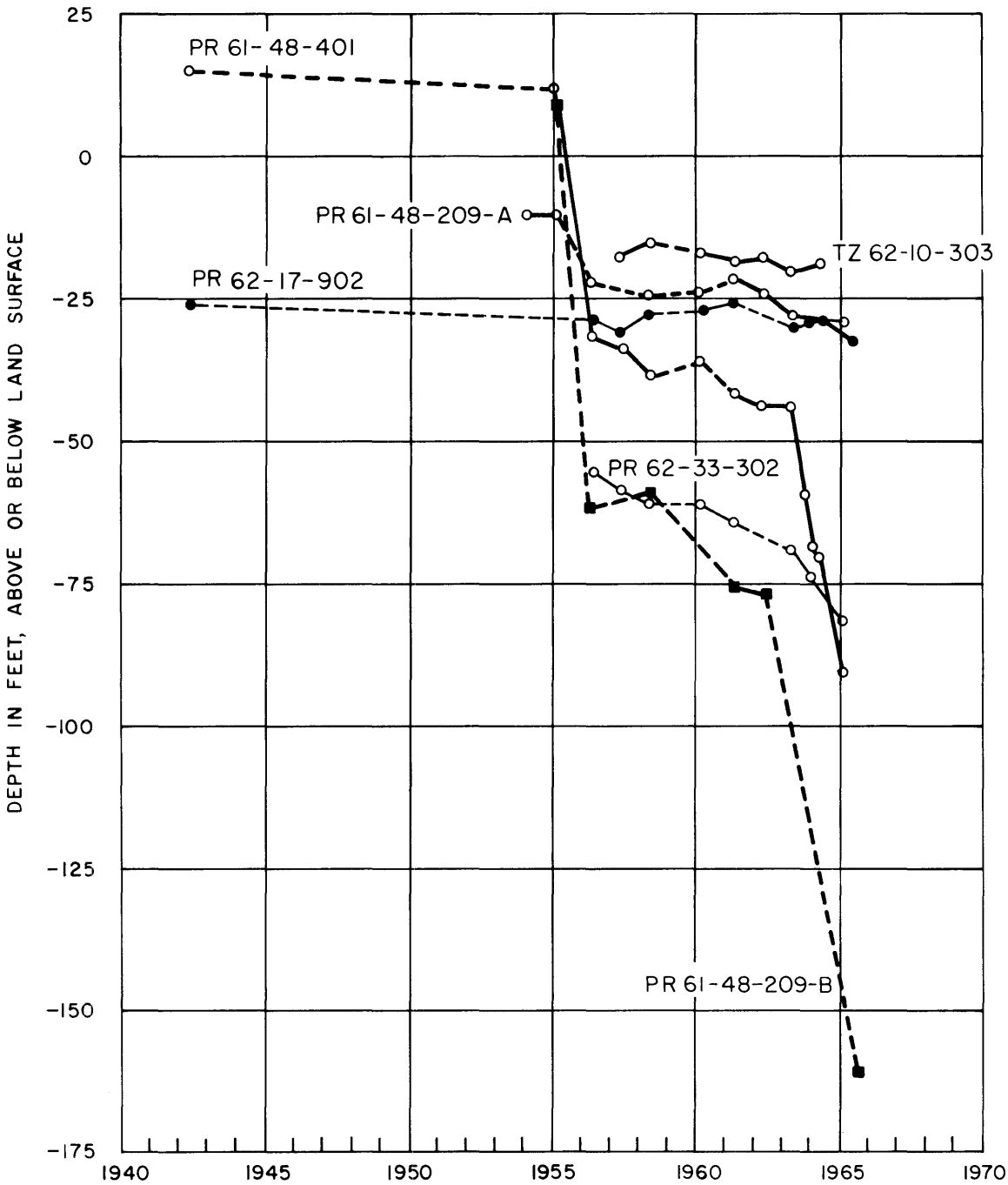


Figure 18

Water Levels in Wells Tapping the Evangeline Aquifer

U.S Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

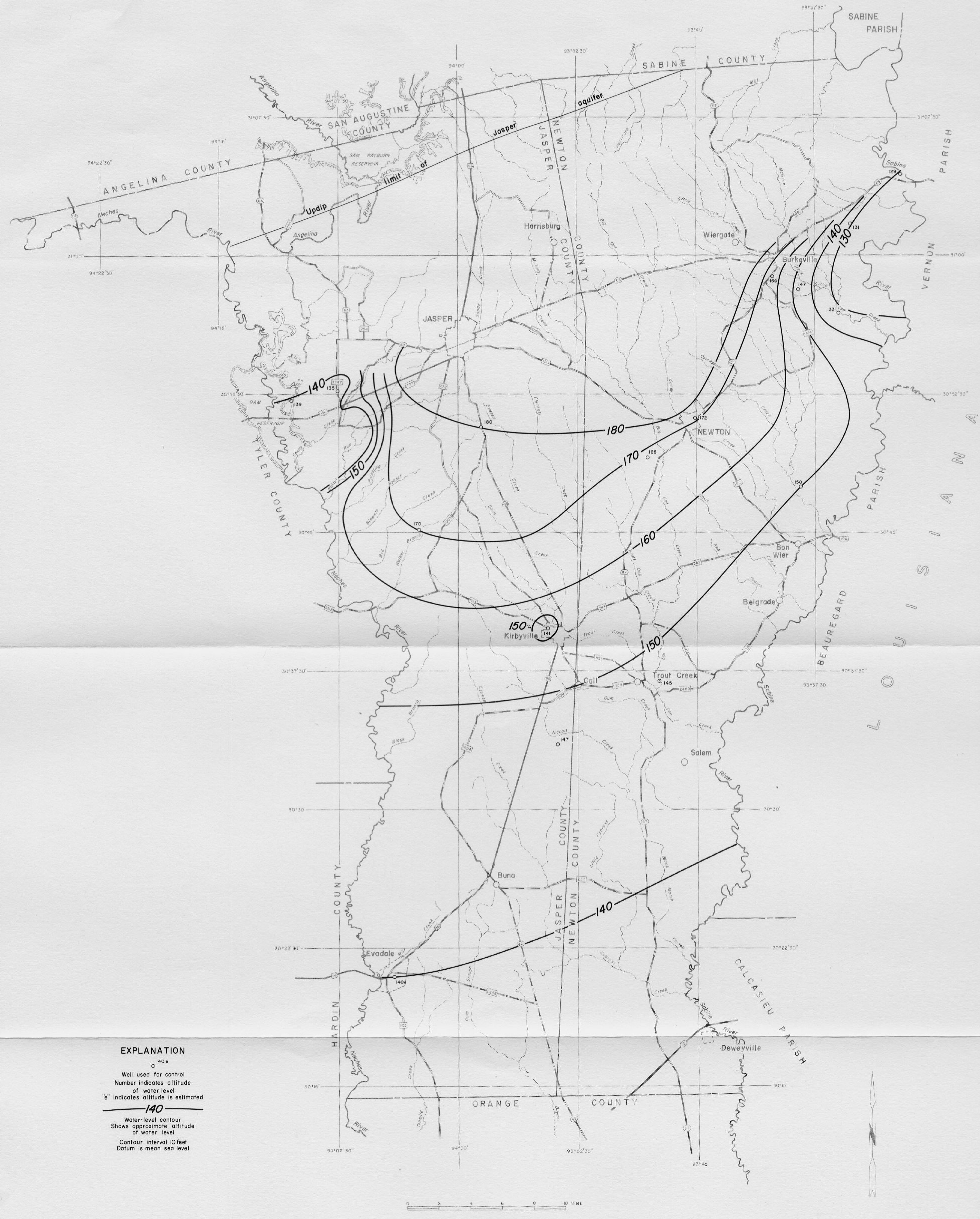


Figure 19

Approximate Altitude of Water Levels in the Jasper Aquifer, 1964-65

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Base from U. S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department

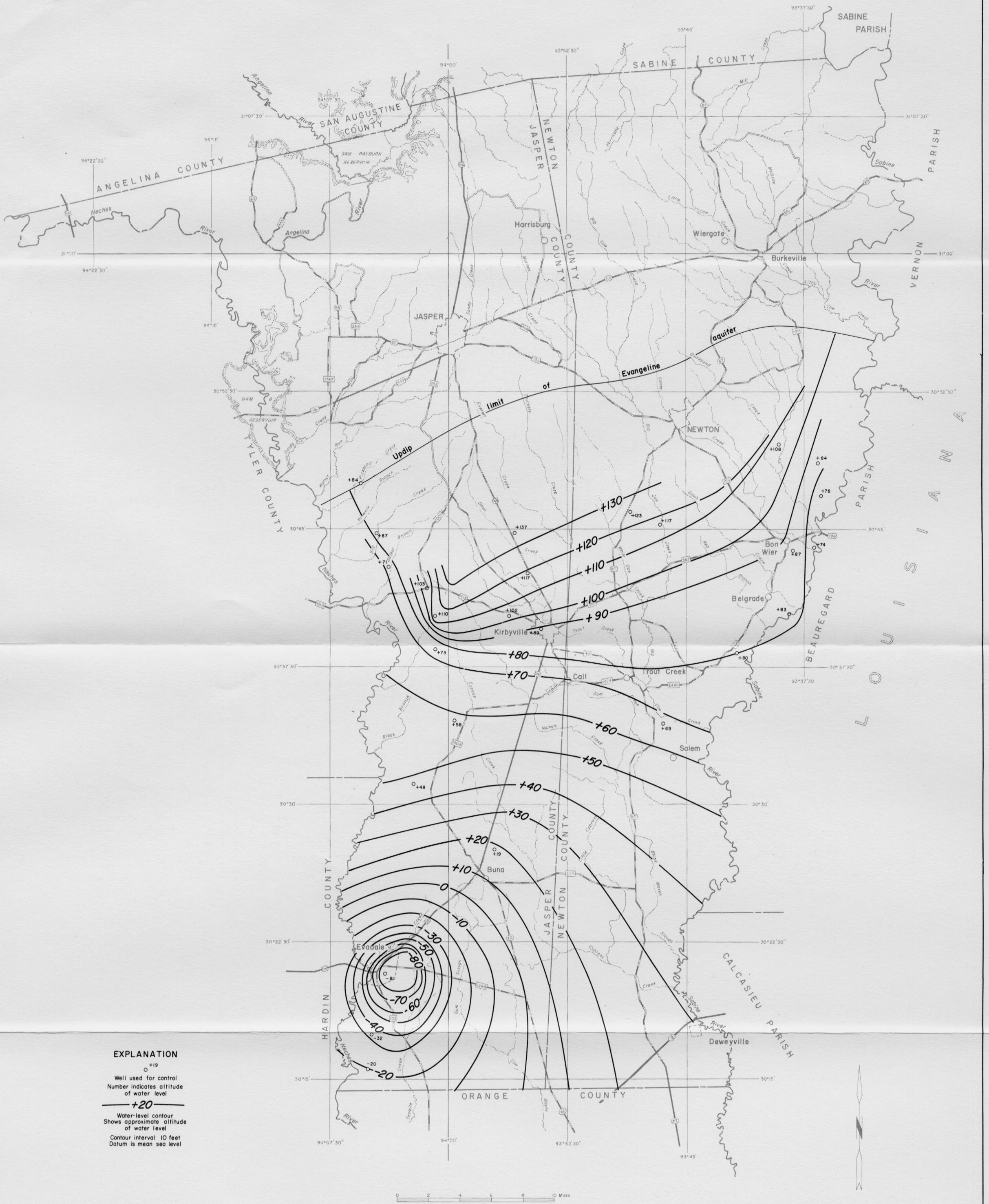
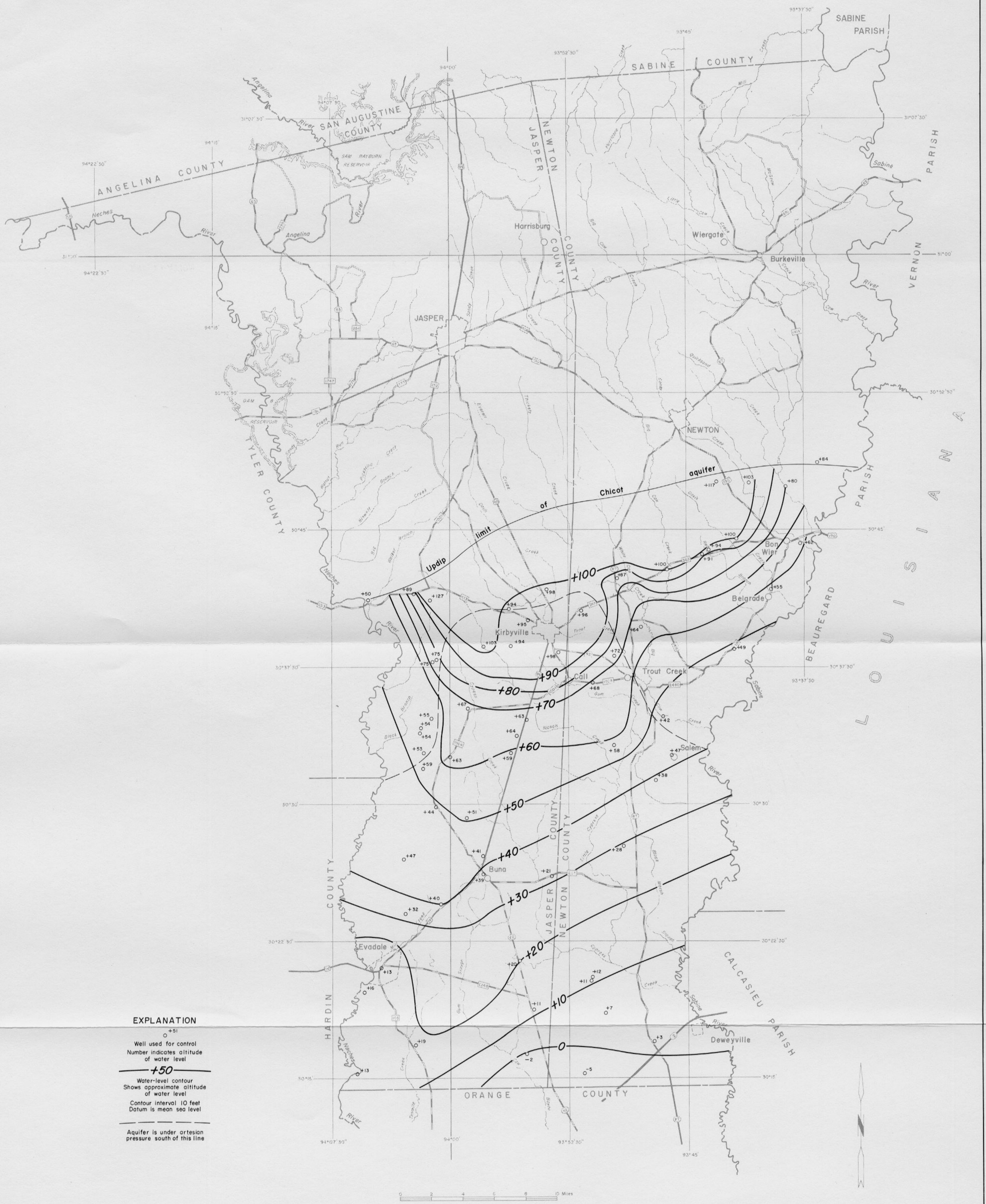


Figure 20

Approximate Altitude of Water Levels in the Evangeline Aquifer, 1964

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Base from U. S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department



EXPLANATION

+51
Well used for control
Number indicates altitude of water level

+50
Water-level contour
Shows approximate altitude of water level
Contour interval 10 feet
Datum is mean sea level

Aquifer is under artesian pressure south of this line

Base from U. S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department

Figure 21

Approximate Altitude of Water Levels in the Chicot Aquifer, 1964

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

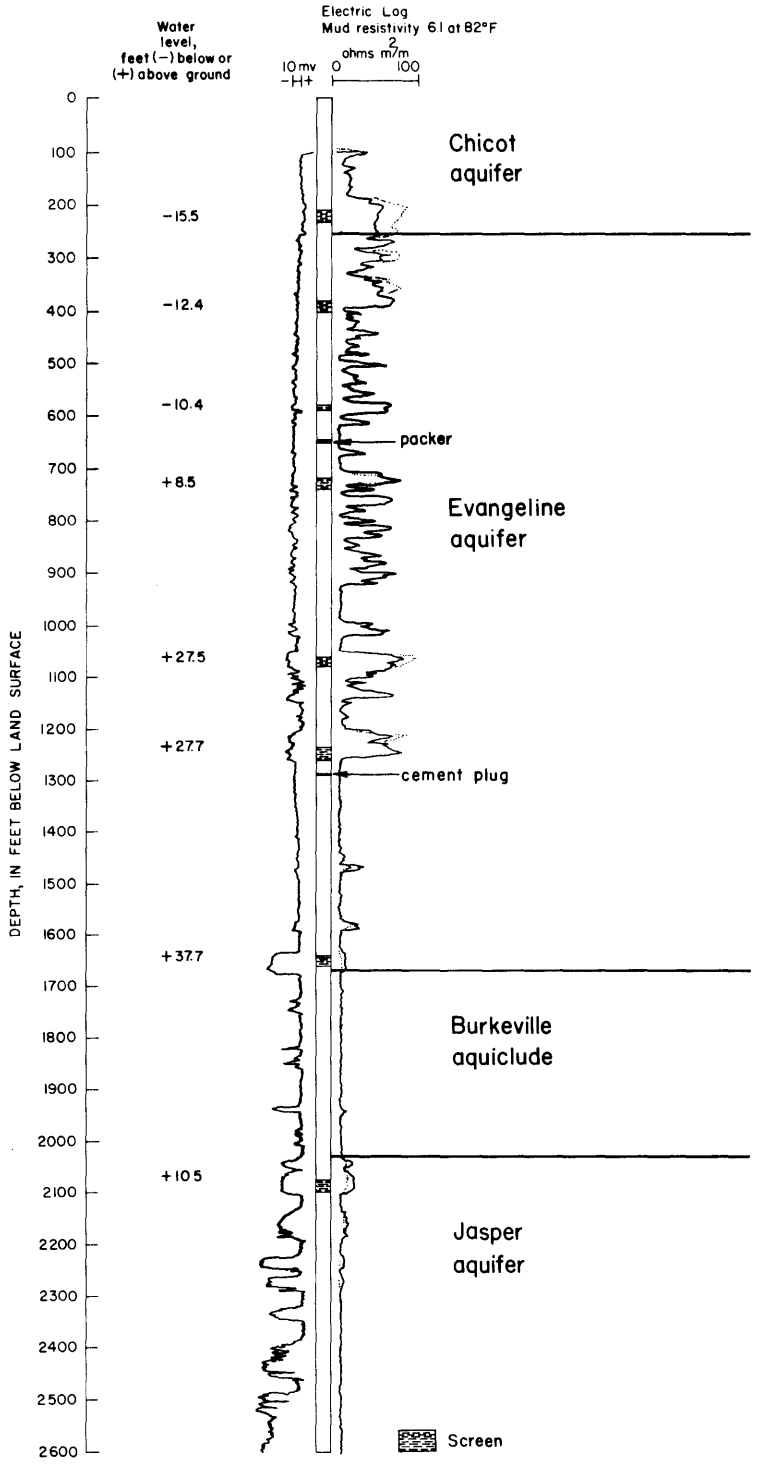


Figure 22

Electric Log of Observation Well PR-61-48-209 at Evadale Showing Hydrologic Units, Screens, Packer, Cement Plug, and Water Levels of Individual Sands Measured in 1947

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

vicinity of Salem and Big Cow Creek. Because the Chicot is the most permeable aquifer in the report area, wells in the artesian part of the Chicot have the least variations of water level.

Water levels have declined little, if any, in the outcrop of the Chicot aquifer.

Relation of Water-Level Declines to Land Subsidence

The pressure in an artesian aquifer helps support the framework of the aquifer. When the artesian pressure is lowered, water is released from storage in the aquifer and the beds are compacted, most of the compaction taking place in the fine-grained sediments. The amount of total compaction and resulting subsidence depends on the thickness of the fine-grained sediments and the amount of decline in artesian head.

According to Winslow and Wood (1959, p. 1030) the removal of ground water and the consequent lowering of artesian pressure has resulted in a subsidence of the land surface in almost the entire upper Gulf Coast region of Texas, including Orange County to the south of Jasper and Newton Counties. Winslow and Wood (1959, fig. 3, p. 1032) show that the land surface subsided more than 0.25 foot in parts of Orange County during the 1918-54 period. Their work was based on the releveling of previously established level lines by the U.S. Coast and Geodetic Survey. Their map shows some subsidence over an area encompassing more than half of Orange County. Because of a lack of data, the extent of subsidence since 1954 cannot be determined. However, the land surface probably has continued to subside, especially in localized areas where large declines in artesian pressure have occurred.

The well field at the paper mill at Evadale in south Jasper County was developed since 1954 and a network of bench marks was established in and around the plant in order to measure differential subsidence. The leveling from January 1955 to July 1963 was referenced to a point 1 mile south of the plant site and about 2 miles southwest of the original well field. A new well field was developed in 1962 between the original reference point and the plant site. A new reference point, selected and established in the last series of measurements in July 1963, is 3 miles east of the plant, and will be used to supplement the old reference point in future determinations of land-surface elevation. The maximum differential subsidence from 1955 to 1963 was 0.228 foot at a bench mark about 500 feet from well PR-61-48-205. At the time of the latest subsidence measurements (1963), the estimated water-level difference between the original reference point and the point of maximum subsidence was approximately 25 feet. On the assumption that the original water level was the same at both points and that subsidence was directly related to the difference in decline in water levels, the ratio of subsidence to water-level decline would be 0.228 foot for 25 feet, or 0.912 foot for 100 feet. On the basis of the estimated declines of water levels of 140 feet at the point of maximum subsidence and 115 feet at the original reference point and the subsidence rate of 0.912 foot per 100 feet of water-level decline, a total subsidence of 1.28 feet would be indicated at the point of maximum subsidence, and 1.05 feet of subsidence at the original reference point. Winslow and Doyel (1954, p. 419-420) reported the ratio between the subsidence of the land surface and the decline of artesian pressure head to be about 1 foot of subsidence to 100 feet of decline. The ratio was determined in the northern part

of the Houston-Galveston region where the aquifers have a relatively high sand percentage comparable to that of the report area.

Some subsidence has probably taken place in the vicinity of the irrigation wells in south Jasper and Newton Counties. At the present (1965), land subsidence is not a serious problem, except locally, in Jasper and Newton Counties; however, subsidence could become serious if water levels continue to decline.

Well Construction

Generally, when a well is to be constructed for public-supply or industrial use, a test hole is drilled to the depth desired. Formation samples are collected during drilling, and upon completion of the test hole an electric log is run so that the occurrence of sands containing fresh water can be ascertained. In some such holes, tests are made to determine the quality of the water and the transmissibility of individual sands.

If favorable conditions are indicated by the data collected, the test hole is usually reamed to the top of the first sand that is to be screened; and the surface casing is then installed and cemented into place. The diameter of the surface casing ranges from 12 to 20 inches.

The section to be screened is then reamed with the largest drilling bit that can pass the surface casing. This step is followed by the use of an underreamer, a device that expands and cuts a hole larger than the diameter of the surface casing. Usually the hole is underreamed to a diameter of 30 inches. The blank pipe and screen are then installed. The bottom of the screen is closed off with a back-pressure valve which permits the use of fluid to keep the hole clean during the placing of the screen but prevents water, sand, or gravel from entering through the bottom of the string. "Gravel," which is mostly sand, is pumped into the annular space between the screen and the formation by means of a gravel tube that is withdrawn as the space is filled. The gravel reservoir--the space between the lower part of the surface casing and a blank liner connected to the screen (Figure 23)--is also filled with gravel. The construction of a typical industrial or public-supply well is shown in Figure 23. The screen is pipe, 6 to 14 inches in diameter, that has been perforated and wrapped with stainless steel wire to form a screen. Where corrosion is a problem, the pipe is also stainless steel. Generally the openings in the screen, which range from 0.016 to 0.050 inches, are larger than the sand particles in the formation but smaller than those in the gravel envelope after the development of the well. Blank pipe of the same diameter as the screen is used to separate screens.

The well is developed by surging, swabbing, pumping, backwashing, and the use of chemicals until the specific capacity and sand-water ratio are satisfactory. The well is then tested by pumping from 4 to 24 hours and samples of water for chemical and bacterial analyses are collected. One well in Newton County, constructed by this procedure, reportedly produced 3,970 gpm.

The size and type of pump installed depends upon the pumping lift and the quantity of water needed. The larger public-supply and industrial wells have high-capacity, deep-well turbine pumps powered by electricity. Irrigation wells are equipped with the same type of pumps, but are usually powered by diesel or gas motors. Pump settings in 1965 ranged from 100 to 400 feet below land surface.

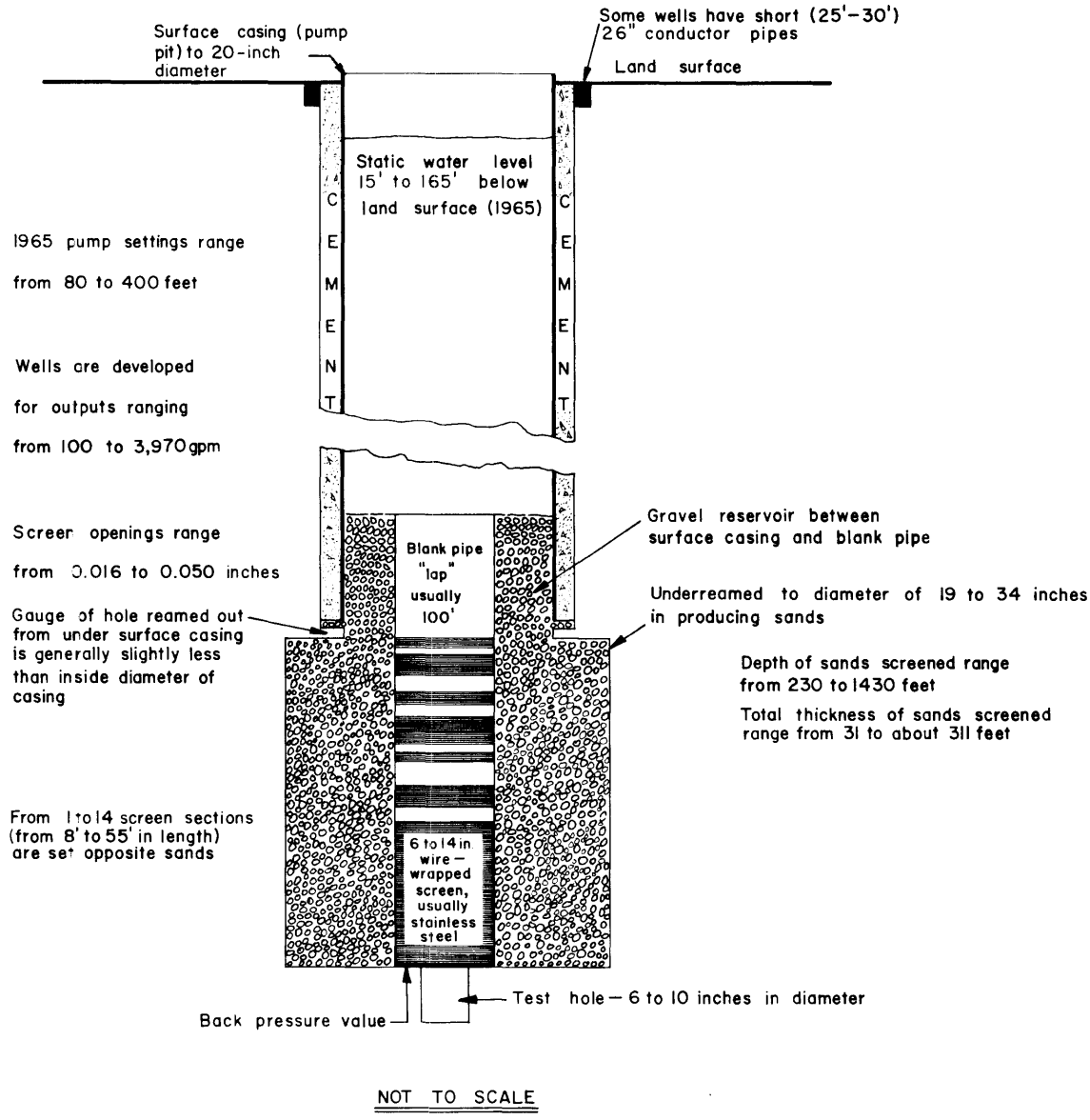


Figure 23

Construction of a Typical Large-Capacity Well

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Shallow dug wells, usually 30 to 36 inches in diameter, were common in the area prior to 1945 and some are still being constructed. However, in the report area most of the modern, small-capacity wells that furnish water for domestic use and for small industries are drilled wells that have been completed with a single screen. In this type of well, the screen is an integral part of the pipe that conducts the water out of the well. The sizes of the screen and pipe range from 1-1/4 to 4 inches. In some small-capacity wells, more than one size of screen or pipe may be used. In the construction of some small public-supply wells, 4- or 6-inch casing is placed and cemented from the surface to the top of the sand. A screen of slightly smaller size is then lowered through the pipe and set into the sand. The screen is lowered on a short section (1 to 10 feet) of blank pipe which has a lead nipple on top. The lead nipple is battered down to form a seal between the pipe and the surface pipe.

A variety of screen types is available, but stainless steel and plastic have become the most widely used because of their resistance to corrosion by acid water. Plastic is coming into widespread use as the material for conductor pipe and screens in the small and relatively shallow wells. Stainless steel screen is used in the larger wells. Most of the smaller wells are now being equipped with air lifts, instead of the traditional centrifugal and jet pumps. The rapid and recent adoption of the air lift has resulted from the general realization that this method of lift reduces most iron and corrosion problems. Submersible pumps are used in the small wells, especially where iron stain is not a problem.

CHEMICAL QUALITY OF GROUND WATER

The chemical analyses of water from selected wells in the report area are given in Table 7. The quality of water commonly determines its suitability for use. A general classification of water, according to dissolved-solids content, is as follows (Winslow and Kister, 1956, p. 5):

Description	Dissolved-solids content (parts per million)
Fresh	Less than 1,000
Slightly saline	1,000 to 3,000
Moderately saline	3,000 to 10,000
Very saline	10,000 to 35,000
Brine	More than 35,000

The U.S. Public Health Service (1962, p. 7) has established standards for the chemical quality of water to be used on common carriers engaged in interstate commerce. These standards are commonly used in evaluating water for use as a public supply. The following are the limits of concentration for some of the constituents.

Description	Concentration (parts per million)
Chloride (Cl)	250
Fluoride (F)	(*)
Iron (Fe)	.3
Manganese (Mn)	.05
Nitrate (NO_3)	45
Sulfate (SO_4)	250
Total dissolved solids	500

*According to the Public Health Service (1962, p. 41), the optimum fluoride level for a given community depends on climatic conditions because the amount of water (and consequently the amount of fluoride) ingested is influenced primarily by air temperature. The optimum value of 0.8 ppm (parts per million) in Jasper and Newton Counties is based on the annual average of maximum daily air temperature of 79.1°F at Beaumont. Presence of fluoride in average concentrations greater than twice this value (0.8 ppm), or 1.6 ppm, would constitute grounds for rejection of the supply. No excessive concentrations of fluoride were found in Jasper and Newton Counties.

Water having concentrations of chemical constituents in excess of the recommended limits may be objectionable for various reasons. Maxcy (1950, p. 271), in relating nitrate concentrations to the occurrence of methemoglobinemia ("blue-baby" disease), recommends an upper limit of 44 ppm nitrate as NO_3 in water used for infant feeding.

In the 1942 well inventory of Jasper and Newton Counties, analyses of water from 41 shallow wells (11 to 57 feet deep) in the Catahoula Sandstone and the Jasper, Chicot, and Evangeline aquifers showed more than the recommended limit of nitrate concentration. No deep wells are known that yield water with excessive nitrate content. Shallow wells were not as prevalent in 1963 and 1964 as in previous years, and only a few shallow wells were sampled. One of these, a 34-foot-deep well, yielded water with an excessive amount of nitrate. Probably the majority, if not all, of these wells were polluted by sewage or by other organic material from surface water entering the wells.

Water having a chloride content exceeding 250 ppm may have a salty taste, and sulfate in water in excess of 250 ppm may produce a laxative effect. Both constituents are discussed further in the portions of this report section concerning aquifers.

Excessive concentrations of iron and manganese in water cause reddish-brown or dark gray precipitates that discolor clothes and stain plumbing fixtures. The recommended limit for iron is 0.3 ppm. Amounts of iron in excess of the recommended limit are common in water from all the aquifers in the report area, and iron stain and red water are, or have been, common complaints.

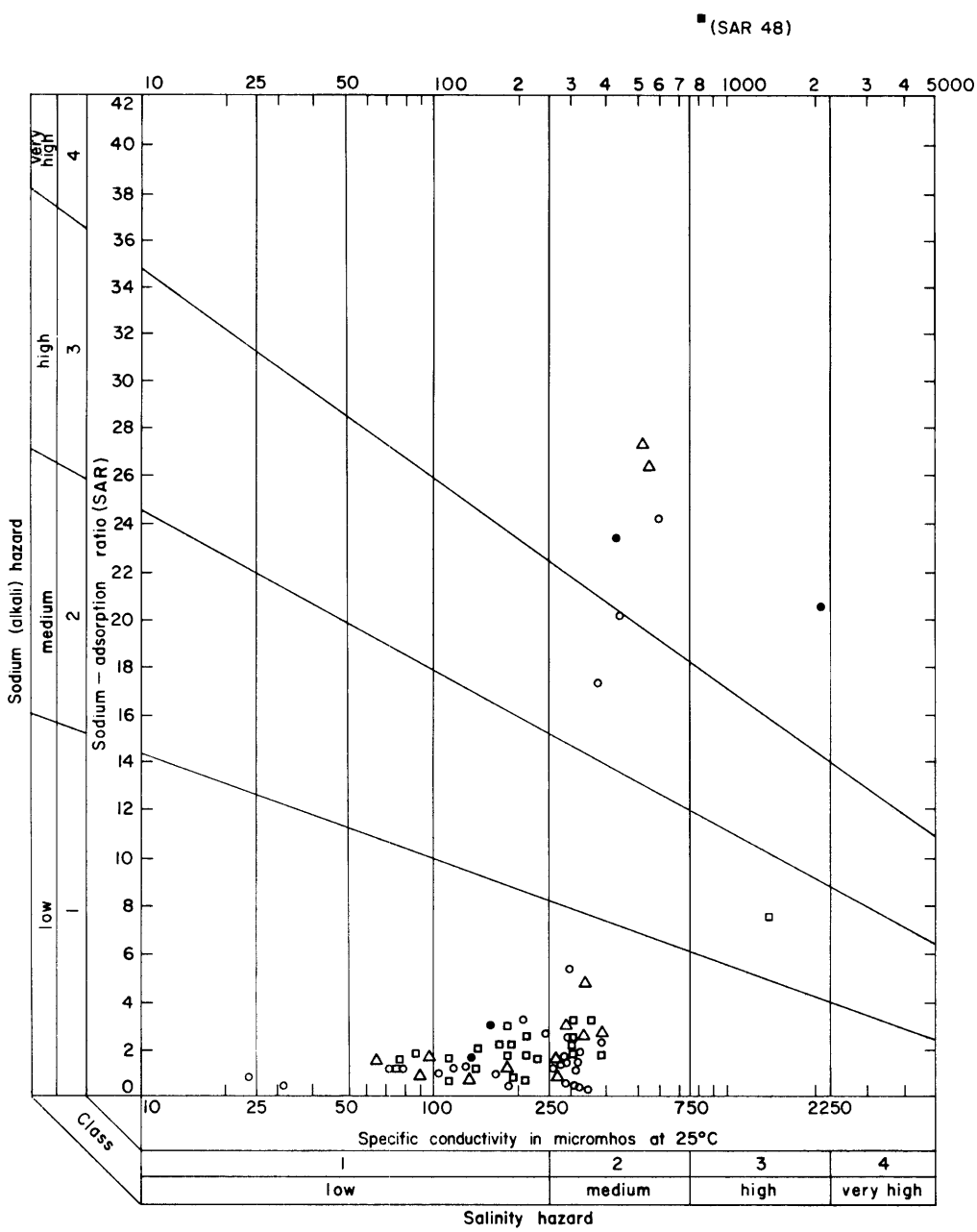
Iron in the water pumped from the aquifers underlying the two-county area comes from two sources: (1) iron in solution in the ground water (Chicot aquifer produces water of this type), and (2) iron derived from the corrosion of the well casing, pump, and pipes by acid (low pH) ground water. Corrosiveness of water generally increases with decreasing pH. Laboratory determinations of iron and pH of a large number of samples are given in Table 7. The pH values shown in the table probably are not representative of the actual pH of the water in the aquifer. The pH of water samples may change (generally increases) during storage in the laboratory.

As previously mentioned, the use of air lift reduces most of the iron and corrosion problems in domestic supplies. The use of plastic material for conductor pipe and screen in the small and relatively shallow wells and the use of stainless steel for screen in the larger wells also helps to control the corrosion problems. The water for domestic use is usually stored in large tanks. The iron precipitate is allowed to settle to the bottom and water is then withdrawn from the top of the tank.

Calcium and magnesium are the principal constituents responsible for hardness in water. Hardness causes an increase in the consumption of soap and induces the formation of scale in hot-water heaters and water pipes. A classification commonly used with reference to hardness is as follows: 60 ppm or less, soft; 61 to 120 ppm, moderately hard; 121 to 180 ppm, hard; and more than 180 ppm, very hard. If calcium carbonate causes more than 75 ppm hardness in water to be used in steam boilers (American Society for Testing Materials, 1959, p. 24), then the water should be treated to prevent formation of scale. In high-pressure boilers, the tolerance is much less than 75 ppm. One of the major items of concern to most industries is the development of water supplies that do not contain corrosive or scale-forming constituents which affect the efficiency of boilers or cooling systems. Suggested water-quality tolerances for a number of industries have been summarized by Hem (1959, p. 253) and Moore (1940). Hardness of the ground water is not a problem in most of Jasper and Newton Counties.

The suitability of water for irrigation depends on the chemical quality of the water and on other factors, such as soil texture and composition, types of crops, irrigation practices, and climate. The most important chemical characteristics pertinent to the evaluation of water for irrigation are: the proportion of sodium to total cations, an index of the sodium hazard; total concentration of soluble salts, an index of the salinity hazard; RSC (residual sodium carbonate); and the concentration of boron. A system of classification commonly used for judging the quality of water for irrigation was proposed by the U.S. Salinity Laboratory Staff (1954, p. 69-82). The classification is based primarily on the salinity hazard as measured by the electrical conductivity of the water and the sodium hazard as measured by the SAR (sodium-adsorption ratio). This classification was used to prepare Figure 24 which includes analyses from five of the water-bearing units. However, this classification is not directly applicable to the report area because of the high rainfall. If the use of water of questionable quality is contemplated, then the type of soil to be watered, the local conditions of drainage, and the crops to be irrigated should be given consideration.

An excessive concentration of boron renders a water unsuitable for irrigation. Scofield (1936, p. 286) indicated that boron concentrations of as much as 1 ppm are permissible for irrigating most boron-sensitive crops and that



EXPLANATION

- □ Chicot aquifer
- △ Evangeline aquifer
- ○ Jasper aquifer
- ● Catahoula Sandstone
- ■ Jackson Group

Figure 24

Classification of Irrigation Waters

(Modified from U. S. Salinity Laboratory Staff, 1954, p. 80)

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

concentrations of as much as 3 ppm are permissible for the more boron-tolerant crops. The highest boron concentration shown by the analyses (Table 7) is 1.8 ppm. Most analyses show a boron concentration of less than 1 ppm.

Another factor in assessing the quality of water for irrigation is the RSC (residual sodium carbonate) of the water. Excessive RSC will cause the water to be alkaline, and the alkaline water will cause the organic material of the soil to dissolve. The soil may become a grayish black. The affected soil is referred to as "black alkali." Wilcox (1955, p. 11) states that laboratory and field studies have resulted in the conclusion that water containing more than 2.5 epm (equivalents per million) RSC is not suitable for irrigation. Water containing from 1.25 to 2.5 epm is marginal, and water containing less than 1.25 epm RSC is probably safe. Correct irrigation practices and proper use of amendments might make possible the successful use of marginal water for irrigation. The degree of leaching in Jasper and Newton Counties may raise, to some extent, the permissible limits of water quality.

The temperature of ground water is often of great importance to industries and to others planning to use the water. Ground water has a more uniform temperature than surface water. The temperatures of water samples are given in Table 5. The thermal gradient is about 1°F per 64 feet of depth for the Jasper aquifer in Jasper and Newton Counties. This is a steeper gradient than exists downdip in the Evangeline and Chicot aquifers. An even steeper gradient exists in the older beds. The temperature gradient of the flowing well in the Jackson Group north of Rockland in northwest Jasper County is about 1°F per 50 feet.

Following is a discussion of the water quality of the respective water-bearing units.

Major Aquifers

Jasper Aquifer

In northern Jasper County, the Jasper aquifer provides water for domestic, municipal, and recreational use, and for small industries. All water being used from the Jasper is fresh. In this aquifer, saline water is present only at depth and generally at a considerable distance downdip (Figures 5 and 28).

Of the water samples collected in the report area, only one contained more than 500 ppm dissolved solids. It was from a well (PR-61-16-301), 13 feet deep, which yielded water that contained 503 ppm dissolved solids and was also high in nitrate. Fifteen shallow wells in the Jasper aquifer yielded water whose nitrate content was higher than recommended. No samples showed excessive chloride, fluoride, or sulfate, by U.S. Public Health Service (1962) standards. The iron problem in water from wells in this aquifer is usually caused by the corrosion of pipes, fixtures, and casing by acid (low pH water). Silica content ranged from 10 to 78 ppm, and hardness from 1 to 408 ppm. Much of the water is soft. The well that yielded very hard water (408 ppm) was PR-61-16-301. The silica content of most of the water is high enough to require treatment for boiler usage.

Evangeline Aquifer

All water being used from the aquifer is fresh. Water from only two wells contained more than 500 ppm dissolved solids. These wells, 16 and 26 feet deep, had a dissolved-solids concentration of 513 and 681 ppm, respectively. One of these wells and five other shallow wells in the Evangeline aquifer produced water containing an excess of nitrate according to Public Health Service standards. Analyses of water from the Evangeline aquifer indicate no excessive amounts of chloride, fluoride, or sulfate.

Most of the domestic wells that produce from the Evangeline downdip were drilled to escape red (iron) water in the shallower sands (Chicot); in general, the efforts were successful. Water used for the paper mill and as small supplies for the public does not contain iron in concentrations that are considered undesirable. Silica content ranges from 17 to 46 ppm; water used by the paper mill is in the 17 to 19 ppm range. Hardness ranges from 1 to 553 ppm with most samples being in the soft (less than 60 ppm) classification. The sample containing 553 ppm hardness came from a well 16 feet deep. This sample also contained 681 ppm dissolved solids.

The downdip limit of fresh water in the Evangeline aquifer occurs in Orange County. The interface of fresh and slightly saline water is shown on cross-sections A-A' (Figure 28) and D-D' (Figure 31) and on Figure 7. The thickness of sands containing fresh water in the Evangeline aquifer is shown in Figure 8.

Chicot Aquifer

The Chicot aquifer furnishes water for irrigation, municipal, and domestic uses in the southern half of Jasper and Newton Counties. The water in the Chicot in the report area is fresh. Analyses of water from four shallow wells in the aquifer had a dissolved-solids content of more than 500 ppm. A sample of water from well PR-61-40-503, completed at 27 feet in the clay that caps the Chicot aquifer, contained more than 1,000 ppm dissolved solids. The well was sampled in 1942, and the analysis showed a dissolved-solids content of 2,210 ppm. Small amounts of slightly saline water probably occur elsewhere in the clays of the area. The other three wells whose analyses showed dissolved solids in excess of 500 ppm are 65, 23, and 69 feet deep and contain 765, 518, and 803 ppm dissolved solids, respectively. Three of the analyses showed more than 250 ppm chloride, and the fourth showed 240 ppm chloride. One well is at a pumping station in an oil field where most of the trees have died. This well may have been contaminated by oil-field brine. The practice of disposing saline oil-field water into surface pits has been discontinued at this location, and all salt water is now injected back into saline-water-bearing horizons.

No wells completed in the Chicot aquifer produced water with excessive fluoride or sulfate, but most of the samples from this aquifer showed undesirable amounts of iron. Iron staining has been common; almost everyone using water from this aquifer reports past or present red water or rust problems. Water produced through plastic pipe stains as readily in some areas as that from iron pipes. The conclusion is that much of the formation water contains an undesirable amount of dissolved iron. This problem can be controlled by the use of air lift and settling tanks.

Silica content ranges from 12 to 74 ppm and is usually high enough to require treatment before use in modern high-pressure boilers.

Hardness ranges from 1 to 885 ppm, but most of the wells yield soft water. The well which produced water with a hardness of 885 ppm had a 2,218 ppm dissolved-solids concentration.

According to the 1942 well inventory, 18 shallow wells in the Chicot aquifer yielded water that contained more than 45 ppm nitrate. Of the wells sampled in 1964 only one yielded water with an excessive concentration of nitrate.

The nearest occurrence of slightly saline water in the Chicot aquifer is in Orange County near where Jasper, Newton, and Orange Counties have a common point. The thickness of fresh-water sands in this aquifer in Jasper and Newton Counties is shown on Figure 10.

Minor Aquifers

Yegua Formation

One well (PR-37-61-903), an oil test, reportedly flowed saline water from the Yegua Formation in Jasper and Newton Counties (Table 7).

Jackson Group

One well (PR-37-61-901), in extreme northwest Jasper County, is known to produce fresh water from the Jackson Group in the report area. The flow of fresh water is accompanied by traces of crude oil and contains dissolved natural gas. It is a sodium bicarbonate water with a dissolved-solids content of 459 ppm. The temperature of the water is 84.5°F.

Catahoula Sandstone

To date, the Catahoula Sandstone has undergone very little development in Jasper and Newton Counties. Because the Catahoula will be the only source of ground water in some of the area around and near the new Sam Rayburn Reservoir, the aquifer will probably be more heavily developed in the future. In the area of the reservoir, electric logs and chemical analyses show that the quality varies between wide limits. Water in the Catahoula ranges from a fresh, soft, sodium bicarbonate type to a moderately hard, sodium chloride type. Sulfate content was low in all samples, and the pH of all samples except one was near or above 7.0. The total dissolved solids ranged from 36 to 545 ppm. According to the 1942 inventory, a high concentration of nitrate was present in two shallow wells, one in Newton County and the other in Jasper County. No iron staining was noted during the fieldwork, but the analysis of a sample of water from a test well at the Sam Rayburn Reservoir construction site showed a concentration of 3 ppm iron.

Slightly to moderately saline water occurs in some places in the outcrop. The approximate location of the downdip limit of occurrence of fresh water in the Catahoula Sandstone is shown in Figure 11.

Relation of Fresh Ground Water to Salty Ground Water

Most of the geologic formations composing the fresh-water aquifers in Jasper and Newton Counties consist of sediments that were deposited beneath the Gulf of Mexico. These sediments either contained salt water at the time of deposition, or were deposited in fresh water and later were filled with salt water at a time of higher sea level. At some time after deposition, the sea receded and the process of recharge and discharge began. Fresh water furnished to the recharge area began to force the saline water downdip to discharge areas until the pressure exerted by the fresh water equaled the pressure of the salt water. Flushing of the salt water from the sands may have been accomplished in several ways. Winslow and others (1957, p. 387-388) concluded that the discharge in Harris County, under conditions similar to those in Jasper and Newton Counties, took place through the overlying clays. Before large withdrawals by wells began, the system was probably in dynamic equilibrium (that is, the fresh water-salt water interface was nearly stationery because the pressure head of the fresh water that was moving downdip from the outcrop and discharging upward through the clays was balanced by the static head of the salt water). The cross sections (Figures 28, 29, 30, 31) show the relation of fresh water and salt water in Jasper and Newton Counties.

In the vicinity of Evadale, large ground-water withdrawals from the Evangeline have upset the equilibrium in the aquifer. As a result, the salt water is probably moving updip in response to a reversal of the hydraulic gradient (Figure 20). Updip movement of salt water can be expected at any place where large concentrated withdrawals have lowered the artesian pressure head and upset the equilibrium at the fresh water-salt water interface. The rate of movement updip is slow, depending on the hydraulic gradient and permeability of the sands.

The fresh water-salt water interface in the Catahoula Sandstone occurs in the outcrop area in western Jasper County. Data for the accurate description of the interface and interfingering are not available, but an estimate of the position of the interface is shown on Figure 11 as the downdip limit of fresh water. The interface between fresh and slightly saline water for the sands of the Jackson Group is in the extreme northern part of Jasper County. The interface in the Yegua Formation is north of Jasper and Newton Counties.

Disposal of Oil-Field Brines

The oil-field brine produced during 1961 in Jasper and Newton Counties amounted to about 5.4 million barrels, of which 83.5 percent was returned to saline-water-bearing formations by injection wells and 16.5 percent was disposed of in open-surface pits (Texas Water Commission and Texas Water Pollution Control Board, 1963, p. 249-257 and 387-402).

Some of the open pits are located in outcrops of sand. Where the pits are in clay, they are ineffective as a means of disposing brine--because they simply fill and overflow to the nearest stream or sand outcrop. Another reason for the ineffectiveness of pits in clay (except for storage) is that the annual gross lake-surface evaporation of about 44 inches is offset by an annual precipitation of about 54 inches. Evaporation is also retarded by the presence of oil scum. Most of the water placed in unlined pits constructed in sandy soil seeps into the ground, and the generally water-saturated conditions of the

outcrop probably cause much of this water to be discharged into the nearest stream as spring or seepage flow. Because salt water has a higher specific gravity than fresh water, some of the former will sink and mix with naturally occurring ground water and remain in the ground water.

The dead trees and vegetation noted in the vicinity of the old pit locations in the southern and central parts of the report area probably died because of their proximity to disposal pits. In these areas, injection wells have replaced pits. More injection wells have been drilled since the 1961 inventory and the ratio of pit to injection-well disposal is improving.

In summary, the disposal of oil-field brines has not resulted in serious damage to the ground-water supplies of Jasper and Newton Counties. Deleterious local effects from bad practices were noted, but remedial action has been taken. Some contamination exists where pits are still used but the quantity of salt water is so small that the effects are local. All salt water should be disposed of in such a way that it cannot reach the streamways or ground-water reservoirs.

Protection of Water Quality in Oil-Field Drilling Operations

The Texas Railroad Commission requires that, in drilling wells, contractors use casing or cement to protect fresh-water strata from contamination. For the past decade, the Railroad Commission has received recommendations from the Texas Water Development Board and from its predecessors, the Texas Water Commission and the Texas Board of Water Engineers, concerning the depths to which the fresh water should be protected.

Where oil or gas fields are established the recommended depths are incorporated in some of the field rules. Figure 25 shows the amount of casing required by the Oil and Gas Division of the Railroad Commission of Texas and the depth of fresh to slightly saline water in these fields.

RELATION OF GROUND WATER TO STREAMFLOW

Measurements of stream discharge and related surface-water data have been made in Texas for many years. During the water year 1963-64, the following surface-water data were obtained by the U.S. Geological Survey in the report area: measurements of discharge and stage of streams at 9 stations; contents and stage of a reservoir at 1 station; measurements of discharge and stage at 5 partial-record stations; and chemical analyses and water temperatures at 1 station (U.S. Geol. Survey, 1965). The station locations are shown on Figure 27.

The discharge from springs and seeps contributes to the stream discharge in much of the report area. Hydrographs of the flow at gaging stations located in small watersheds in the report area indicate that almost all of the flow of perennial streams during the summer and early autumn is ground-water discharge. During the winter, when plant growth is at a minimum and the evaporation rate is lower, the rate of ground-water discharge is usually more than double the summer rate.

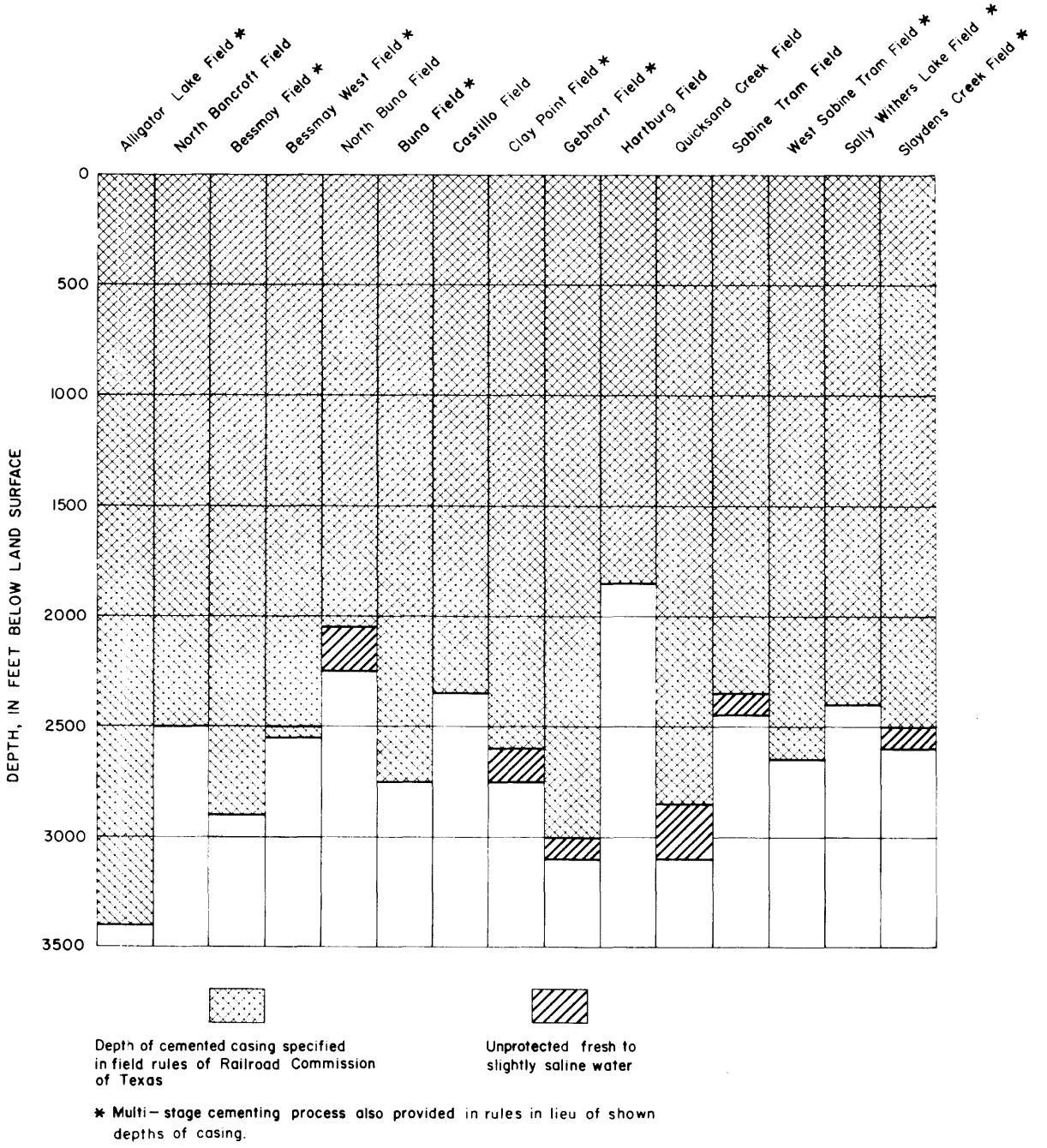


Figure 25

Comparison Between Depth to Base of Sand Containing Fresh to Slightly Saline Water and Amount of Surface Casing Required in Oil Fields

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Estimates of the annual rate of ground-water discharge, or rejected recharge, in representative watersheds in the report area are in the following table:

Station number	Location of station	Drainage area (sq mi)	Estimated annual rate of ground-water discharge	
			Cubic feet per second	Acre-feet per sq mi
8-285.1	Quicksand Creek near Bon Wier, Tex.	65.1	28	315
8-295	Big Cow Creek near Newton, Tex.	128	47	266
8-296	Big Cow Creek near Belgrade, Tex.	342[1/]	106	224
8-300	Cypress Creek near Buna, Tex.	69.2	.2	2
8-260 and 8-285	Sabine River basin (in Tex. and La.) between 8-260, Sabine River near Burkeville, Tex., and 8-285, Sabine River near Bon Wier, Tex.	747[2/]	350	339

[1/] Includes the drainage area of Big Cow Creek above station 8-295.
[2/] Estimated 375 sq mi in report area.

These watersheds include about 850 sq mi, or about 45 percent of the report area. From these data the ground-water discharge to streams in Jasper and Newton Counties is about 500,000 acre-feet per year, or 446 mgd.

AVAILABILITY OF GROUND WATER

The volume of ground water available for development--without depleting to below stream level the storage level in the outcrops--is dependent upon the rate of recharge to the aquifers. If the water table in the outcrops were lowered to the level of the stream beds, the rate of recharge would be at least as much as the sum of the water being discharged as base flow (500,000 acre-feet per year, or 446 mgd), plus the amount of water being transmitted by the aquifers at the present gradient, or 70,000 acre-feet per year (62 mgd). This sum is 570,000 acre-feet per year, or 508 mgd.

To withdraw this amount of water would require properly spaced wells and controlled rates of pumping. Ideal conditions are not likely to occur, and these requirements do not take into consideration all factors that will be encountered in the development of the aquifers in the report area. However, the 570,000 acre-feet per year rate gives some conception of the magnitude of water supply that can be safely developed on a continuous basis from the aquifers in Jasper and Newton Counties.

An immense quantity of ground water is in transient storage in the two counties. The average thickness of sand saturated with fresh water is more than 700 feet. On the basis of a porosity of 30 percent, the aquifers have enough fresh water to cover the surface of both counties to a depth of 210 feet. Not all of this water is recoverable. If the three aquifers were dewatered everywhere to a depth of 400 feet below land surface, and if only one-half of the water present in the sands were to be produced, then 44 million acre-feet of water would be available from storage. This quantity is equivalent to a body of water about 35 feet deep covering the surface of Jasper and Newton Counties, and is enough water to sustain the present (1965) usage for more than 750 years. The preceding figures are all conservative and do not include the removal from storage of water in the clay parts of the aquifers and aquicludes.

Of the 570,000 acre-feet per year estimated to be available, about 70,000 acre-feet per year, or 62 mgd, is being transmitted by the three major aquifers at the present gradients (Figures 19, 20, and 21). The determination of amount of water (17,000 acre-feet per year or 15 mgd) being transmitted in the Jasper aquifer was made along a line midway between the center of the outcrop and the downdip limit of fresh water in the aquifer. This line crosses the counties 1.5 miles north of Kirbyville. The determinations for the Evangeline (11,000 acre-feet per year or 10 mgd) and Chicot (42,000 acre-feet per year or 37 mgd) aquifers were made on a line midway between the centers of their respective outcrops and the southern county line. The downdip limit of fresh water for both aquifers occurs in Orange County. The line for the Evangeline aquifer extends eastward about a mile south of Call, and the one for the Chicot aquifer passes across the counties about a mile north of Buna. The 1963 and 1964 production of water in Jasper and Newton Counties was between 40 and 50 mgd, and in Orange County was 20 mgd, an amount approximately equal to that being transmitted by the three aquifers at the present gradient.

The total thickness of sand containing fresh water is an important factor in the delineation of areas favorable for future development of ground-water resources. Figure 26 shows the total thickness of sand containing fresh water in Jasper and Newton Counties. This map is a compilation of data given in Figures 6, 8, and 10 plus data for the Catahoula Sandstone and Jackson Group. The maximum thickness of these sands is in the central part of the report area, which is also the area where the fresh-water-bearing sand in the Jasper aquifer is thickest (Figure 6). Because there has been very little development of the Jasper aquifer, this area in the central part of Jasper and Newton Counties is regarded as the most favorable for the future development of ground-water resources.

More than 400 feet of sand saturated with fresh water is available in all of Jasper and Newton Counties south of a line crossing the north edge of the city of Jasper (Figure 26). Between this line and the southern boundary of the counties, the thickness increases to as much as 1,200 feet at Kirbyville. Southward from Kirbyville, the interface between slightly saline water and fresh water rises first through the Jasper aquifer, and then through the Evangeline aquifer; thus, at the southern boundary of the report area the Chicot aquifer and only the top part of the Evangeline aquifer contain fresh water. At some locations along the southern boundary, slightly less than 400 feet of fresh-water-bearing sand may be present.

North of the line through the city of Jasper, the thickness of saturated sand gradually decreases to about 200 feet near the updip limit of the Jasper

Figure 26

Approximate Total Thickness of Sand Containing Fresh Water

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Base from U. S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department

aquifer (Figure 6). In the northwestern part of Jasper County, where only the Catahoula Sandstone and older formations are present, the thickness of fresh-water-bearing sands is as small as 20 feet and could be as small as zero in some localities.

Wells capable of producing more than 1,000 gpm of fresh water can be constructed anywhere south of a line extending northeastward from the intersection of U.S. Highway 190 and the Tyler-Jasper county line to the intersection of State Highway 63 and the Texas-Louisiana state line.

CONCLUSIONS AND RECOMMENDATIONS

A large supply of fresh water is available in the aquifers of Jasper and Newton Counties. The proper development and maximum utilization of this supply will depend on the correct location and development of well fields. With good planning, all of the report area except the northwestern part of Jasper County will support large well fields.

Salt water in the downdip parts of the Jasper and Evangeline aquifers will move updip as development continues and the piezometric surface is lowered. Subsidence of the land surface will occur as a result of water-level declines in all the aquifers. Neither of these factors should impede development of the water resources but they should be considered in making plans for a type of development that provides the most fresh water with the least intrusion of salt water and that causes evenly distributed land subsidence.

In the southwestern part of Jasper County where the Evangeline aquifer has been partially developed, some subsidence has occurred, water levels have declined, and some movement of salt water probably has taken place. The movement of salt water and declines of water levels that have and will take place should be carefully evaluated before new well fields are constructed in this aquifer in the southern parts of Jasper or Newton Counties.

This report has described the basic framework of the aquifers, but continued collection of basic hydrologic data will be necessary if the problems which will accompany the development of the ground-water resources are to be understood and resolved. Hence, a continuing inventory should be made of all the new large-capacity wells, and should include the identification of the aquifers from which the water is being produced. The annual inventory of pumpage of water should be expanded and should include records of water pumped from individual wells and from the different aquifers.

The program of measuring water levels in observation wells should be expanded, and wells tapping all the aquifers should be included in the program. This information is needed to delineate the vertical hydraulic gradients between the aquifers, as well as to determine the direction and rate of lateral movement of water in the aquifers.

Periodic chemical quality resampling of water from key wells to chart the movement of salt water into the fresh-water parts of the aquifers should also be included in the continuing program. The observations should determine not only the lateral but also the vertical movement of salt water.

An expanded program for measuring subsidence is needed in Jasper and Newton Counties. Further delay in starting such a program will make difficult, if not impossible, precise determination of total subsidence. An enlarged network of bench marks should be run and leveled periodically. This program should be in conjunction with the continuing and expanding program for the collection of water-level and pumpage records, so that correlations of cause and effect can be made in the future.

As new wells are drilled in the area, aquifer tests should be made to obtain additional information on the hydraulic properties of the aquifers.

The continuing program of basic-data collection should extend into the adjoining counties because the development in those areas will affect the ground-water supplies in the report area. In addition to Jasper and Newton Counties, the area of observation should include parts of Orange, Tyler, Hardin, and Jefferson Counties. These observations would supplement similar observations being made in adjoining areas in Louisiana by the U.S. Geological Survey.

The ultimate objective of the continuing program should be to provide data for more precise quantitative evaluations of the aquifers in Jasper and Newton Counties. These evaluations are needed for more accurate predictions of the effects of future development on water levels, salt-water encroachment, and land-surface subsidence. In recent years, electrical-analog models have proved useful in the evaluation of aquifers. Such a model has been completed for the aquifers of the Houston area (Wood and Gabrysch, 1965). A preliminary model of the Chicot and Evangeline aquifers in Texas and Louisiana, including Jasper and Newton Counties, is now being constructed. The program recommended above would provide data that could be used in the model and thus aid in the proper planning and development of the ground-water resources of Jasper and Newton Counties.

REFERENCES CITED

American Society for Testing Materials, 1959, Manual on industrial water and industrial waste water: Am. Soc. for Testing Materials Spec. Tech. Pub. 148-D, 2d ed., 653 p.

Baker, B. B., Peckham, R. C., Dillard, J. W., and Souders, V. L., 1963a, Reconnaissance investigation of the ground-water resources of the Sabine River basin, Texas: Texas Water Comm. Bull. 6307, 57 p.

_____1963b, Reconnaissance investigation of the ground-water resources of the Neches River basin, Texas: Texas Water Comm. Bull. 6308, 67 p.

Baker, E. T., Jr., 1964, Geology and ground-water resources of Hardin County, Texas: Texas Water Comm. Bull. 6406, 179 p.

Baldwin, N. L., and McGuinness, C. L., 1963, A primer on ground water: U.S. Govt. Printing Office, Washington, 26 p.

Bernard, H. A., 1950, Quaternary geology of southeast Texas: Louisiana State Univ. doctoral dissertation 165 p.

Bernard, H. A., and Leblanc, R. J., 1965, Resume of the Quaternary geology of the northwestern Gulf of Mexico Province, in Quaternary of the U.S.: Princeton Univ. Press, p. 137-187.

Cooper, H. H., Jr., and Jacob, C. E., 1946, A generalized graphical method for evaluating formation constants and summarizing well-field history: Am. Geophys.; Union Trans., v. 27, p. 526-534.

Cromack, G. H., 1942, Records of wells, drillers' logs, water analyses and a map showing locations of wells in Jasper and Newton Counties, Texas: Texas Board Water Engineers duplicated rept., 50 p.

Deussen, Alexander, 1914, Geology and underground waters of the southeastern part of the Texas Coastal Plain: U.S. Geol. Survey Water-Supply Paper 335, 365 p.

Ferris, J. G., Knowles, D. B., Brown, R. H., and Stallman, R. W., 1962, Theory of aquifer tests: U.S. Geol. Survey Water-Supply Paper 1536-E, 173 p.

Fisk, H. N., 1940, Geology of Avoyelles and Rapides Parishes: Louisiana Dept. Conserv., Geology Bull. 18, 240 p.

Hackett, O. M., 1962, Ground-water levels in the United States, 1956-59, south-central states: U.S. Geol. Survey Water-Supply Paper 1549, 192 p.

Harder, A. H., 1960, Geology and ground-water resources of Calcasieu Parish, Louisiana: U.S. Geol. Survey Water-Supply Paper 1488, 102 p.

Hem, J. D., 1959, Study and interpretation of the chemical characteristics of natural water: U.S. Geol. Survey Water-Supply Paper 1473, 269 p.

Kennedy, W., 1892, A section from Terrell, Kaufman Co., to Sabine Pass on the Gulf of Mexico: Texas Geol. Survey 3d Ann. Rept., p. 45 and 62.

Leopold, L. B., and Langbein, W. B., 1960, A primer on water: U.S. Govt. Printing Office, Washington, 50 p.

Lowry, R. L., Jr., 1960, Monthly reservoir evaporation rates for Texas, 1940 through 1957: Texas Board Water Engineers Bull. 6006, 15 p.

Maxcy, D. F., 1950, Report on the relation of nitrate concentration in well waters to the occurrence of methemoglobinemia: Natl. Research Council, Bull. Sanitary Eng., p. 265-271.

Meinzer, O. E., 1923a, The occurrence of ground water in the United States, with a discussion of principles: U.S. Geol. Survey Water-Supply Paper 489, 321 p.

_____1923b, Outline of ground-water hydrology, with definitions: U.S. Geol. Survey Water-Supply Paper 494, 71 p.

Meinzer, O. E., and others, 1942, Physics of the earth, v. 9 of Hydrology: New York, McGraw-Hill Co., Inc., p. 385-478.

Moore, E. W., 1940, Progress report of the committee on quality tolerances of water for industrial uses: New England Water Works Assoc. Jour., v. 54, p. 263.

Piper, A. M., 1953, Nation-wide situation, in Phys. and Econ. Found. of Nat. Resources, v. IV of Subsurface facilities of water management and patterns of supply-type area studies: U.S. Cong., House of Representatives, Comm. on Interior and Insular Affairs, p. 1-120.

Rogers, J. E., and Calandro, A. J., 1965, Water resources of Vernon Parish, Louisiana: Water Resources Bull. no. 6, 104 p.

Rose, N. A., 1943, Progress report on the ground-water resources of the Texas City area, Texas: U.S. Geol. Survey open-file rept., 45 p.

Scofield, C. S., 1936, The salinity of irrigation water: Smithsonian Inst. Ann. Rept., 1934-35, p. 27.

Taylor, T. U., 1907, Underground waters of the Coastal Plain of Texas: U.S. Geol. Survey Water-Supply Paper 190, 73 p.

Texas Water Commission and Texas Water Pollution Control Board, 1963: A statistical analysis of data on oil field brine production and disposal in Texas for the year 1961 from an inventory conducted by the Texas Railroad Commission, RRC District 3, v. 2, 473 p.

Todd, D. K., 1959, Ground-water hydrology: New York, John Wiley and Sons, Inc., 336 p.

Tolman, C. F., 1937, Ground water: New York, McGraw-Hill Book Co., 593 p.

U.S. Geological Survey, Surface water records of Texas: 1965, Records for 1964, 479 p.

U.S. Public Health Service, 1962, Public Health Service drinking water standards: Public Health Service Pub. 956, 61 p.

U.S. Salinity Laboratory Staff, 1954, Diagnosis and improvement of saline and alkali soils: U.S. Dept. of Agr. Handb. 60, 160 p.

Veatch, A. C., 1906, Geology and underground water resources of northern Louisiana with notes on adjoining districts, in Geol. Survey of Louisiana, Report of 1905: Louisiana State Expt. Sta., Louisiana Geol. Survey Bull. 4, p. 261-457.

Wenzel, L. K., 1942, Methods for determining permeability of water-bearing materials, with special reference to discharging well methods: U.S. Geol. Survey Water-Supply Paper 887, 192 p.

Wesselman, J. B., 1965, Geology and ground-water resources of Orange County, Texas: Texas Water Comm. Bull. 6516, 112 p.

Wilcox, L. V., 1955, Classification and use of irrigation waters: U.S. Dept. Agr. Circ. 969, 19 p.

Winslow, A. G., and Doyel, W. W., 1954, Land-surface subsidence and its relation to the withdrawal of ground water in the Houston-Galveston region, Texas: Econ. Geology, v. 49, no. 4, p. 413-422.

Winslow, A. G., Doyel, W. W., and Wood, L. A., 1957, Salt water and its relation to fresh ground water in Harris County, Texas: U.S. Geol. Survey Water-Supply Paper 1360-F, p. 375-407.

Winslow, A. G., and Kister, L. R., Jr., 1956, Saline water resources of Texas: U.S. Geol. Survey Water-Supply Paper 1365, 105 p.

Winslow, A. G., and Wood, L. A., 1959, Relation of land subsidence to ground-water withdrawals in the upper Gulf Coast region, Texas: Mining Eng., p. 1030-1034.

Wisler, C. O., and Brater, E. F., 1959, Hydrology: New York, John Wiley and Sons, 408 p.

Wood, L. A., and Gabrysch, R. K., 1965, Analog model study of ground water in the Houston district, Texas: Texas Water Comm. Bull. 6508, 103 p.

Wood, L. A., Gabrysch, R. K., and Marvin, Richard, 1963, Reconnaissance investigation of the ground-water resources of the Gulf Coast region, Texas: Texas Water Comm. Bull. 6305, 123 p.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties

All wells are drilled and cased with iron unless otherwise noted in the remarks column.
Water levels : Reported water levels given in feet; measured water levels, in feet and tenths.
Method of left and type of power: A, airleft, B, bucket and rope; C, cylinder; Cf, centrifugal; E, electric; G, gasoline, butane, or Diesel engine; H, hand; J, jet; N, None; T, turbine; W, windmill. Number indicates horsepower.
Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, livestock.
Water-bearing unit
Geologic : Tcs, Catahoula Sandstone; Tj, Jackson Group; Ty, Yegua Formation.
Hydrologic : J, Jasper aquifer; Ev, Evangeline aquifer; Ch, Chicot aquifer.

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
Jasper County												
PR-36-49-801	George Caylor	--	1934	14	36	Tcs	242	12.9	Oct. 28, 1964	N	N	Dug well. Concrete casing. Not used in 1964.
* 802	Gilmer Lumber Co.	Jake Giles	--	1,320	8	Tj, Ty	300	22	1907	N	N	Formerly supplied water for sawmill. Old well. Reported caved and abandoned in 1942.1/
57-101	E. P. Dowell	M. M. Merritt	1959	233	2	Tcs	268	80	1959	A,E	D	Screened from 223 to 233 ft.
* 102	Paul A. Teegarden, Inc.	Layne-Texas Co.	1959	340	4	Tcs	225	32	1959	T,E	D	Casing: 4-in. to 312 ft cemented. Screen 2 7/8-in. from 317 ft to bottom.1/
103	Kirby Lumber Co.	--	1906	800	8	Tcs	220	--	--	N	N	Formerly supplied water for sawmill. Abandoned in 1940.
201	T. M. Ellis, Jr.	-- Balkin	1963	185	2	Tcs	236	40.5	Oct. 28, 1964	A,E	D	Screened from 177 ft to bottom.
* 202	J. Z. Ziegler	--	--	17	36	J	260	8.2	May 14, 1942	B,H	D,S	Dug well. Wood casing. Old well. Reported weak supply of water in dry weather.
* 203	Mrs. S. P. Garlington	--	1932	30	36	J	400	--	--	C,H	D,S	Dug well. Concrete casing.
* 401	J. M. Lane	George Merritt	1961	156	2	J	380	24.8	Mar. 31, 1965	A,E	D,S	Screened from 148 to 156 ft. Temp. 60°F.
* 402	J. L. Cooper	J. L. Cooper	1937	32	36	J	350	25.7	May 14, 1942	B,H	D,S	Dug well. Wood casing.
* 501	Roy Davis	--	1930	41	6	J	450	28.0	do	B,H	D	Bored well.
* 701	Texas Forest Service	C. C. Camp	1936	84	6	J	380	74.6	do	B,H	D	Casing: 6-in. tile. Horton Lookout Tower well 36.
801	Magnolia Pipeline Co.	Magnolia Pipeline Co.	1926	590	6	J	475	100.9 108.1	May 14, 1942 Oct. 26, 1964	N	N	Observation well. Not used.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

	Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
	*PR-36-57-901	Harrisburg Water Supply Corp.	C. C. Innerarity	1964	718	7, 6, 4	J	485	212.7	Oct. 27, 1964	T,E, 5	P	Casing: 7-in. to 212 ft, 6-in. from 212 to 300 ft, and 4-in. from 300 to 420 ft... Screen from 678 to 718 ft with 4-in slotted pipe. Gravel-packed. Reported discharge 25 gpm with drawdown of 4 ft in 1964.[1]
	902	Dehon Parker	--Morgan	1961	309	2	J	484	154.6	do	N	N	Screened with brass from 289 ft to bottom.
*	903	J. E. Parker	--	--	25	48	J	510	11.6	May 14, 1942	B,H	D,S	Dug well. Open hole. Reported weak supply of water in summer. Old well.
*	37-56-903	J. P. Short	J. P. Short	1912	24	36	Tcs	220	12.6	do	B,H	D,S	Dug well. Wood casing. Reported sand and gravel from 18 ft to bottom. Old well.
*	61-801	Mrs. -- Smith	--	--	19	36	Tcs	142	12.4	May 5, 1942	B,H	D,S	Dug well. Wood casing.
*	901	U.S. Government Angelina National Forest	Lake Charles Naval Store Co.	1927	986	12	Tj	135	+	Mar. 16, 1960	Flows	D	Estimated flow 2 gpm in 1942, and 4 gpm in 1960. Measured flow 5 gpm in 1965. Temp 84°F.
	902	E. C. Boiton et al. well 1	J. C. Bonham	1958	1,410	--	--	130	--	--	--	--	Oil test.
*	903	Kountze Bros. well 1	--	1907	1,249	--	Ty	140	--	--	--	--	Oil test. Well flowed when drilled. Reported sand from 65 to 85 ft. Yegua from 1,229 to 1,241 ft. Well 635 in Water-Supply Paper 335.[1]
	904	Bob Boykin well 1	Great Lakes Oil Syndicate	1928	1,298	--	Ty	130	--	--	--	--	Oil test.[1]
	62-401	T. O. Sutton & Sons et al. well 1	Chessher, Sutton, & Davis Drilling Co.	1957	1,302	--	--	120	--	--	--	--	Oil test.
	701	Nona Mills et al. well 1	Humble Oil & Refining Co.	1944	10,100	--	--	109	--	--	--	--	Do.
	702	B. F. Boykin well 2	Midwest Co. of Texas	1940	1,996	--	--	106	--	--	--	--	Oil test.[1] [2]
*	603	do	Black Gold Petroleum Co.	1932	155	4	Tcs	100	+	May 7, 1962	Flows	D,S	Formerly supplied water for drilling rigs. Estimated flow 4 to 5 gpm in 1942....
	63-501	George B. Dean	--	1936	86	4	Tcs	170	10	1936	N	N	Seismic test hole.
*	601	Leaky Mays	Frank Balcar	1924	360	6	Tcs	150	+	May 7, 1962	Flows	D,S	Estimated flow 3 gpm in 1942; flow 1 gpm, Mar. 16, 1960. Formerly supplied water for sawmill and town of Block.
	602	H. Ralph well 1	Guffey Oil Co.	1905	2,277	--	--	165	--	--	--	--	Oil test.[1]

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
*PR-37-63-701	Joe Tannahill	George Merritt	1961	422	8, 4	Tcs	110	+	July 24, 1965	Flows	D	Estimated flow 100 gpm. Screen from 392 to 422 ft. Well first drilled to 175 ft with 8-in. casing set to 147 ft. Reported flowing salty water. Hole deepened to 422 ft. Temp. 71°F.
* 702	do	do	1961	535	2	Tcs	115	19	1961	A,E	D	Screen from 527 to 535 ft. Originally completed at 250 ft. Reported produced gas which would burn.
* 703	O. P. Pace	--	1930	22	6	Tcs	150	9.4	May 5, 1942	B,H	D,S	Bored well. Wood casing.
* 801	I. S. Bean	Cleveland & East Texas Oil Co.	1903	1,400	6	Tcs	140	30	1906	N	N	Abandoned in 1908.[1/]
* 802	Frankie Moody	--	--	17	36	J	142	5.5	May 7, 1942	B,H	D,S	Dug well. Wood casing. Old well.
* 901	Jasper Investment Corp.	-- Simmons	1964	350	5	Tcs	95	+	Apr. 27, 1965	Flows	S	Open hole from 40 ft to bottom. Temp. 71°F.
* 902	C. A. Woods	George Merritt	1963	149	2	Tcs	110	5	1963	J,E, 1/3	D	Field tested specific conductance 1,600 at 72°F - 1965.
* 903	Snooks Dean	-- Primrose	1965	330	2	Tcs	110	+ 9	Apr. 1965	Flows, Cf,E	D	Field tested specific conductance 4,000 at 72°F - 1965. Measured flow 10 gpm in 1965. Well also produces gas.
* 904	Ray Prewitt	Merritt Bros.	1963	36	2	J	110	12	1963	Cf,E	D	Screened from 28 ft to bottom. Field tested specific conductance 200 at 70°F.[1/]
* 64-301	Kirby Lumber Co.	--	--	24	36	Tcs	210	17.7	May 14, 1942	C,E, 1/2	D,S	Dug well. Concrete casing. Old well.
401	U.S. Army Corps of Engineers	Layne-Texas Co.	1960	419	--	Tcs	137	32	1960	N	N	Water level reported in sand from 269 to 289 ft. Former test well. Chloride content reported by driller: 269 to 289 ft, 350 ppm; 163 to 183 ft, 855 ppm; 331 to 351 ft, 547 ppm.
* 102	do	Paul Hardeman, Inc.	1962	300	4 1/2	Tcs	259	148 178.6	1962 Nov. 19, 1964	T,E	D,P	Screen from 233 to 263 ft. Reported discharge 10 gpm with 16 ft of drawdown when drilled. Dewatering of dam site for construction purposes had lowered water surface in sands in 1964.[1]
* 403	do	Layne-Texas Co.	1963	250	--	Tcs	190	114.4	Nov. 19, 1964	T,E	P	Drilled to furnish permanent supply for administration buildings and vistors area at Sam Rayburn Dam.
* 701	Archie Hamilton	--	--	19	36	J	120	13.7	May 7, 1941	B,H	D,S	Dug well. Wood casing. Old well.
61-07-101	C. S. Primrose	Horace Byerly	1930	30	6	J	120	18	Oct. 1963	J,E	D,S	Bored well. Tile casing.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
*PR-61-07-102	Mrs. Fannie Primrose	H. E. Primrose	1916	42	30	J	120	18.6	Oct. 18, 1963	J,E	D,S	Dug well. Concrete casing.
103	McShane Estates well 1	C. E. V. Lenz	1925	3,504	--	--	100	--	--	--	--	Oil test.
201	J. R. Byerly	H. P. Byerly	1953	30	8	J	120	19.6	Oct. 18, 1963	J,E, 1/3	D	Bored well. Tile casing.
* 202	do	J. R. Byerly	1942	22	7	J	150	18	1942	C,H	D,S	Bored well. Reported white sand from 15 to 22 ft. Tile casing.
301	Tennessee Gas & Transmission Co. well 4	Layne-Texas Co.	1947	331	10, 5	J	110	+	1960	Flows, T,E,10	Ind	Casing: 10-in. to 296 ft. Screen from 303 to 328 ft with 26 ft of 5-in. brass screen. Gravel-walled. Estimated flow 75 gpm in 1963.[1]
* 302	Tennessee Gas & Transmission Co. well 5	Tennessee Gas & Transmission Co.	1948	344	10, 6	J	112	+	1960	Flows, T,E, 7 1/2	D,Ind	Estimated flow 60 gpm in 1963. Screen from 321 to 344 ft. 19-in. underream, gravel-walled.
303	do	Layne-Texas Co.	1945	429	12, 6	J	110	+	1945	Flows	Ind	Screen from 293 to 338 ft. Measured flow 8 gpm in 1963.[1]
304	Willie Bryan	--	--	30	24	J	125	19.7	Oct. 10, 1963	J,E	D	Dug well. Concrete casing.
305	Tennessee Gas & Transmission Co.	--	1944	300	--	J	110	--	--	--	--	Capped.
* 306	Sol Pace	Sol Pace	1938	17	36	J	126	8.6	May 7, 1942	B,H	D,S	Dug well. Wood casing. Reported fails in drought.
* 601	State Fish Hatchery	Frank Balcar	1931	300	4	J	120	+	Apr. 10, 1942	Flows, Cf,E, 1/2	D,S	Reported flow 3 to 5 gpm in 1942. Measured flow 3 gpm in 1960 and 1964. Temp. 68°F.
602	B. S. Ratcliff	-- Mitchell	1954	338	4	J	110	+	1960	Flows, Cf,E	D,S	Estimated flow 20 gpm in 1960.
* 603	Ed Lynn	Frank Balcar	1928	338	4	J	105	+	Apr. 10, 1941	Flows	D,S	Reported flow 110 gpm when drilled. Owner reports shutin pressure of 45 psi. Screen from 298 ft to bottom. Temp. 71°F.
* 604	Martin Dies	Layne-Texas Co.	1941	364	6	J	130	20	Sept. 1940	Flows, T,E,3	D,S	Drilled to supply water for swimming pool and fish pond. Measured flow 62 gpm in 1940.[1]
605	Roy Nolan	George Merritt	1960	200	2	J	100	+	Mar. 30, 1965	Flows, Cf,E	D,S D	Estimated flow 15 gpm in 1965.
606	D. Rhodes	do	1955	200	2	J	100	+	--	Flows, Cf,E	D	Estimated flow 20 gpm in 1965.
607	E. Woods	do	1965	200	2	J	100	+ --	--	Flows	D	Estimated flow 5 gpm in 1965.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

	Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
									Below land-surface datum (ft)	Date of measurement			
	PR-61-07-608	David Henderson	George Merritt	1965	200	2	J	100	+	--	Flows	D	Estimated flow 5 gpm in 1965.
	609	Arvetta Barnes	-- Primrose	1963	185	2	J	100	+	--	Flows, C,E	D	Estimated flow 5 gpm in 1965. Reported drilled in clay for first 120 ft.
*	610	Robert Shelby	Seismograph Crew	1940	100	3	J	100	+	May 6, 1942	Flows	D,S	
	611	Martin Dies	Frank Balcar	1940	411	6	J	140	--	--	A,E	D	Reported white sand from 385 ft to bottom.
	801	State of Texas well 1	-- Adams	--	2,330	--	--	85	--	--	--	--	Oil test. Old well.1/
	901	Albert McCray	Horace Byerly	--	43	--	J	120	39.1	Oct. 15, 1963	B,H	D	Bored well. Old well. Reported to weaken in dry time.
*	902	P. K. Perkins	Frank Balcar	1929	237	4	J	180	55	1929	A,G,3	D,S	
*	08-101	Shade Griffin	--	1958	50	35	J	340	42.5	Oct. 10, 1963	B,H	D,S	Dug well. Concrete casing. Replaced similar oil well - 43 ft deep, which was sampled in 1942.
	102	Hugh Conkline	-- Bishop	1963	75	4	J	240	--	--	J,E	D	
	103	I. E. Primrose	--	--	30	36	J	190	--	--	J,E, 1/4	D	Dug well. Orginally produced from 21 ft. Concrete casing. Old well.
	104	Bert Hinson	Crews Water Well Service	1958	237	2	J	280	--	--	--	D	1/
*	105	W. H. Hancock	--	--	31	36	J	234	24.2	May 7, 1942	B,H	D,S	Dug well; unlined. Old well.
*	106	C. C. Woods	--	--	40	30	J	200	33.0	do	B,H	D,S	Dug well. Concrete casing. Old well.
	201	Burt Graham	-- Sears	--	340	4	J	420	--	--	C,E	D,S	
*	202	A. A. Dubose	A. A. DuBose	1937	34	36	J	275	21.7	May 7, 1942	B,H	D	Dug well. Concrete casing.
*	301	Morgan & Lindsey	J. D. Adams	1935	1,366	6	J(?)	310	48	1935	A,E,3	D	Casing: 6-in. to 530 ft, 4-in. from 530 ft to bottom. Quality of water indicative of production being from Jasper aquifer.
*	401	C. F. Hilton	Frank Balcar	1928	209	4	J	256	19	1928	A,E	D,S	
	402	Hugh Hamilton	G. W. Boykin	1963	80	2	J	213	53	Oct. 1963	J,E, 1 1/2	D	
	403	Calvin Hall	Merritt Drilling Co.	1951	241	2	J	140	+	Oct. 10, 1963	Flows	D	Estimated flow 15 gpm.
	501	W. L. Armstrong	Mike Merrick	1960	150	2	J	275	--	--	A,E	D,S	
*	502	J. W. Campbell	Frank Balcar	1939	425	4, 2 1/2	J	254	49 50	1939 1963	A,E	D,S	1/

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
*PR-61-08-503	C. M. Bridges	Frank Balcar	1936	230	4	J	250	70	Oct. 1963	A,E	D,S	
504	First State Bank	--	--	120	6	J	325	100	1938	N	N	
* 505	A. B. Jolly	--	1929	22	6	J	200	11.2	May 6, 1942	B,H	D,S	Bored well. Wood casing.
* 506	Adam Byerly	C. E. Brown	1935	187	3	J	250	65	1939	A,E	D,S,P, Ind	Screen from 167 ft to bottom. Supplies water for cotton gin, school, store, and several houses.
* 601	Bill Limbrick	Bill Limbrick	1935	19	36	J	340	12.1	May 14, 1942	B,H	D,S	Dug well; unlined. Reported weak during drought.
701	M. H. Durdin	Bellinger Drilling Co.	1961	100	2	J	155	6	Oct. 1963	A,E, 2	D	Screen from 92 ft to bottom. Supplies water for 2 hours.
702	Thomas M. Mixon	--	--	189	2	J	200	24	1963	A,E, 3	D,S	
* 703	Hardy Durbin	Hardy Durdin	1939	17	1 1/4	J	155	--	--	C,H	D,S	Driven well.
* 801	J. C. Yeates	Bradshaw & Eidman	1959	6,024	9	J	170	+ 9.0	Dec. 4, 1964	Flows	S	Open hole below 641 ft. Water sand shows at 641-722 ft on electric log.
* 802	Tom Holmes, Jr.	George Merritt	1964	190	2	J	185	40	1964	A,E	P	Screen from 182 ft to bottom.
* 803	J. C. Yates	--	1922	25	24	J	170	19.5	May 8, 1942	B,H	D,S	Dug well. Concrete casing.
901	W. W. Martindale	George Bellinger	1963	320	--	J	205	40	1963	A,E	D	
* 902	J. E. Dodd	J. E. Dodd	1934	47	36	J	225	40.6	May 9, 1942	B,H	D,S	Dug well. Wood casing. Reported water from blue clay.
903	-- Seale well 1	-- Seale	1900	1,471	--	--	180	--	--	--	--	Oil test. Well 629 in Water-Supply Paper 335.[1]
15-201	State of Texas Parks & Wildlife Dept.	Simmons Water Well Service	1963	442	4 1/2	J	94	+45.2	Dec. 1, 1964	Flows	P	Casing: 4 1/2-in. cemented to surface. Screen from 432 ft to bottom. Reported flow 32 gpm in 1963; estimated flow 4 gpm in 1964.[1]
202	State of Texas Hen House Ridge	do	1962	170	4 1/2	J	95	+14.5	do	Flows	P	Casing: 4-in. cemented to surface. Screen from 157 to 167 ft.[1]
203	Jasper County	-- Balkin	1958	105	3	J	90	+	do	Flows, C,E	D,P	Measured flow 9 gpm in 1964.
204	Jasper County Park	do	1958	105	3	J	89	+15.5	do	Flows	P	Measured flow 3 gpm in 1964.
* 601	M. R. Smith	Seimograph Crew	1938	55	3	J	87	+	Oct. 15, 1963	Flows	D	Estimated flow 30 gpm in 1942. Reported flow 18 gpm in 1963.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
*PR-61-16-501	Eray Thomas	Eray Thomas	1920	22	36	Ev(?)	120	10.7 18.4	May 8, 1942 Oct. 16, 1963	N	N	Not in use.
502	do	Crews Water Well Service	1962	450	2	J	120	+	Oct. 16, 1963	Flows	D	Estimated flow 12 gpm in 1963. Reported never weakens.
503	Watson Thomas	do	1962	242	2	J	120	+	do	Flows	D,S	Estimated flow 20 gpm in 1963.
601	Mrs. Effie Morgan	--	1946	56	36	Ev(?)	280	40.0	do	J,E, 1/4	D	Dug well. Concrete casing.
* 602	Mrs. D. A. Olds	--	1926	23	36	Ev(?)	280	18.0	May 8, 1942	N	N	Dug well. Wood casing. Abandoned by 1964.
* 801	Dick O'Brien	Paul Achéson	1958	777	2	J	185	34	1958	J,E	D,S	Screen from 759 ft to bottom.
802	Orvie Horn	American Water Well Service	1953	567	2	J	198	28.2	Aug. 4, 1964	J,E	D,S	Screen from 551 ft to bottom.
901	J. D. Morgan	Wallace Olds	--	40	30	Ev	235	29.6	Oct. 23, 1963	J,E	D,S	Dug well. Concrete casing.
902	W. I. Hubbard	--	1953	60	30	Ev	265	50	1953	J,E	D	Do.
903	C. E. Smith	C. E. Smith	--	45	30, 8	Ev	255	40	1963	J,E	D	Do.
* 904	Monroe Arnold	L. E. Richard	1924	48	36	Ev	205	21.2	May 9, 1942	B,H	D,S	Dug well. Wood casing.
24-101	E. C. May	--	1947	360	2	J(?)	80	+	July 27, 1964	Flows	D,S	Measured flow 30 gpm in 1964.
201	E. C. Carruth	Crews Well Service	1963	260	2	Ev	91	+	do	Flows	D,S	Drilled to 260 ft, plugged back to 189 ft and completed. Measured flow 7.5 gpm in 1964.[1]
* 202	Elmer Carruth	--	1940	17	24	Ev(?)	90	2.5	May 9, 1942	B,H	D,S	Dug well. Concrete casing.
* 203	Bryant Good	--	1902	23	36	Ch	85	14.4	do	B,H	D,S	Dug well. Unlined.
* 301	Mrs. Kate Clark	--	1930	30	30	Ch	174	4.4 9.3	May 9, 1942 June 11, 1964	J,E, 1/3	D	Dug well. Concrete casing.
* 302	Texas A&M Nursery	Layne-Texas Co.	1957	300	5	Ev	140	31.8	June 16, 1964	A,E	D	Reported dissolved solids 115 ppm.
* 303	W. E. Smith	--	1928	63	30	Ev	250	58	1942	C,H	D,S	Dug well. Concrete casing.
* 401	Kirby Lumber Co.	Harvey Roff	1960	104	2	Ev	65	14	1960	J,E, 1/4	D	On Neches River bank.
501	-- Carwright well 1	Thompson Drilling Co.	1939	7,752	--	--	67	--	--	--	--	Oil test.[2]
502	do	Mogo & Chapman	1938	7,550	--	--	80	--	--	--	--	Oil test.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
*PR-61-15-602	Jasper County	Seismograph Crew	1938	22	--	J	72	+	Mar. 3, 1964	Flows	D	Five gallon can without bottom stuck in top of well. 4-in. open hole below. Could not pass tape past 22 ft in 1964. Temp. 70°F.
603	U.S. Army Corps of Engineers, Sandy Creek Park	Simmons Water Well Service	1962	260	4 1/2	J	89	+31.3	Nov. 20, 1964	Flows	P	Casing: 4-in. cemented to surface. Screen from 248 to 258 ft. Reported total dissolved solids, 135 ppm.1/
* 901	B. O. Easely	George Bellinger	1963	181	4, 2	J	77	+	--	Flows	D	Estimated flow 250 gpm in 1965. Screen from 171 ft to bottom. Temp. 71°F.1/
16-101	W. S. Durdin	-- Davis	1949	120	4	J	140	--	--	Cf,E	D	
* 102	Jasper County Lumber Co.	--	--	22	36	J	134	16.2	May 8, 1942	N	N	Filled and abandoned.
103	-- Minyard	Seismograph Crew	1948	40	4	J	100	+	Oct. 17, 1963	Flows	S	Estimated flow 90 gpm in 1963.
104	Stone Prewitt	do	1963	66	4	J	105	+	Oct. 16, 1963	Flows	S	Measured flow 100 gpm in 1964. Uncased seismic hole.
105	M. A. Newman	--	1959	98	2	J	140	--	--	A,E, 3	D	Reported changing to airlift to eliminate rust problem.
106	J. L. Lanier	Sun Oil Co.	1964	--	--	J	100	+	Mar. 11, 1965	Flows	S	Estimated flow 150 gpm in 1964. Temp. 68.9°F. in 1964.
* 107	Smith Dairy	C. E. Brown	1935	125	2 1/2	J	150	4	1938	A,G, 3	D,S	Screen 20 ft on bottom. Drilled to supply water for dairy..
* 201	S. D. Jones	--	1927	33	24	J	145	22.0	May 8, 1942	B,H	D,S	Dug well. Concrete casing. Reported weak in drought.
202	D. M. Thomas	Commodore Oil Co.	--	3,805	--	--	120	--	--	--	--	Oil test.1/
* 301	Ivy McLemore	--	1912	13	24	J(?)	170	5.0 6.7	May 8, 1942 Oct. 16, 1963	B,H	D	Dug well. Concrete casing.
302	do	Merritt Bros.	1961	254	2 1/2	J	170	20	Oct. 1963	T,E	D,Irr	
303	-- Neal	--	1960	180	2	J	245	83.6	Aug. 4, 1964	A,E, 3/4	D	
304	Sophie Sheffield	Sophie Sheffield	1947	35	30	J	240	28.6	do	B,H	D	Dug well. Concrete casing.
* 305	Mrs. Corine Yates	--	1935	17	36	J	160	5.2	May 9, 1942	B,H	D,S	Dug well. Unlined.
401	James Wilson	--	--	25	40	Ev(?)	100	15.7	Oct. 23, 1963	B,H	D,S	Dug well. Unlined. Old well.
* 402	Stone Prewitt	Seismograph Crew	1963	64	4	J	100	+	--	Flows	S	Estimated flow 400-500 gpm in 1963. Measured flow 480 gpm in 1964. Uncased seismic hole. Temp. 69°F.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
*PR-61-24-503	Liza Smith	Liza Smith	1940	24	36	Ch	70	14.9	May 11, 1942	B,H	D,S	Dug well. Wood casing.
601	Willy & Cora Cooper	Eli Johnson	1934	37	24	Ch	158	31.2	June 12, 1964	B,H	D,S	Concrete casing.
602	Offineal Booker	Emmitt Johnson	1937	46	24	Ch	152	28.9	do	B,H	D	Concrete casing. Owner reports clay 15 to 44 ft.
603	do	--	1950	160	--	Ev	150	40.1	do	A,E	D,S	
604	J. T. Ener	Paul Acheson	1953	240	2	Ev	183	79 79.5	Feb. 1953 June 16, 1964	A,E	D	Screen from 230 ft to bottom.
* 605	J. O. Booker	J. O. Booker	1912	41	48	Ch	143	25.0	May 9, 1942	N	N	Dug well. Unlined. Abandoned 1954.
606	do	--	1954	98	2	Ch(?)	143	54.2	June 17, 1964	A,E, 3/4	D,S	Screen from 92 ft to bottom.
* 607	Frank Cooper	--	--	27	48	Ch	159	15.4	May 16, 1942	N	N	Dug well. Unlined. Caved and filled in 1964. Replacement well being dug in 1964. Was 38 ft. deep and had only found clay.
901	N. J. Qualls	--	--	38	36	Ch	142	--	--	N	N	Dug well. Concrete curbed open hole. Clay to bottom. Owner reports fine sand at bottom. Reported dry at 38 ft in 1964.
* 902	do	-- Ellis	1963	172	2	Ch	140	65	June 1964	J,E, 1/2	D,S	
903	Law Scott	--	1962	180	--	Ch	138	62.9	June 10, 1964	A,E	D,S	
* 904	John T. Maurice	Paul Acheson	1953	300	2	Ev(?)	123	50 49.7	1953 June 10, 1964	A,E	D,S	
* 905	Texas Forest Service	C.C.C. Camp	1938	42	6	Ch	116	37.9	May 16, 1942	N	N	Bored well. Tile casing. Abandoned.
906	James Blout well 1	Sinclair Oil & Gas Co.	1963	6,505	--	--	70	--	--	--	--	Oil test.
32-201	Kirby Williamson well 1	Oil Reserves Corp.	1959	8,914	--	--	60	--	--	--	--	Do.
* 301	P. H. Davis	--	--	54	36	Ch	120	38.8 40.3	May 16, 1942 May 20, 1964	B,H	D,S	Dug well. Concrete casing. Old well.
* 302	M. G. Gregory	M. G. Gregory	1939	15	48	Ch	95	5.4	May 16, 1942	B,H	D,S	Dug well. Unlined
501	C. C. Kelly well 1	Meredith & Co. & Bradco Oil & Gas Co.	1956	7,415	--	--	--	--	--	--	--	Oil test.
* 601	L. O. Block	Frank Balcar	1927	1,470	4 2 1/2	J	120	+	Apr. 10, 1942	Flows	D,S	Screen from 1,440 ft to bottom. Measured flow 5 gpm in 1964. Temp. 84°F.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
PR-61-32-602	O. E. Wigington	--	1960	237	2	Ch	123	60	1960	A,E, 3/4	D,S	Screen from 225 ft to bottom.
603	Weldon Kelly	--	--	237	2	Ch	121	58.4	May 12, 1964	A,E, 3/4	D,S	
604	Andrew D. Barrow	Andrew D. Barrow	1951	35	2	Ch	80	--	--	J,E, 1/3	D	Bored well.
605	Guy Standley	-- Higgs	1958	115	2	Ch	67	13.6	May 20, 1964	A,E, 3/4	D,S	
606	R. V. Taylor	R. V. Taylor	1952	33	1 1/4	Ch	70	15.9	do	C,H	D,S	Driven and bored well.[1]
607	Mrs. C. A. Moore	-- Skoggs	1954	100	2	Ch	70	16.2	do	A,E	D,S	
608	-- Moore	--	1955	134	2	Ch	68	13.6	do	J,E	D	
801	State lease well 2	Harry L. Martin	1959	6,797	--	--	56	--	--	--	--	Oil test.[2]
802	C. A. Withers well 1	J. P. Owen	1955	7,815	--	--	44	--	--	--	--	Oil test.
803	Stella B. Richardson well 1	North Central Oil Corp.	1957	7,515	--	--	48	--	--	--	--	Do.
901	Ella Moore well 1	Humble Oil & Refining Co.	1955	8,005	--	--	48	--	--	--	--	Oil test.[2]
902	M. B. Hughes well 1	Slick Oil Corp.	1956	7,920	--	--	82	--	--	--	--	Oil test.
903	M. B. Hughes well A-1	do	1958	7,915	--	--	116	--	--	--	--	Do.
904	Leverett Davis well 1	J. C. Means, Jr.	1949	7,805	--	--	58	--	--	--	--	Do.
905	M. B. Hughes well 1	North Central Oil Corp.	1959	7,015	--	--	19	--	--	--	--	Do.
906	Jim Walters	Sun Oil Co.	1950	347	4	Ev	50	2.1 5.1	May 19, 1964 Feb. 26, 1965	N	N	Unused oil field supply well.
* 907	J. V. Withers	--	1920	39	36	Ch	90	31.0	May 16, 1942	B,H	D,S	Dug well. Unlined
40-201	Roy Richardson well 2	Austral Oil Co.	1962	10,573	--	--	68	--	--	--	--	Oil test.
301	-- Henderson well A-1	Phillips Petroleum Corp.	1960	12,200	--	--	74	--	--	--	--	Do.
302	-- Henderson well 1	San Jacinto Drilling Co.	1958	7,613	--	--	71	--	--	--	--	Do.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
PR-61-40-303	A. P. Walters	-- Simmons	1963	151	4	Ch	77	26.6	May 12, 1964	N	N	Well destroyed in 1964.
* 304	do	Paul Acheson	1940	230	2	Ch	85	16 35.2 32.5	1940 Feb. 26, 1964 May 12, 1964	N	N	Discontinued use because of red water and sand.
* 305	do	A. P. Walters	1950	32	36	Ch	85	21.1 25.6	May 12, 1964 Feb. 26, 1965	J,E, 1/3	D,S	Dug well. Concrete casing. Temp. 70°F.
401	Temple Lumber Co. well 1	Ginther, Warren, & Ginther	1951	8,062	--	--	34	--	--	--	--	Oil test.
402	do	Gulf Oil Corp.	1956	11,051	--	--	36	--	--	--	--	Do.
* 501	P. E. Drake	J. C. Mosier	1953	285	2	Ch	57	14 16.7	1953 Apr. 24, 1964	A,E	D,S	Screen from 278 ft to bottom. Temp 71°F.
* 502	T. McGalin	T. McGalin	1919	34	1 1/4	Ch	60	16.1	May 29, 1942	N	N	Driven well. Caved and abandoned.
* 503	L. V. Withers	--	1912	27	24	Ch	57	9.4	do	B,H	D,S	Dug well. Concrete casing.
601	Maggie Richardson well 1	Sun Oil Co.	1943	8,342	--	--	71	--	--	--	--	Oil test.[2/]
602	-- Nantz well 1	J. M. Flaitz & R. B. Mitchell	1953	8,310	--	--	57	--	--	--	--	Oil test.
* 603	W. R. Tarver	James E. Wallace	1939	25	1	Ch	65	--	--	N	N	Driven well. Abandoned in 1950.
* 801	Jourdan Reese	Simmons Water Well Service	1959	250	5	Ch	50	--	--	T,E, 5	D,S	Supplies water for fish ponds and swimming pool.
* 802	C. E. Slaymaker	C. E. Slaymaker	1957	11	2	Ch	25	+	Apr. 24, 1964	Flows, Cf,E	D	Driven well. Estimated flow 5 gpm in spring.
* 803	do	--	1964	130	2	Ch	55	22.7	May 5, 1964	A,E	P	
* 804	J. Reese	--	1942	32	1 1/4	Ch	50	--	--	C,H	D,S	Driven well.
901	Ernest Gloeoe	--	1960	118	2	Ch	57	16.7	May 5, 1964	A,E, 3/4	D,S	
* 902	Bill Lowe	--	--	--	1 1/4	Ch	54	--	--	C,H	D,S	Bored well. Old well.
48-101	East Texas Pulp & Paper Co. well B-4	Layne-Texas Co.	1964	1,423	20, 14	Ev	35	--	--	T,E, 300	Ind	Underreamed from 770-1,408 ft. Has 309 ft of stainless steel screen in underreamed interval designed to pump 2,500 gpm. Gravel-walled.
* 201	East Texas Pulp & Paper Co.	--	1947	1,200	6	Ev	45	+	May 17, 1950	Flows	N	Observation well. Reported flowed 40 gpm. Temp. 80°F.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
PR-61-48-202	East Texas Pulp & Paper Co. well 7	Layne-Texas Co.	1954	1,088	20, 12 3/4	Ev	46	96.1	Dec. 29, 1959	T,E, 300	Ind	Underreamed from 649 to 1,088 ft. Measured discharge 1,700 gpm in 1959. Gravel-packed.
203	East Texas Pulp & Paper Co. well 8	do	1954	1,293	20, 12 3/4	Ev	46	81.4	do	T,E, 300	Ind	Measured discharge 2,410 gpm in 1959. Reported specific capacity 42 gpm/ft. Underreamed from 635 to 1,293 ft.
204	East Texas Pulp & Paper Co. well 6	do	1954	1,314	20, 12 3/4	Ev	46	--	--	T,E, 300	Ind	Measured discharge 2,460 gpm in 1959. Reported specific capacity 42 gpm/ft. Underreamed from 651 to 1,314 ft.
205	East Texas Pulp & Paper Co. well 5	do	1953	1,310	29, 12 3/4	Ev	44	--	--	T,E, 300	Ind	Measured discharge 2,450 gpm in 1959. Reported specific capacity 36 gpm/ft. Underreamed from 639 ft to 1,310 ft. Gravel-walled.
206	East Texas Pulp & Paper Co. well 2	do	1953	782	18, 12 3/4	Ev	49	--	--	T,E, 300	Ind	Measured discharge 1,760 gpm in 1959. Reported specific capacity 18 gpm/ft. Underreamed from 300 ft to 782 ft.
207	East Texas Pulp & Paper Co. well 1	do	1953	1,440	20, 12 3/4	Ev	49	--	--	T,E, 300	Ind	Measured discharge 2,000 gpm. Reported specific capacity 19 gpm/ft. Underreamed from 625 to 1,357 ft. Gravel-walled.
*	East Texas Pulp & Paper Co. well 4	do	1953	1,328	20, 12 3/4	Ev	51	--	--	T,E, 300	Ind	Measured discharge 1,550 gpm. Underreamed from 716 ft to bottom. Gravel-walled Temp. 79°F.
209	East Texas Pulp & Paper Co.	do	1947	2,755	4 1/2	Ev, Ch	--	--	--	N	N	Screened intervals: 213-233, 384-404, 584-594, 723-744, 1,074-1,095, 1,241-1,264, 1,653-1,675, and 2,083-2,104 ft. Test well completed as observation well. Cement plug at 1,295 ft. 4-in. packer on 1 1/2-in. tubing set at 671 ft, separating well into two zones.
* 210	Evadale High School	George Bellinger	1955	350	4	Ev(?)	39	--	--	T,E, 5	P	Screen from 320 ft to bottom.
* 211	Stimits Addition	do	1954	267	4	Ch(?)	41	27 28.2	1954 Feb. 20, 1964	T,E, 5	P	Screen from 237 ft to bottom. Reported discharge 45 gpm in 1964.
* 212	do	Mitchell Bros.	1963	380	4	Ev	42	29.0	Feb. 20, 1964	A,E	P	Screen from 350 ft to bottom. Reported discharge 100 gpm in 1964.
213	do	do	1964	380	4	Ev	40	29	1964	J,E, 1/2	P	
* 214	Southern Pine Co.	Frank Balcar	1936	226	6	Ch	42	17 29.7 32.9	Nov. 1941 Apr. 23, 1964 Feb. 26, 1965	T,E, 5	D,S	Not in use in 1964.[1]

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
*PR-61-48-215	L. E. Gailey	--	1928	26	1	Ch	45	--	--	C,H	D,S	Bored well.
216	Kirby Lumber Co.	--	1924	600	4	Ev	38	--	--	N	N	Formerly supplied water for sawmill, and town of Evadale. Abandoned in 1937.
* 217	Archie Moss	--	1939	17	36	Ch	44	6.8	May 15, 1942	B,H	D,S	Dug well. Wood casing. Weak in drought.
218	East Texas Pulp & Paper Co. well B-3	Layne-Texas Co.	1962	1,360	20, 14	Ev	38	--	--	T,E, 300	Ind	Underreamed from 698 to 1,346 ft. Gravel-walled. Has 262 ft of stainless steel screen opposite sands. Designed to pump 2,500 gpm. Pump set at 280 ft.
219	East Texas Pulp & Paper Co. well B-2.	do	1962	1,387	20, 14	Ev	40	--	--	T,E	Ind	Underreamed from 712 to 1,372 ft. Gravel-walled. Has 337 ft of stainless steel sceen opposite sands. Pump set at 280 ft.
220	East Texas Pulp & Paper Co. well B-1	do	1962	1,399	20, 14	Ev	40	--	--	T,E, 300	Ind	Underreamed from 620 ft to 1,382 ft. Gravel-walled. 302 ft of stainless steel screen opposite sands. Designed to pump 2,500 gpm. Pump set at 300 ft.
* 301	East Texas Pulp & Paper Co. well 3	do	1953	1,342	20, 12 3/4	Ev	49	--	--	T,E, 300	Ind	Underreamed from 400 ft to bottom. Measured discharge 2,250 gpm. Reported specific capacity 34 gpm. Temp. 80°F.
* 401	Champion Paper Co.	L. B. Jenson	1905	1,211	8	Ev	37	+ 67.0 69.1 89.0	Apr. 10, 1942 Feb. 18, 1964 Apr. 23, 1964 Feb. 26, 1965	N	N	Estimated flow 50 gpm in 1942. Observation well.1/
402	J. H. Weatherford	--	1940	30	24	Ch	30	3.5	Feb. 18, 1964	J,E, 1/3	D	Dug well. Concrete casing.
403	Henry Whitmire	Henry Whitmire	1963	61	2	Ch	32	22	1963	J,E	D	Screen from 57 ft to bottom. Supplies water for two houses.
404	C. S. Stone	--	1960	70	2	Ch	38	22.2	Feb. 18, 1964	N	N	Unused in 1964.
* 405	W. H. Newbold	W. H. Newbold	1934	27	30	Ch	40	3	1942	B,H	D,S	Dug well. Wood casing. Reported weak in drought. Could not locate in 1964.
* 501	W. C. Colvin	Wise & Flether	1904	1,070	6	Ev	37	+	Apr. 10, 1942	T,E	D,S	Screen from 1,060 ft to bottom. Reported flow 35 gpm in 1942.
502	Parrafin Oil Corp. well 1	Oil & Gas Production Inc., & Kirby Petroleum Co.	1960	9,509	--	--	39	--	--	--	--	Oil test.
* 503	J. M. Richardson	--	1941	18	1 1/4	Ch	40	--	--	C,H	D,S	Driven well. Three feet of screen on bottom.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
PR-61-48-504	East Texas Pulp & Paper Co. well B-6	Layne-Texas Co.	1964	1,425	20, 14	Ev	40	--	--	T,E, 300	Ind	Underreamed from 750 to 1,410 ft. Gravel-walled. Has 371 ft of stainless steel screen opposite sands. Pump set at 400 ft.
505	East Texas Pulp & Paper Co. well B-7	do	1964	1,445	20, 14	Ev	40	--	--	T,E, 300	Ind	Underreamed from 790 to 1,455 ft. Gravel-walled. Has 349 ft of stainless steel screen opposite sands. Designed to pump 2,500 gpm. Pump set at 400 ft.
* 701	J. C. Chance	Chance Well Service	1954	1,250	4 1/2	Ev	35	50.4 54.9 65.3	Dec. 17, 1963 Apr. 23, 1964 Feb. 25, 1965	C,W	S	Screen from 1,210 ft. to bottom.
702	do	do	1950	468	4	Ev(?)	30	27.4 28.2	Dec. 17, 1963 Apr. 21, 1964	J,E	S	20 ft of stainless steel. Screen at bottom.
703	M. H. Ozley	-- Jones	1961	157	2	Ch	30	17	1961	J,E	D	
* 704	City of Beaumont	-- Balcar	1932	814	2	Ev	30	7	1932	N	N	Filled and abandoned in 1964.1/
* 801	T. H. Mabry	Wise & Fletcher	1903	1,039	6	Ev	37	+	Apr. 10, 1942	N	N	Estimated flow 30 gpm in 1942. Owner reported well obstructed in 1964.1/
901	V. Franklin	-- Corbett	1941	65	1 1/4	Ch	35	15.8	Nov. 18, 1963	N	N	Not used.
902	do	-- Burr	1959	437	2, 1 1/2	Ev(?)	33	13	1959	J,E	D,S	Screen from 427 ft to bottom.
* 903	A. E. Errington	Fred Hetzel	1939	75	1 1/4	Ch	32	--	--	A,G, 1 1/2	D,S	Drilled to supply water for dairy.
904	Miller Vidor Lumber Co. well 1	Sun Oil Co.	1951	8,022	--	--	31	--	--	--	--	Oil test.
* 62-01-101	Jasper Country Club	Bellinger Drilling Co.	1950	640	J--	J	335	--	--	A,E	D,Irr	Temp. 68°F.
* 102	Mrs. A. E. Mears	George Merritt	1958	282	2	J	425	163	1958	A,E	D	
* 103	Corrie Reese	Corrie Reese	1940	10	36	J	345	5.8	May 14, 1942	B,H	D,S	Dug well. Wood casing.
* 201	Beaver Bishop	--	1942	22	36	J	340	16.5	May 13, 1942	B,H	D,S	Do.
301	Charles Brown	--	1964	222	2	J	345	61.8	Oct. 20, 1964	A,E	D	Reported discharge 37 1/2 gpm in 1964. Screen from 216 ft to bottom.
* 302	E. R. Simmons	--	1917	10	36	J	280	7.0	May 13, 1942	B,H	D,S	Dug well. Wood casing.
* 401	City of Jasper well 5	Layne-Texas Co.	1954	800	12, 6 5/8	J	275	69.1 73.1	Nov. 22, 1955 Feb. 10, 1965	T,E, 40	P	Screened intervals: 382-392, 402-442, 486-538, 598-608, and 663-703 ft. Temp. 70°F.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
*PR-62-01-402	City of Jasper well 3	Layne-Texas Co.	1951	634	12, 6 5/8	J	292	86.3 86.0	Nov. 22, 1955 Feb. 10, 1965	T,E, 25	P	Screen from 407 to 445 ft, and 524 to 564 ft. Temp. 74°F.
403	City of Jasper well 2	do	1944	592	12, 6 5/8	J	287	82.9	Nov. 18, 1955	N	N	Abandoned in 1955.
* 404	City of Jasper well 4	do	1953	594	12, 6 5/8	J	287	84.2 80.0	Nov. 16, 1955 Feb. 10, 1965	T,E, 30	P	Screen from 407 to 447 ft, and 523 to 563 ft.
405	P. H. Ferguson	-- Primrose	1964	166	--	J	240	6	1964	A,E	D	Screened with plastic screen from 154 ft to bottom.
* 406	City of Jasper	Layne-Texas Co.	1964	1,352	20, 14	J	242	53.2	Feb. 10, 1965	T,E	P	Screened opposite sands from 416 to 767 ft. Temp. 71°F.[1]
* 407	Ennis McClelland	Ennis McClelland	1939	22	36	J	320	15.9	May 14, 1942	B,H	D,S	Dug well. Rock casing.
* 408	Cliff Bishop	--	1930	27	24	J	225	21.2	May 13, 1942	B,H	D,S	Dug well. Concrete casing.
* 409	City of Jasper	Layne-Texas Co.	1930?	582	10, 6	J	287	70	Aug. 1930	T,E, 25	P	Supplies water for Jasper.[1]
501	B. G. Lindsey	do	1940	390	6	J	305	67	Sept. 1940	A,E, 5	D,S	Not used in 5 years.[1]
* 502	C. E. Perkins	C. E. Brown	1935	196	2 1/2	J	290	20	1936	A,E, 2	D,S	20 ft of screen on bottom.
601	R. T. Bennett	-- Atkinson	--	330	2	J	300	60	Oct. 1963	A,E	D,S	Screen from 321 ft to bottom.
* 602	Dave Adams	Dave Adams	1941	25	36	J	265	23.0	May 13, 1942	B,H	D,S	Dug well. Wood casing.
* 603	Ellis Sidney	Ellis Sidney	1941	54	36	J	260	44.5	do	B,H	D,S	Dug well. Reported white quicksand from 50 to 54 ft.
* 701	Texas Electric Co. Cooperation, Inc.	Layne-Texas Co.	1963	1,000	8, 4 1/2	J	255	55.0 55.8	Mar. 2, 1964 Feb. 11, 1965	T,E, 7 1/2	Ind	Screen from 800 to 835, and 840 to 865 ft.[1]
702	Jasper Fiber Products	--	1962	253	4	J	225	41.4	Feb. 10, 1965	A,E, 15	Ind	Screen from 230 to 250 ft.
703	Martindale Lumber Co.	-- Merritt	1962	176	2	J	215	10	1962	A,E, 100	Ind	
* 704	Stewart Ratcliff	--	--	16	36	J	240	10.6	May 18, 1942	B,H	D,S	Dug well. Wood casing. Old well.
801	-- Gilbert well 1	Frank Buttram	1950	5,408	--	--	230	--	--	--	--	Oil test.
802	C. T. Flourney well 1	Helmerick & Payne, Inc.	1930	2,238	--	--	340	--	--	--	--	Oil test.[1]
901	Cecillid Bailey	Horace Byerly	1955	20	30	J?	240	15.0	Oct. 24, 1963	B,H	D	Dug well. Concrete casing.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

	Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
									Below land-surface datum (ft)	Date of measurement			
	PR-62-01-902	C. T. Coker	G. W. Boykin	1963	354	2	J	338	--	--	A,E, 1/2	D	Screen from 346 ft to bottom.
	903	M. E. Dean	George Merritt	--	213	2	J	260	--	--	A,E	D	Old well.
	904	W. A. Folson	--	--	252	2	J	282	60	Dec. 1964	A,E	D	
*	905	Price Powell	--	--	26	24	Ev(?)	260	14.7	May 13, 1942	B,H	D,S	Dug well. Concrete casing. Old well.
*	906	W. H. Fortney	--	1941	12	7	Ev(?)	265	.5	do	B,H	D,S	Dug well. Wood casing.
*	02-701	C. M. Davenport	--	1944	30	30	Ev	260	23.4	Oct. 24, 1963	J,E, 1/2	D,S	Dug well.
	09-101	C. E. Johnston	--	1952	56	36	Ev(?)	270	29.5	Oct. 21, 1964	J,E	D,S	Dug well. Concrete casing.
	102	J. O. Easeley	--	1948	601	2	J	300	120	1948	A,E, 3	D	Screen from 580 ft to bottom.
*	103	Van D. Marshall	C. E. Brown	1940	381	2	J	300	135	1942	C,E, 5	D,S	Screen from 371 ft to bottom.
*	104	C. E. Johnson	C. E. Johnson	1942	38	30	Ev(?)	270	34.8	May 9, 1942	B,H	D,S	Dug well. Wood casing.
	301	Joseph Howell	Merritt Bros.	1958	520	2	J	325	--	--	A,E, 1 1/2	D,S	
	401	Alfred W. Morgan	Alfred W. Morgan	1947	26	30	Ev	275	21.4	Oct. 21, 1964	J,E	D	Dug well. Concrete casing. Reported rust in water.
	402	F. C. Dewitt	--	1957	300	2	J	305	80	1957	A,E	D	Screen from 288 ft to bottom.
*	501	Alfred Southwell	--	1938	27	30	Ev	260	16.5	May 9, 1942	B,H	D,S	Dug well. Concrete casing.
	601	R. L. Sheffield	-- Ellis	1963	138	2	Ev(?)	265	62.1	Oct. 22, 1964	A,E, 1	D	
*	602	T. C. Morgan	--	1932	71	27	Ev	280	47.4	May 12, 1942	B,H	D,S	Dug well. Concrete casing.
	701	James Foreman	--	1963	120	2	Ev	258	65	1963	A,E	D	
*	702	Mrs. Walter Aarant	--	1941	39	36	Ev	285	33.3	May 9, 1942	B,H	D,S	Dug well. Concrete casing.
	703	C. F. Smith	Layne-Bowler Co.	1907	523	9	J	280	--	--	N	N	Screen from 405 to 446 ft, and 513 to 521 ft.1/
	801	Quincy Adams	Grady-Ellis	1963	185	2	Ev	240	50	1963	A,E, 1	D	Screen from 173 ft to bottom.
*	802	Noah Davis	Noah Davis	1940	32	36	Ev	200	25.4	May 11, 1942	B,H	D,S	Dug well. Unlined.
*	901	--	--	--	39	36	Ch	205	27.9	May 12, 1942	B,H	D,S	Dug well. Concrete casing. Old well.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
*PR-62-10-401	Page Heirs	--	1924	42	36	Ev	255	32.1	May 12, 1942	B,H	D,S	Dug well.
* 17-101	Robert Turner	--	--	17	48	Ch	180	6.7	May 11, 1941	Cf,E	D,S	Dug well. Unlined. Drilled to supply water for dairy.
* 201	Virgil Pullian	--	1937	29	36	Ch	150	12.2 20.3	May 12, 1942 July 31, 1964	J,E	D,S	Dug well. Unlined.
202	do	--	1960	140	2	Ev	150	33.3	July 21, 1964	A,E, 1 1/2	D,P	
203	O. G. Taylor	Hugh Morgan	1962	21	30	Ch	181	15.0	July 31, 1964	J,E	D,S	Concrete casing.
204	B. C. Hardin	--	1943	30	30	Ch	180	24.4	do	J,E, 1/3	D,S	Dug well. Concrete casing.
205	do	--	1952	85	2	Ev	170	32.6	do	A,E, 3/4	D,S	
* 206	J. M. Turner	--	1927	90	6, 4	Ev	180	--	--	C,E	D,S	Wrought iron and concrete casing. Supplies water for dairy.
* 207	E. Hamlett	--	1939	47	36	Ch	170	5.6	May 11, 1942	B,H	D,S	Dug well. Reported white sand from 43 to 45 ft.
301	P. L. Allen	-- Ellis	1963	130	2	Ev	179	--	--	A,E	D	
* 302	M. V. Summers	--	1902	18	36	Ch	160	15	1942	Cf,G	D,S	Dug well. Reported weak in drought.
401	Atlantic Refining Co. & Sinclair Oil & Gas Co. well 1	--	1963	6,913	--	--	130	--	--	--	--	Oil test.
* 402	A. J. Musselwhite	--	--	20	24	Ch	170	8.7	May 11, 1942	B,H	D,S	Dug well. Concrete casing. Old well.
* 403	L. F. Ogden	--	--	18	36	Ch	157	7.7	May 16, 1942	B,H	D,S	Dug well.
501	A. Mixson well 1	W. C. Dunlop, Jr.	1955	7,075	--	--	123	--	--	--	--	Oil test.[2]
502	-- Lanier et al. well 1	W. C. Dunlop, Jr., & Conroe Well Service, Inc.	1956	6,343	--	--	112	--	--	--	--	Oil test.
503	A. L. Watson well 1	Slick Oil Corp.	1958	6,400	--	--	113	--	--	--	--	Do.
* 504	G. T. Ellis	G. T. Ellis	1963	150	2	Ch	124	28.2 29.1	July 16, 1964 Mar. 11, 1965	A,E, 3/4	D,S	Measured discharge 33 gpm when drilled. Screen from 144 ft to bottom.[1]
505	W. P. Van Pelt	Paul Acheson	1943	250	2	Ev	123	20.9	July 22, 1964	A,E	D,S	
506	Lucian Fussel	Grady Ellis	1963	150	2	Ch	118	23.7	July 21, 1964	A,E, 3/4	D,S	

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
*PR-62-17-507	G. R. Warren	--	--	36	36	Ch	145	22.7	May 11, 1942	B,H	D,S	Dug well. Wood casing. Old well.
* 508	Clifford Mullin	--	1926	35	24	Ch	140	10.1	May 16, 1942	B,H	D,S	Dug well. Concrete casing.
* 509	W. P. Van Pelt	John Adams	1938	150	2	Ch	123	35	1939	C,W	D,S	
601	D. M. Henderson well 1	Atlantic Refining Co. & Sinclair Oil & Gas Co.	1957	9,200	--	--	103	--	--	--	--	Oil test.
602	Wenzel Oil Unit well A-1	do	1959	6,609	--	--	101	--	--	--	--	Do.
603	Mrs. Estelle Brouschard	--	1961	111	2	Ch	117	19.3	July 31, 1964	A,E	D,S	
604	W. W. West	Roth Water Well Co.	1959	180	2	Ch	122	--	--	A,E	D	
605	I. K. Shepard	do	--	146	2	Ch	122	--	--	A,E	D	
701	E. E. Barrow	-- Curr	--	27	--	Ch	130	11.7	June 17, 1964	N	D,S	Dug well.
702	Lou Ozan	--	1951	50	24	Ch	120	4.4	do	N	N	Do.
703	do	Roth Water Well Co.	1960	98	2	Ch	120	16.7	do	A,E, 3/4	D,S	
704	Sinclair Oil & Gas Co. & Atlantic Refining Co. well 2	--	1957	6,752	--	--	133	--	--	--	--	Oil test.
705	Sinclair Oil & Gas Co. & Atlantic Refining Co. well 1	--	1956	7,103	--	---	131	--	--	--	--	Do.
* 706	W. J. Wright	John Adams	1939	156	2	Ch	125	12	1939	N	N	Abandoned.
* 801	R. K. Bruton	Grady Ellis	1963	180	2	Ch	122	28.4 30.2	June 17, 1964 Mar. 11, 1965	A,E	D,S	Cased to 150 ft. Screen from 164 ft to bottom.
* 802	Jess Gilcrease	--	1934	17	36	Ch	122	4.6	May 16, 1942	N	N	Dug well. Filled and abandoned.
* 901	W. S. Gillispie	Frank Balcar	1926	1,564	6	J	121	+20.5	June 16, 1964	Flows	D,S	Reported flow 85 gpm to tank 30 ft above ground in 1926; tested flow in 1940, 35 gpm; in 1964 water would only rise 20.5 ft above ground. Water flowed 42 gpm in 1964, 2.5 ft above surface. Temp. 83°F.
* 902	do	do	1926	325	6	Ev	119	20 25.8 28.8 30.0	1932 May 16, 1942 July 16, 1964 Mar. 4, 1965	N	N	Screen from 300 to 325 ft.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
*PR-62-17-903	City of Kirbyville	Frank Balcar	1910	1,427	8	J	94	+	Apr. 10, 1942	Flows	P	Reported flow 130 gpm, July 15, 1964. 1/
* 904	do	Layne-Texas Co.	1946	1,556	6, 4	J	100	+57.3	Mar. 8, 1965	Flows	P	Reported flow 120 gpm in 1955. Measured flow 115 gpm in 1965. Screen from 1,466 to 1,512 ft. Temp. 82°F.
* 905	do	J. W. Jackson	1927	1,490	6	J	104	+	Apr. 10, 1942	Flows	P	Reported flow 175 gpm in 1942, and 55 gpm July 15, 1964. Temp. 83°F.
* 906	R. C. Phillips	George Bellinger	1957	1,464	3	J	112	+	--	Flows	D,S	Measured flow 68 gpm in 1964. Screen from 1414 ft to bottom.
* 907	Trout Creek Lumber Co.	Frank Balcar	1924	448	6	Ev	100	20	Apr. 15, 1942	N	N	Screen from 388 ft to bottom. Formerly supplied water for sawmill. Abandoned 1956.
908	Harvey Roff	Harvey Roff	1950	28	--	Ch	115	16.6	July 21, 1964	J,E	D	Dug well.
909	Lewis Troy	do	1961	185	--	Ch	115	17.5	Mar. 11, 1965	N	N	Screen to 139 ft. Abandoned. 1/
910	Leon Toll	do	--	181	--	Ch	115	38.2	do	N	N	Screen to 139 ft. Not used.
25-101	A. B. O'Bannion	--	1950	235	2	Ch	123	53 56.5	1953 May 12, 1964	A,E, 3/4	D,S	
* 102	W. A. Horn	W. A. Horn	1927	22	30	Ch	120	9.0	May 16, 1942	B,H	D,S	Dug well. Concrete casing. Reported weak in drought.
* 201	W. E. Beathard	George Bellinger	1953	1,445	3	J	110	+	--	Flows	D,S	Measured flow 95 gpm in 1964. Temp. 85°F.
301	Kirby-Adams well 1 well 1-K	Oil Reserves Corp.	1960	9,050	--	--	113	--	--	--	--	Oil test.
* 302	Mrs. R. L. Miller	--	1937	20	42	Ch	92	8.7 11.6	May 18, 1942 June 18, 1964	N	N	Dug well.
* 303	Call School	John Adams	1939	260	2	Ch	108	--	--	J,E, 2	P	Drilled to supply water for school.
* 307	T. B. Stanford	--	1939	14	36	Ch	111	7.0	May 18, 1942	C,E, 1/4	D,S	Dug well. Concrete casing.
401	William Allen well 1	Atlantic Refining & Sinclair Oil & Gas Co.	1963	7,562	--	--	120	--	--	--	--	Oil test.
402	P. M. King	P. M. King	1962	28	--	Ch	122	.7	May 12, 1964	J,E	D	Dug well.
* 403	A. P. Fowler	--	1954	365	2	Ev	120	62.0	May 20, 1964	A,E, 2	D,S	
* 404	W. F. Withers	--	1902	28	36	Ch	110	5.8	May 16, 1941	J,E, 1/3	D,S	Dug well. Concrete casing.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
PR-62-25-501	L. G. Denby	Leo Burks	1953	212	2	Ch	112	48.3	June 12, 1964	A,E	D	
* 502	Kenneth Coleman	do	1953	199	2	Ch	111	52.5	do	A,E, 1 1/2	D,S	Screen from 189 ft to bottom.
503	Martin Richardson	--	1950	260	2	Ch	100	36.8	June 18, 1964	A,E	D,S	Screen from 252 ft to bottom.
* 504	Gibson Irby	--	1938	29	36	Ch	110	25.2	May 18, 1942	B,H	D,S	Dug well. Concrete casing.
505	Texas State Highway Dept.	Frank Balcar	1934	388	4	Ev	110	11	1934	N	N	Unable to locate well in 1964.
* 601	Dave Henderson & John Lanier	Layne-Texas Co.	1945	1,441	4	J	105	+43.2	July 7, 1964	Flows	D,S	Measured flow 19 gpm in 1964. Estimated flow 25 gpm in 1960.
602	Nona Collins well 1	Hinkel Drilling Co.	1951	7,821	--	--	104	--	--	--	--	Oil test.
* 604	J. S. Linscomb	Frank Balcar	1940	150	3	Ch	100	--	--	Cf,G, 1 1/2	D,S	Drilled to supply water for dairy.
701	Mabel B. Hughes well 1	Woods Exploration & Production Co. et al.	1959	7,873	--	--	100	--	--	--	--	Oil test.
702	do	Sinclair Oil & Gas Co. & Atlantic Refining Co.	1957	7,850	--	--	111	--	--	--	--	Do.
703	Mabel B. Hughes well B-1	American Republics & Houston Oil Co.	1953	7,891	--	--	107	--	--	--	--	Do.
* 801	Southern Neches Corp.	Layne-Texas Co.	1946	1,606	8, 4	J	105	+	--	Flows	D,S	Measured flow 400 gpm in 1953. Estimated flow 200 gpm in 1964.
* 802	W. S. Richard	--	1922	30	24	Ch	100	20.2	May 18, 1942	B,H	D,S	Dug well. Concrete casing.
901	-- Medrano well 1	Houston Oil Co.	1940	7,351	--	--	105	--	--	--	--	Oil test.2/
33-101	Salvadore Castillo well 1	Houston Oil Co. & American Republic Co.	1943	7,410	--	--	108	--	--	--	--	Oil test.
102	Salvadore Castillo well 2	do	1951	8,125	--	--	89	--	--	--	--	Do.
103	Salvadore Castillo well 3	do	1952	8,121	--	--	89	--	--	--	--	Do.
104	-- Lambert well 1	J. P. Owens Drilling Co.	1951	8,320	--	--	75	--	--	--	--	Do.
105	F. M. Byers	--	1955	238	2	Ch	108	56.9	May 8, 1964	A,E	D,S	

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
*PR-62-33-106	Hardy Richardson	Paul Acheson	1940	92	2	Ch	105	--	--	J,E, 1/4	D,S	
107	do	George Bellinger	1963	520	2	Ev	105	40	1963	J,E	D,S	
* 201	Kirby Lumber Co.	--	1902	1,100	8	Ev	92	73.2 81.3	Jan. 4, 1964 Feb. 5, 1965	N	N	Formerly supplied water for large lumber mill.
* 202	do	O. C. Adams	--	761	5	Ev	92	45 73.9 81.9	1932 Jan. 4, 1964 Feb. 25, 1965	N	N	Do.
* 203	do	Frank Balcar	1936	280	9	Ch	92	20	1936	N	N	Screen from 260 ft to bottom.1/
204	M. B. Hughes well 1	American Republics Corp. & Houston Oil Co.	1951	8,103	--	--	92	--	--	--	--	Oil test.
205	H & T C RR. well 1	Atlantic Refining Co. & Sinclair Oil & Gas Co.	1957	8,503	--	--	94	--	--	--	--	Do.
206	Earl C. Hankamer well 1-D	American Republics Corp. & Houston Oil Co.	1954	8,541	--	--	76	--	--	--	--	Do.
207	H. E. Alexander well 1	Skelly Oil Co.	1956	8,499	--	--	63	--	--	--	--	Do.
208	Herbert York et al. well 1	K & H Operating Co.	1957	8,023	--	--	88	--	--	--	--	Do.
209	do	Hankamer Investment Co.	1956	8,210	--	--	85	--	--	--	--	Do.
* 210	W. R. Black	--	1934	24	36	Ch	90	12.8	May 19, 1942	B,H	D,S	Dug well. Wood casing.
301	Earl E. Hankamer well E-1	American Republics & Houston Oil Co.	1955	8,513	--	--	78	--	--	--	--	Oil test.
* 401	Jasper County Water Control & Improvement District well 1	Katy Drilling Co.	1959	498	12, 6	Ch	72	31 26.5 28.5 31.3	May 1959 Mar. 7, 1960 Apr. 24, 1964 Feb. 25, 1965	T,E, 40	P	Screen from 230 to 375 ft. Drawdown 41 ft after pumping 840 gpm for 10 hours. Gravel-packed.1/
402	do	Layne-Texas Co.	1952	410	8, 6	Ch	67	20 26.7 27.9	1952 Jan. 3, 1964 Feb. 25, 1965	T,E, 15	P	Screen from 370 to 380 ft, and 387 to 408 ft. Drawdown 75 ft after pumping 104 gpm. Supplied water for 20 houses in 1964.
* 403	C. M. Bond	George Bellinger	1959	624	4	Ev	67	4	1959	T,E, 7 1/2	P	Screen from 603 ft to bottom.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land-surface datum (ft)	Date of measurement			
PR-62-33-404	C. M. Bond	D. O. Darden	1957	450	4	Ev(?)	67	23.5 26.9	Mar. 8, 1960 Apr. 24, 1964	N	N	Quit using well because it produced iron.
* 405	Roy Richardson	George Bellinger	1963	460	--	Ev	78	40	1963	J,E	D,S, Irr	
* 406	John A. Lewis	--	1928	30	24	Ch	80	--	--	Cf,E, 1/4	D,S	Dug well. Concrete casing.
* 407	Mike Rogers	--	1929	17	48	Ch	65	13.1	May 15, 1942	C,W	D,S	Do.
* 408	Buna Independent School District	Paul Acheson	1939	262	3	Ch	75	--	--	Cf,E	P	Drilled to supply water for school.
* 501	B. A. Richardson	--	1915	17	36	Ch	80	10.8	May 19, 1942	B,H	D,S	Dug well. Wood curb.
601	O. S. Richardson	J. Frank Davis	1948	250	2	Ch	76	38 45.1	1948 May 1, 1964	A,E	D,S	
* 701	R. M. Franklin	--	1900	21	36	Ch	62	11.5	May 19, 1942	B,H	D,S	Dug well. Wood curb.
801	M. R. Walters well 1	Atlantic Refining & Sinclair Oil & Gas Co.	1958	9,000	--	--	66	--	--	--	--	Oil test.[2]
* 802	M. E. Fann	--	--	22	36	Ch	68	7.7 8.9	May 15, 1942 May 6, 1964	Cf,E	D,S	Dug well.
* 803	J. R. Spencer	J. R. Spencer	1940	18	1	Ch	50	--	--	C,H	D,S	Driven well.
804	The Texas Pipeline Co.	--	1912	400	6	Ev	80	--	--	N	N	Abandoned in 1964.
41-101	T. & N. O. RR. well 1	Atlantic Refining & Sinclair Oil & Gas Co.	1958	9,002	--	--	45	--	--	--	--	Oil test.
102	J. H. Kurth, Jr. well 1	do	1960	9,213	--	--	43	--	--	--	--	Oil test.[2]
* 201	O. T. Johnson	--	1938	63	6, 3	Ch	48	6	1942	N	N	Not used.
202	Harry V. Peveto	--	1952	219	2	Ch	50	29.9	May 5, 1964	A,E, 3/4	D	Screen from 209 ft to bottom.
* 203	Oliver Peveto	Blackie Jordan	1941	185	2	Ch	50	14	1941	N	N	Dry at 26 ft in 1964.
* 401	Magnolia Pipeline Co.	Magnolia Pipeline Co.	1926	680	5	Ev	40	5.8 24.1 32.3	May 15, 1942 Mar. 15, 1960 Nov. 18, 1963	N	N	Reported formerly supplied water for pumping station.
402	do	--	--	90	6	Ch	40	3.5	May 15, 1942	N	N	Could not locate well in 1963.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
*PR-62-41-602	Norbert Theriot	--	1946	316	1 1/2	Ch	42	31.2	Feb. 20, 1964	A,E, 1/2	D	Screen from 300 ft to bottom.
701	-- Vidor well 1	Phillips Petroleum Corp.	1948	7,409	--	--	331	--	--	--	--	Oil test.
* 702	Mixon Heirs	--	1942	71	1 1/2	Ch	38	19.4	Jan. 7, 1964	N	N	Drilled to supply water for dairy. Screen from 61 ft to bottom.
* 801	Mrs. Eunice Marceaux	Coastal Water Wells Co.	1952	730	10, 8, 6	Ch	32	26.9 34.8 34.2	Mar. 15, 1960 Jan. 7, 1964 Apr. 15, 1964	T,B	Irr	Pumps 1,700 gpm. Temp. 72°F.[1]
802	Buck Williams well 1	Standard Oil Co.	1956	7,209	--	--	28	--	--	--	--	Oil test.[2]
* 803	O. K. Ratcliff	-- Lesson	1939	65	3	Ch	--	--	--	N	N	Bored well. Filled and abandoned.
* 804	do	-- Jurden	1943	111	1 1/4	Ch	35	7	1960	J,E	D,S	Screen from 105 ft to bottom.
805	Alex Marceaux well 1	S. E. Gilbert	1954	6,989	--	--	37	--	--	--	--	Oil test.
901	Kirby Lumber Co. well 1	Standard Oil Co.	1947	8,006	--	--	30	--	--	--	--	Do.
* 902	D. Ward	-- Lesson	1940	72	2	Ch	36	14	1942	N	N	Screen from 67 ft to bottom. Destroyed.
903	B. F. Williams & Son	-- Darden	1957	64	1 1/4	Ch	36	21.2	Jan. 7, 1964	N	N	
904	Kirby Lumber Co.	--	1911	388	8	Ch	36	6	1912	N	N	Formerly supplied water for sawmill and lumber camp. Casing filled with rubbish in 1942.
905	-- Kurth et al. well 1	R. B. Mitchel & J. M. Flaitz	1952	7,350	--	--	32	--	--	--	--	Oil test.
49-209	Buck Williams well 2	Standard Oil Co.	1957	7,180	--	--	26	--	--	--	--	Do.

Newton County

TZ-36-50-701	M. Lowe	M. Lowe	1964	28	30	Tcs	275	20.5	Oct. 28, 1964	J,E	D	Dug well.
* 702	--	--	--	19	36	Tcs	260	10.0	May 21, 1942	B,H	D,S	Dug well. Wood casing. Old well.
* 801	Bennie Harrison	Bennie Harrison	1939	22	48	Tcs	300	17.2	do	B,H	D,S	Dug well.
* 901	H. A. Marshall	--	1932	12	36	Tcs	240	5.8	do	B,H	D,S	Dug well. Wood casing.
* 51-701	Onnie H. Weaver	--	--	27	36	J	250	22.6	do	B,H	D,S	Dug well. Concrete casing. Old well.

See footnotes at end of table.

Table 5.- Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
*TZ-36-52-404	Newton County	Seismograph Crew	1941	48	3	J	120	+	May 20, 1942	N, Flows	N	Iron casing. Estimated flow 5 gpm in 1942.
501	Toledo Bend Dam well G-3	Eustis Engineering Co.	1962	1,009	--	--	120	--	--	N	N	Stratigraphic test.2/
502	Toledo Bend Dam well G-4	do	1962	1,024	--	--	125	--	--	N	N	Do.
* 503	Joe R. Ferguson	--	--	15	30	J	100	9.1	May 20, 1942	B,H	D,S	Dug well. Concrete casing. Old well.
801	Bryant Gassaway	Bill Bishop	1958	160	3	J	100	+	Mar. 29, 1960	Flows	D	Estimated flow 70 gpm in 1960.
* 802	Mandy Odem	--	1930	30	36	J	145	24.3	May 20, 1942	B,H	D,S	Dug well. Wood casing.
* 57-904	A. L. Hilliard	A. L. Hilliard	1940	20	1	J	335	2.0	May 22, 1942	B,H	S	Bored well.
58-101	L. M. Scott	L. M. Scott	1948	60	30	J	530	31.9	Oct. 28, 1964	B,H	D	Do.
* 102	Walter Scott	--	1941	23	36	J	560	17.0	May 22, 1942	B,H	D,S	Dug well. Concrete casing.
* 301	Wilkins & Hart	--	--	26	36	J	400	18.6	May 21, 1942	B,H	D,S	Dug well. Concrete casing. Old well.
* 302	Mack Norton	--	1928	12	36	J	540	6.7	do	B,H	D,S	Dug well. Concrete casing.
401	Wier Long Leaf Lumber Co.	--	1921	54	6	J	420	47	1921	N	N	Bored well. Abandoned in 1934.
* 59-101	B. C. Perry	--	1927	23	42	J	445	16.1	May 22, 1942	B,H	D,S	Dug well. Concrete casing.
501	Luther Moore Lumber Co. well 1	Pan-American Petroleum Corp.	1963	15,384	--	--	330	--	--	--	--	Oil test.
502	B. M. Clark	William Bishop	1956	207	2	J	320	85	1956	A,E	D	Screened with 10 ft of 2-in. stainless steel screen from 197 ft to bottom. Supplies water for 4 houses.
* 503	Kimball Love	--	1941	62	36	J	320	60.1	May 21, 1942	B,H	D,S	Dug well. Concrete casing.
* 601	Carol Miller	--	--	57	36	J	280	48.7	do	B,H	D,S	Dug well. Concrete casing. Old well.
* 701	Stark & Brown	--	--	22	36	J	230	13.1	do	B,H	D,S	Dug well. Wood casing.
801	City of Wiergate	Pitre Water Well Co.	1956	178	4	J	200	41	1956	N	N	Abandoned. Formerly supplied water for 16 houses.
* 802	do	Bill Bishop	1960	227	2	J	220	40	1960	A,E	P	Supplies water for 14 houses.
* 803	Wier Long Leaf Lumber Co.	McMasters & Pomeroy	1937	232	6	J	195	30	1942	A,-	Ind, D,P	Casing: 6-in. to 180 ft, 4-in. to bottom. Screen from 190 to 222 ft. Reported discharge 500 gpm in 1942.1/

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
*TZ-36-59-901	Burkeville High School	McMasters & Pomeroy	1938	120	4	J	190	--	--	C,E, 3/4	P	Drilled to supply water for high school.
* 60-101	W. L. Trotti	Bill Bishop	1961	400	4	J	165	+ 6.5	Mar. 24, 1965	Flows	S	Measured flow 13 gpm in 1965.
* 201	W. H. Gunter	do	1959	160	2	J	118	+	Mar. 22, 1965	Cf,E, Flows	D	Measured flow 15 gpm in 1965.
* 202	Charles Gunther	do	1964	160	2	J	125	+11.8	do	Flows	D	Measured flow 13 gpm in 1965.
* 203	Dewey Gunther	do	1964	160	2	J	125	+10.8	do	Flows	D	Measured flow 28 gpm in 1965. Open hole completion.
* 204	Larkin Myers	do	1964	160	2	J	126	+ 7.6	Mar. 24, 1965	Cf,E, Flows	D,S	Estimated flow 5 gpm in 1965.
* 205	Sutton Gunther	do	1962	168	2	J	116	+20.3	do	Cf,E, Flows	D,S	Measured flow 3 gpm in 1965.
206	Robert A. Smith	do	1964	160	2	J	116	+	Mar. 24, 1965	Cf,E, Flows	D,S	Measured flow 2.5 gpm in 1965.
* 207	Newton County	Seismograph Crew	--	--	--	J	155	+	--	Flows	S	Estimated flow 5 gpm in 1965. Old well.
* 208	Henry Gunter	--	1922	22	42	J	120	17.0	May 20, 1942	B,H	D,S	Dug well. Concrete casing.
401	Lutcher-Moore well 1	Olin Industries Michel T. Holbuty	1954	9,091	--	--	290	--	--	--	--	Oil test.[2/]
402	Lutcher-Moore	Cox & Hamon	1950	7,515	--	--	250	--	--	--	--	Oil test.
403	C. R. Skinner	Harvey Roth	1964	235	--	J	305	105	Sept. 1964	A,E	D	Plastic screen from 229 ft to bottom.
* 404	Cary Ray	--	--	52	36	J	305	45.3	May 20, 1942	N	N	Dug well. Concrete casing.
501	Godfrey & Brown	Boger & Boger	1945	5,866	--	--	108	--	--	--	--	Oil test.
* 601	Mrs. Jeff Bischamp	Bill Bishop	1959	225	2	J	105	+	Mar. 24, 1960	Flows	D,S	Well flows approximately 50 gpm in 1965.
* 602	White Horse Lodge	do	1958	225	2	J	105	+24.3	Mar. 22, 1965	Flows	D	Measured flow 45 gpm in 1965.
* 603	Texas Highway Dept.	Texas Highway Dept.	1939	27	6	J	100	+	May 20, 1942	Flows	N	Estimated flow 10 gpm in 1942 and 1/2 gpm in 1965.
604	-- Hall	Bill Bishop	1952	90	2 1/2	J	125	+	1960	J,E, Flows	D	Reported flow 5 gpm in 1960. Measured flow 1 gpm in 1965. Tenant reportes flow fluctuates with river level.
* 605	M. T. Rathbone	do	1964	260	2	J	108	+24	Mar. 1965	Flows	D	Screen from 258 ft to bottom. Measured flow 10 gpm in 1965. Reported flow 18 gpm in 1964.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
*TZ-36-60-606	Charles Gunther	Bill Bishop	1964	160	2	J	100	+	Mar. 1965	Cf,E, Flows	D	Plastic screen from 144 to 160 ft. Estimated flow 4 gpm in 1965.
* 607	do	do	1963	160	2	J	100	+	do	Flows	S	Estimated flow 3 gpm in 1965. Open hole completion.
* 608	do	do	1963	160	2	J	100	+	do	Flows	S	Estimated flow 1 gpm in 1965. Open hole completion.
* 609	Henry Hall	--	1950	155	3	J	100	+	do	Cf,E, Flows	D,S	Estimated flow 2.5 gpm in 1965. Temp. 69°F.
* 701	Bill Talley	Bill Bishop	1950	200	2	J	115	+16.3	Mar. 22, 1965	Flows	D,S	Estimated flow 5 gpm in 1965. Temp. 70°F.
* 702	C. Newberry	--	1936	24	36	J	200	13.9	May 20, 1942	B,H	D,S	Dug well. Wood casing.
* 62-02-101	Elmer Simmons	--	1932	45	24	J	300	41.6	May 21, 1942	Cf,G, 1 1/2	D,S	Dug well. Concrete casing.
201	John T. Holmes	Bill Bishop	1959	130	2	J	298	42	1959	A,E	D	
* 202	A. D. Holmes	--	1939	50	6	J	300	41.2	May 21, 1942	B,H	D,S	Bored well. Wood casing.
* 301	Hunter Fowler	Hunter Fowler	1936	33	36	J	300	30.1	do	B,H	D,S	Dug well. Wood casing.
* 401	Charles W. Adams	Charles W. Adams	1940	45	6	J	260	38.9	May 22, 1942	B,H	D,S	Bored well. Wood casing.
* 402	Newton County School District	--	--	34	24	J	300	26.5	do	B,H	D	Dug well. Concrete casing. Old well. Formerly supplied water for school.
* 501	Hanah Kyles	--	--	15	36	J	270	4.2	do	B,H	D,S	Dug well. Wood casing. Old well.
502	E. W. Brown, Jr.	Pan-American Petroleum Corp.	1962	14,100	--	--	297	--	--	--	--	Oil test.
* 601	H. H. Westbrook	C. O. Lynch	1919	33	36	J	300	25.6	May 22, 1942	B,H	D,S	Dug well. Brick casing.
702	P. B. Davis	George Merritt	1958	171	2	J	245	--	--	C,H	D	Reported iron in water.
* 703	Can Buitt	Can Buitt	1933	16	24	Ev(?)	200	9.2	May 21, 1942	B,H	D,S	Dug well. Cement casing.
801	Mrs. -- Coleman	Mrs. -- Coleman	--	35	30	Ev(?)	305	27.7	Oct. 20, 1964	J,E	D	Dug well.
802	Leo Boits	George Bellinger	1958	407	2	J	315	100	1958	A,E	D,S	Screen 7 ft at bottom. Supplies water for chicken ranch.
* 803	Jess M. Woods	Jess M. Woods	1932	18	1 1/4	Ev(?)	300	--	--	C,H	D,S	Bored well.
901	Graddie Woods	Graddie Woods	1957	18	--	Ev	325	8	Dec. 1964	T,E	D	Dug well.
03-201	Wiley Lewis	-- Davis	1954	300	2	J	215	35	1954	A,E	D	

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
TZ-62-03-202	W. H. Greer	Bill Bishop	1954	163	2	J	215	51.2	Dec. 4, 1964	A,E	D	Nine feet of screen.
* 203	Mrs. S. C. Erwin	--	--	30	36	Ev(?)	210	23.7	May 22, 1942	B,H	D,S	Dug well. Concrete casing. Old well.
* 301	City of Burkeville	--	1964	1,050	12	J	200	19.7	Dec. 3, 1964	T,E	P	Screen from 990 ft to bottom. Temp. 70°F.
302	Gordon Woods	Bill Bishop	1963	150	2	J	240	93.5	do	A,E	D	
303	L. A. Birch	do	1958	150	2	J	160	15	1958	A,E	D,S	
* 304	Mary Dickerson	--	1912	25	36	Ev(?)	160	6.8	May 22, 1942	B,H	D,S	Dug well. Wood casing.
* 305	Jack Ozment	--	--	26	36	Ev(?)	160	22.2	do	B,H	D,S	Dug well. Concrete casing. Old well.
* 401	C. W. Simmons	--	1930	22	36	Ev	320	19.0	do	Cf,E, 1/4	D,S	Dug well.
* 501	A. M. Sharver	--	1934	16	36	Ev	180	--	--	B,H	D,S	Dug well. Wood casing.
* 601	John Summers Estate	--	1930	19	42	Ev(?)	348	13.0	May 22, 1942	B,H	D,S	Dug well. Unlined.
* 701	R. E. Lee	Bill Bishop	1961	522	2	J	310	130	1961	A,E	D,S	Temp. 69°F.
* 702	E. A. Lindsey	--	1925	56	36	Ev	300	43.2	May 23, 1942	B,H	D,S	Dug well. Concrete casing.
801	W. A. Slaydon	Roth Bros.	1956	100	2	Ev	297	75	1956	T,E	D	
901	Barnie Griggs	Barnie Griggs	1949	36	2	Ev	215	29	1964	J,E	D,S	Bored well.
* 902	C. H. Young	C. H. Young	1924	23	36	Ev	200	20.4	May 22, 1942	B,H	D,S	Dug well. Wood casing.
04-101	Kelly Tipton	--	1963	185	2	J	119	+	Mar. 17, 1965	J,E, Flows	D	Estimated flow 15 gpm in 1965. Temp. 70°F.
* 102	W. H. McMahon	Bill Bishop	1964	185	2	J	115	+19.0	do	Cf,E, Flows	D	Measured flow 5 gpm in 1965. Temp. 70°F.
* 103	Curry McMahon	--	1939	18	42	J	150	12.2	May 22, 1942	B,H	D,S	Dug well. Concrete casing.
* 401	Don Ford	Pete Gunstream	1948	120	2 1/2	J	106	+21	1948	Flows	D	Estimated flow 4 gpm in 1965. Open end at 120 ft. Temp. 71°F.
* 402	-- Newman et al.	do	1950	230	3	J	118	+15.0	Mar. 16, 1965	Cf,E, Flows	D	Measured flow 30 gpm in 1965. Supplies water for camp house. Temp. 72°F.
403	Tom McMahon	--	--	100	2	J	110	+	Mar. 17, 1965	Cf,E, Flows	D	Estimated flow 1 gpm in 1965. Supplies water for camp house.
404	Wendel Force	Bill Bishop	1963	200	2	J	105	+	do	Flows	D	Estimated flow 20 gpm in 1965. Supplies water for camp house.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

	Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
									Below land surface datum (ft)	Date of measurement			
	TZ-62-04-501	Sam McMahon	Seismograph Crew	--	200	2	J	95	+	--	Flows	D,S	Reported flow 35 gpm in 1965.
	502	-- Freeman	--	1962	200	2	J	95	+	Mar. 27, 1964	Flows	D	Estimated flow 10 gpm in 1964. Supplies water for several camp houses and fish pond.
*	503	F. C. Knighton	--	1929	12	36	Ev(?)	100	6.9	May 22, 1942	B,H	D,S	Dug well. Wood casing.
*	701	Louis Smith	--	1938	53	6	Ev	230	40.5	do	B,H	D,S	Bored well. Wood casing.
*	10-101	Lottie Young	--	1922	22	42	Ev	348	7.6	May 23, 1942	B,H	D,S	Dug well. Unlined
	102	J. I. Howell	Seismograph Crew	1939	75	3	Ev	360	53.9	May 24, 1942	N	D	Bored well. Open, no screen.
*	201	Newton County School District	--	1941	25	35	Ev	320	--	--	C,H	P	Dug well. Concrete casing. Supplies water for school.
	301	City of Newton well 4	Layne-Texas Co.	1947	192	19, 8	Ev	165	12	1947	T,E	N	Not in use because of fine sand. Observation well. Drawdown 41 ft when pumping 97 gpm.
*	302	City of Newton	do	1953	720	8	J	212	35.9 37.2	Mar. 28, 1960 Feb. 11, 1965	T,E, 15	P	Drawdown 60 ft pumping 250 gpm. Location tested and electric logged to 1,025 ft by Big State Drilling Co., in 1950. Temp. 71°F.
	303	City of Newton well 3	do	1944	180	--	Ev	165	--	--	T,E	P	Standby and observation well. Reported pumps 60 gpm.
	304	Newton Lumber Co.	--	1950	180	4	Ev	175	--	--	A,G	Ind	
	305	do	--	1945	180	4	Ev	175	--	--	A,G	Ind	
	306	Sarton Saw Mills	Bellinger Drilling Co.	--	520	--	J	190	--	--	N	N	Formerly supplied water for sawmill.
	307	-- Shofner	-- Davis	1901	160	2	Ev	280	5.7	Dec. 3, 1964	N	N	Not used since 1957. Measured depth 100 ft in 1964.
*	308	City of Newton	Layne-Texas Co.	1964	1,370	--	J	212	--	--	--	--	Test well. Electric logged from 100 to 1,370 ft. Sampled at 1,071-1,091 and 1,285-1,305 ft.
*	309	do	Texas Water Wells	1964	1,210	12, 6	J	215	42.7	Feb. 11, 1965	T,E	P	Electric logged to 1,370 ft. Screened with 6-in. stainless steel wire wrapped pipe from 1,070 ft to 1,110 ft, and 1,130 to 1,190 ft; 12-in. casing cemented to surface. Well reportedly drewdown 56 ft after pumping 8 hours at 430 gpm on initial test. Temp. 76°F.
*	310	City of Newton well 5	McMasters & Pomeroy	1940	200	6	Ev	180	11	1941	T,E, 10	P	1/
	311	City of Newton	John Adams	1929	850	8	J	180	2	1936	N	N	Formerly supplied water for city of Newton. Abandoned in 1938 when new well was drilled.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
*TZ-62-10-402	Monroe Kenebrew	--	1934	39	36	Ev	200	32.0	May 24, 1942	B,H	D,S	Dug well. Unlined.
501	East Texas Baptist Encampment	Layne-Texas Co.	1959	695	8	J	245	77.0	Oct. 19, 1964	T,E	D,P	Dissolved solids reported to be 194 ppm and chloride 11 ppm. Estimated usage 5 ac-ft/year.
* 502	Hoy Fuller	--	--	31	36	Ev	240	24.3	May 24, 1942	B,H	D,S	Dug well. Old well. Unlined.
* 503	Civilian Conservation Corps	--	--	260	6	Ev	240	--	--	N	N	Formerly supplied water for CCC Camp.
504	S. A. Benze	Dutch Shell Seismograph Crew	1936	97	3	Ev	180	7.6	May 24, 1942	N	N	Bored well. Brilled to 97 ft, but casing set in sand at 64 ft. Open hole completion.
* 601	H. A. Willett	--	1905	26	36	Ev	180	17.5	May 25, 1942	B,H	D,S	Dug well. Unlined.
* 602	Lewis Ferguson	--	1928	24	42	Ev	220	18.3	do	B,H	D,S	Do.
* 701	J. B. Stark	--	1930	16	30	Ch	180	4.0	May 24, 1942	B,H	D,S	Dug well. Concrete casing.
801	Carl Davidson	Higgs & West	1964	346	2	Ev	172	49	Oct. 1964	A,E, 1	D,S	Screen 8 ft of 2-in.
802	John Nielson	--	--	700	2	J	180	--	--	A,E	D	
* 803	A. Wilkinson	--	--	34	42	Ch	172	14.1	May 24, 1942	B,H	D,S	Dug well. Unlined.
901	Texas Eastern Pipeline	Raybord Drilling Co.	1951	300	7, 3	Ev	131	13.7	July 29, 1964	T,E, 3	D,Ind	Pumping station inactivated in 1964. 165 ft of 7-in. casing, 162 ft of 3-in. Screen 40 ft.[1/]
11-101	L. L. Griggs	Bill Bishop	--	100	4	Ev	260	--	--	J,E	S	Plastic casing.
* 102	M. C. Womack	--	1940	68	24	Ev	250	60	May 1942	C,W	D,S	Dug well. Concrete casing.
103	O. C. Tucker	Shell Oil Co.	1941	139	3	Ev	200	--	--	N	N	Filled seismic hole reported to have flowed from open hole when drilled.
* 201	Fowler Smith	--	--	22	48	Ev	220	4.2	May 23, 1942	B,H	D,S	Dug well. Old well. Unlined.
* 202	W. H. Shepherd	--	--	31	36	Ev	180	28.9	May 25, 1942	B,H	D,S	Do.
* 401	G. R. Joyce	--	1936	21	36	Ev	200	7.9	do	B,H	D,S	Dug well. Unlined.
* 402	Henry Ebare	--	--	29	42	Ch	130	13.5	do	B,H	D,S	Dug well. Old well. Unlined.
* 501	Warren Gunter	--	--	37	36	Ch	130	26.9	do	B,H	D,S	Do.
601	Kirby Winfree well 1-K	Oil Reserves Corp.	1958	9,072	--	--	--	--	--	--	--	Oil test.
602	Kirby Winfree well 6	do	1961	11,175	--	--	--	--	--	--	--	Do.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
TZ-62-11-603	C. M. Barrow	William Bishop	1961	188	2	Ev	155	47.1	Oct. 30, 1964	A,E	D,S	Screen from 182-188 ft. Supplies water for chicken farm.
* 604	R. B. Simmons	--	1902	40	36	Ev	135	31.6	May 25, 1942	B,H	D,S	Dug well. Unlined.
605	Houston Oil Co.	--	1912	360	8	Ev(?)	160	--	--	N	N	Formerly supplied water for sawmill and camp. Pipe pulled and hole abandoned in 1930.
801	Gailon Daugherty	Bill Bishop	1964	140	2	Ev	139	30.7	Oct. 22, 1964	J,E	D	Plastic screen from 132 to 140 ft. Driller reports sand with cherty gravel from 126 ft to bottom.
* 802	S. F. Hughes	--	1941	20	1	Ch	130	--	--	C,H	D,S	Driven well.
901	Broussard Ranch	Simmons Water Well Service	1959	265	4	Ev	135	--	--	J,E, 3	D,S	
* 902	T. F. Lee	George Bellinger	1958	812	3	J	107	+42.7	Nov. 3, 1964	Flows	S	Measured flow 55 gpm in 1964. Temp. 75°F.
903	Oil Reserves Corp.	do	1958	400	6	Ev	97	--	--	T,E	Ind, D,P	Reported discharge 56 gpm. Reported average use 15 gpm.
* 904	Miles Miller	--	--	23	24	Ch	100	19.5	May 25, 1942	B,H	D,S	Dug well. Concrete casing. Old well.
* 12-401	T. C. Lowe	--	1927	16	36	Ev(?)	95	11.2	do	B,H	D,S	Dug well. Concrete casing.
402	Arthur J. Davis well 1	Southwest Gas Production Co.	1960	11,399	--	--	70	--	--	--	--	Oil test.
501	B. G. Lindsey well 1	Humble Oil & Refining Co.	1957	7,800	--	--	72	--	--	--	--	Oil test.[2/]
502	Humble Oil & Refining Co. well 2	--	1957	7,807	--	--	69	--	--	--	--	Oil test.
* 701	Johathan Hurst	William Bishop	1964	302	2	Ev	71	+ 7.5	Oct. 29, 1964	Flows, J,E, 1/3	D,S	Supplies water for fish pond. Measured flow 8 gpm in 1964. Screen from 296 to 302 ft. Temp. 68°F.
702	do	do	1964	265	2	Ev	71	+ 7.0	do	Flows	S	Measured flow 13 gpm in 1964. Screen from 259 ft to bottom. Supplies water for fish pond. Temp. 67°F.
703	do	do	1964	212	2	Ev	70	+ 9.6	do	Flows	S	Estimated flow 10 gpm. Screen from 206 ft to bottom. Supplies water for fish ponds. Temp. 67°F.
704	do	do	1964	189	2	Ev	69	+10.6	do	Flows	S	Measured flow 12 gpm in 1964. Screen from 183 ft to bottom. Supplies water for fish ponds. Temp. 67°F.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
*TZ-62-12-705	Oil Reserves Corp.	George Bellinger	--	300	4	Ev	70	+ 8.2	Oct. 30, 1964	Flows	Ind	Estimated flow 5 gpm in 1964.
* 18-101	Jim Weaver Estate	--	--	21	36	Ch	150	5.3	May 24, 1942	B,H	D,S	Dug well. Unlined.
102	Southwestern Lumber Co. well 1	Tide Water Oil Co.	1934	5,848	--	--	130	--	--	--	--	Oil test.[1]
* 201	Mrs. Robert Calhoun	--	1929	30	36	Ch	140	11.8	May 24, 1942	B,H	D,S	Dug well. Unlined.
202	J. R. Herrin	--	1935	22	1 1/4	Ch	105	18	1935	C,H	D,S	Bored well. 3 ft of screen. Supplies water for filling station.
301	Kirby Drenman well 1	L. D. Cain	1952	8,523	--	--	115	--	--	--	--	Oil test.
302	Mrs. P. E. Lee	Grady Ellis	1964	70	2	Ch	117	--	--	J,E, 1/2	D	
303	Melvin Bishop	--	--	25	30	Ch	108	7.9	July 30, 1964	Cf,E, 1/2	D,S	Concrete casing.
* 304	Sarah Lewis	--	1933	18	1 1/4	Ch	105	--	--	N	N	Driven well.
401	G. R. Smith et al. well 1	F. C. Gaines, Jr.	1958	7,008	--	--	97	--	--	--	--	Oil test.
402	-- Holley	-- Davis	--	300	2	Ev	120	--	--	A,E	S	Old well.
* 403	Tom Gilchriest	--	--	25	36	Ch	110	14.0	May 24, 1942	B,H	D,S	Dug well. Wood casing. Old well.
* 404	Southwestern Settlement and Development Co.	W. T. Arnett	1907	1,495	4	J	106	+	1907	N	N	Caved and Abandoned. Well 627 in Water-Supply Paper 335.[1]
501	M. B. Lewis well 1	Sinclair Oil & Gas Co.	1961	7,003	--	--	99	--	--	--	--	Oil test.
502	J. W. King	--	1952	186	2	Ch	120	40.8	July 30, 1964	A,E	D,S	
503	Burton McDonald Saw Mill	Roff Bros.	1962	137	2	Ch	110	--	--	J,E, 1/2	Ind	Reported iron in water stains fixtures.
504	Hooks Slaughter	--	--	136	2	Ch	115	--	--	A,E	D	Screen 10 ft.
* 505	Tom Singletery	--	--	29	24	Ch	110	21.1	May 26, 1942	B,H	D,S	Dug well. Concrete casing. Old well.
* 601	Tom Wilson Estate	--	--	38	24	Ch	123	26.1	do	B,H	D,S	Do.
701	W. West well 1	Pure Oil Co.	1960	11,526	--	--	99	--	--	--	--	Oil test.
702	-- Moore well 1	Holmes Drilling Co.	1956	7,210	--	--	111	--	--	--	--	Do.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
TZ-62-18-703	-- Hoosier	Avery & Hulver	1961	9,010	--	--	121	--	--	--	--	Oil test.
704	Texas A&M University well 1	H. Cockburn	1941	9,374	9 7/8	--	80	--	--	--	--	Do.
* 705	Hayden Hollis	--	1940	30	36	Ch	124	4.0	May 26, 1942	B,H	D,S	Dug well. Wood casing. Owner reported water level high due to rain.
801	Texas Forest Service	Paul Acheson	1952	210	3	Ch	115	43.9 43.2	July 21, 1964 Mar. 11, 1965	A,E	D	Screened with 24 ft of 2-in. stainless steel from 186 to 210 ft.
802	Bleakwood Gas Unit well 1	Humble Oil & Refining Co.	1951	9,449	--	--	85	--	--	--	--	Oil test.
803	D. M. Henderson well 1	Cooper Petroleum Co.	1959	7,012	--	--	88	--	--	--	--	Do.
* 804	Texas Forest Service	Frank Balcar	1925	350	4	Ch(?)	119	--	--	N	N	Well has been destroyed.
* 805	do	do	1933	150	4	Ch(?)	123	34.6	May 26, 1942	N	N	Formerly supplied water for CCC Camp. Well has been destroyed.
806	Calvin Singletary	George Bellinger	1964	120	7	Ch	84	20	1964	A,E, 5	Irr	Slotted pipe from 106 ft to bottom. Reported pumpage 105 gpm. Will be used to irrigate improved pasture.
* 807	E. D. Marshall	Seismograph Crew	1941	26	1 1/4	Ch	83	23	1942	C,H	D,S	Bored well.
* 901	Biloxi School	--	1937	14	24	Ch	125	--	--	C,H	P	Dug well. Concrete casing. Supplied water for school.
19-101	George McCracken	Grady Ellis	1963	100	--	Ch	110	24.5	July 30, 1964	A,E, 3/4	D,S	Clay outcrop. Reported first sand 30 to 50 ft in local wells.
* 102	S. M. Harrin Estate	--	1918	14	30	Ch	106	8.7 12.3	May 25, 1942 July 30, 1964	Cf,E	D,S	Dug well. Concrete curb. Open hole. Well was cycling every 3 minutes in 1964. Owner reports airlift eliminated red water problem.
103	Mrs. P. E. Lee	--	1960	178	--	Ch	112	20.5	July 30, 1964	A,E	D	
201	Lewis Dunning well 1	Atlantic Refining Co., and Sinclair Oil & Refining Co.	1961	7,150	--	--	77	--	--	--	--	Oil test.
* 202	Edward L. Davis	--	1902	26	36	Ch	120	16.3 19.9	May 25, 1942 July 29, 1964	B,H	D,S	Dug well. Owner reports well will rise to 10 ft of surface after some winter rains. Unlined.
* 301	J. M. Inman	R. T. Briscoe	1931	1,506	8	J,Ev	72	+	Apr. 15, 1942	Flows	S	Owner reports initial flow in excess of 500 gpm. Present flow about 1.0 gph.1/

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
TZ-62-19-302	Kirby Oil & Gas Co. well 1	L. D. French	1955	7,015	--	--	75	--	--	--	--	Oil test.
303	E. T. Inman well 1	--	1949	11,000	--	--	70	--	--	--	--	Do.
304	T. A. Campbell, Jr.	-- Davis	1942	352	2	Ev	80	+ 7.1	July 28, 1964	Cf,E, 1/3, Flows	D	Measured flow 1 gpm in 1964. Screened with 30 ft of 2-in. copper screen from 322 ft to 352 ft. Supplies water for 3 houses and store.
305	C. P. Hughes well 1	Sun Oil Co.	1961	12,017	--	--	70	--	--	--	--	Oil test.
306	do	R. B. Rushall	--	15	2	Ch	75	--	--	J,E, 1/4	D,Ind	
* 307	L. M. Davis	--	1942	29	1 1/4	Ch	85	--	--	C,H	D,S	Driven well.
* 308	T. J. Brown	T. J. Brown	1939	22	1 1/4	Ch	70	8	1942	C,H	D,S	Do.
* 401	Jim L. Stark	--	1907	20	36	Ch	95	14.7	May 25, 1942	B,H	D,S	Dug well. Unlined.
* 402	James Randolph	James Randolph	1939	16	1 1/4	Ch	75	--	--	C,H	D,S	Driven well. 2 ft screen at bottom.
501	-- Hendrix well 1	F. J. Anderson Trust	1944	9,511	--	--	70	--	--	--	--	Oil test.[2/]
502	O. B. Sawyer well 1	Russell Maguire	1958	12,519	--	--	65	--	--	---	--	Oil test.
601	E. P. Hughes well 1	Humble Oil & Refining Co.	1946	8,546	--	--	60	--	--	--	--	Oil test.[2/]
602	W. W. Moore, Jr.	do	1945	--	--	--	--	--	--	--	--	Do.
603	L. J. Barras	Frank Michelle	1961	446	2	Ev	68	+14.5	July 24, 1965	Flows	D	Measured flow 5 gpm in 1964. Screened with 8 ft of 2-in. screen from 438 ft to bottom.
604	E. D. Gilchrest	E. D. Gilchrest	1932	24	1 1/2	Ch	70	--	--	Cf,E	D,S	Bored well.
* 605	Jackson Estate	--	1910	20	1 1/4	Ch	75	--	--	C,H	D,S	Driven well.
* 701	A. B. Kellum	A. B. Kellum	1940	18	1 1/4	Ch	62	--	--	C,H	D,S	Driven well. 2 ft of screen.
801	R. C. Hext, Jr.	R. C. Hext, Jr.	1964	25	1 1/2	Ch	60	10.9	July 22, 1964	Cf,G	Irr	Driven well. Screened with 4 ft of 1-in. brass screen from 21 ft to bottom. Pumps well with portable pump to water improved pasture.
* 802	R. C. Hext	George Bellinger	1963	500	3	Ev	57	+22.8	Oct. 13, 1964	Flows	S	Measured flow 80 gpm in 1964. Screened from 479 ft to bottom. Temp. 71°F.
20-101	Noah Hughes well 1	Sinclair Oil & Gas Co.	1955	7,808	--	--	64	--	--	--	--	Oil test.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
TZ-62-20-102	E. D. Lamens	Grady Ellis	1963	300	2	Ev	65	+ 9.2	July 27, 1964	Flows	D	Estimated flow 3 gpm in 1964. 8 ft plastic screen bottom of well.
103	Gardy Ellis	do	1964	275	3	Ev	60	+	do	Flows	D	Estimated flow 1/2 gpm in 1964. Stainless steel screen from 267 ft to bottom.
104	O. V. Hughes	Frank Davis	1949	350	1 1/4	Ev	58	+	do	Flows	D,S	Estimated flow 2 gpm in 1964.
25-304	Kirby Lumber Co.	--	--	797	8	Ev	95	+	1908	N	N	Old well. Formerly supplied sawmill and town of Call. Abandoned.
305	do	Gust Warnecke	1906	852	8	Ev	95	+	1906	N	N	Reported to flow 8 gpm in 1906. Formerly supplied water for sawmill and town of Call. Abandoned in 1942.
* 306	do	John Adams	1935	529	8	Ev	100	40	1935	N	N	Screened from 489 ft to bottom. Reported pumped 325 gpm in 1942. Supplied water for sawmill and camp. Not in use in 1964.
603	Kirby Lumber Co. well 1	Gulf Oil Corp.	1944	10,500	--	--	78	--	--	--	--	Oil test.
26-101	Joe Manchac	Donald West	1963	160	2	Ch	106	38.1	July 21, 1964	A,E	D,S	
102	do	Rath Bros.	1949	52	2	Ch	106	15.6	do	N	N	Bored well. Filled to 28 ft in 1964. Owner reports well produced red water.
* 103	A. M. Bennett	A. M. Bennett	1914	24	36	Ch	95	6.2	May 26, 1942	B,H	D,S	Dug well. Unlined.
* 104	W. O. Roy	--	1936	24	24	Ch	105	14.2	do	C,W	D,S	Dug well. Concrete casing.
201	-- Stawther well 1	Meridith & Co.	1955	10,518	--	--	85	--	--	--	--	Oil test.
202	-- Lee well 1	Bright & Schiff	1962	9,678	--	--	90	--	--	--	--	Do.
* 203	W. F. McCreight	B & L Drilling Co.	1954	1,300	3	J	60	+85.5	Mar. 9, 1965	Flows	S	Measured flow 170 gpm in 1964. 40 ft of 2 1/2-in. screen. Temp. 83°F.
* 204	J. D. Bean	--	--	46	36	Ch	107	38.7	May 26, 1942	B,H	D,S	Dug well. Wood casing. Old well.
* 301	Eddie Levias	--	1937	17	1 1/4	Ch	70	--	--	C,H	D,S	Driven well.
401	Kirby Lumber Corp. well 1	Robert W. Garwick	1954	8,003	--	--	107	--	--	--	--	Oil test.[2/]
402	H & T C RR. well 1	Atlantic Refining Co., & Sinclair Oil & Gas Co.	1963	7,862	--	--	118	--	--	--	--	Oil test.
403	T. C. Holmes well 1	Panuco Oil Leases Inc. & Oil Maintenance Inc.	1955	8,020	--	--	90	--	--	--	--	Do.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
*TZ-62-26-404	Mrs. T. G. Holmes	--	1924	48	36	Ch	96	24.2	May 26, 1942	C,W	D,S	Dug well. Tile casing.
501	H. Haygood well 1	Atlantic Refining Co., & Sinclair Oil & Gas Co.	1962	6,517	--	--	60	--	--	--	-	Oil test.
502	Kirby-Gray well 1-K	Oil Reserves Corp.	1960	7,600	--	--	100	--	--	--	--	Do.
* 503	T. S. Holmes	-- Burks	1959	200	2	Ch	82	23.9	May 27, 1964	A,E	D,S	Supplies water for dairy. Screened from 190 ft to bottom.
504	do	--	1937	25	36	Ch	82	10.2	do	N	N	
505	R. A. Holmes well 1	Spur Oil Co.	1958	7,903	--	--	72	--	--	--	--	Oil test.
* 506	Landrum Estates	--	1939	40	36	Ch	102	34.9	May 26, 1942	B,H	D,S	Dug well. Unlined.
601	Newton County Lumber Co. well 1	The Texas Co.	1950	11,567	--	--	50	--	--	--	--	Oil test.[2/]
602	Sud West, Jr. well 1	do	1950	11,470	--	--	57	--	--	--	--	Oil test.
603	J. H. Kurth, Jr. well A-1	Atlantic Refining Co., & Sinclair Oil & Gas Co.	1957	8,017	--	--	53	--	--	--	--	Do.
604	J. H. Kurth, Jr. well A-2	do	1957	7,907	--	--	53	--	--	--	--	Do.
605	Newton County Lumber Co. well 1	The Texas Co.	1950	11,498	--	--	51	--	--	--	--	Do.
606	J. H. Kurth, Jr. well 3	North-Central Oil Corp. & Ada Oil Co.	1962	6,815	--	--	60	--	--	--	--	Do.
607	Donald West	Donald West	1962	45	2	Ch	50	3.5	May 22, 1964	N	D	Test well.
608	Camp Bill Stark	--	1946	160	2	Ch	60	17.6	May 24, 1964	A,E, 3/4	D,P	Supplies water for Boy Scout Camp, and caretaker's home. Has from 100 to 175 boys in season camp.
609	Mrs. -- Nealson	--	--	28	24	Ch	61	18.9	May 22, 1964	N	N	Dug well. Old well.
* 610	Campfire Girls	--	1955	285	3, 2	Ch	60	--	--	J,E	D,P	Ontanya Camp. 3-in. pipe to 84 ft. Screened with 6 ft of 2-in. stainless steel screen at 278 to 284 ft.
* 611	Cecil Lozanbee	Frank Michelle	1953	647	2	Ev	62	+ 7.3	July 9, 1964	Flows, J,E	Irr, D,S	Reported flow 2.1 gpm in 1964. Screened from 637 ft to bottom.
612	Robert Owens	Paul Acheson	1949	610	2	Ev	50	+	do	Flows	D	Estimated flow 10 gpm in 1964.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
TZ-62-26-613	Robert Owens	Paul Acheson	1949	612	4	Ev	50	+	--	Flows, Cf,E	D,S	Estimated flow 150 gpm in 1964.
* 614	J. J. Bean	--	1938	20	1 1/4	Ch	63	--	--	C,H	D,S	Driven well. Supplied water for store. Not in use in 1964.
701	West Quinn well 2	Warren Petroleum Corp.	1953	7,999	--	--	100	--	--	--	--	Oil test.
702	J. H. Kurth well 1	Houston Oil Co. & American Republic Corp.	1952	8,305	--	--	85	--	--	--	--	Do.
703	J. H. Kurth well 2	do	1955	8,162	--	--	90	--	--	--	--	Do.
801	E. C. Hankamer	do	1954	8,302	--	--	52	--	--	--	--	Do.
901	J. D. Ray well 1	Atlantic Refining Co.	1956	6,903	--	--	40	--	--	--	--	Oil test.[2/]
* 902	Atlantic Refining Co.	--	1956	165	3	Ch	50	11.6 12.9	May 22, 1964 Feb. 25, 1965	G,A	Ind	Natural gas lift. Temp. 69°F.
* 903	Bluett Holmes	Bluett Holmes	1940	20	1 1/4	Ch	52	--	--	C,H	D,S	Driven well.
27-101	Kirby Lumber Co. well C-1	Atlantic Refining Co.	1951	10,001	--	--	52	--	--	--	--	Oil test.
102	Newton Independent School District	--	1947	460	2	Ev	60	--	--	J,E, 2	P	
103	C. L. Thompson	--	1934	20	1 1/4	Ch	60	--	--	C,H	D,S	Driven well.
201	Kirby Lumber Co. well C-2	Atlantic Refining Co.	1952	9,457	--	--	54	--	--	--	--	Oil test.
202	Kirby Lumber Co. well D-2	do	1960	9,450	--	--	55	--	--	--	--	Do.
401	H. W. Sudduth well 4	Atlantic Refining & Sinclair Oil & Gas Co.	1960	8,100	--	--	148	--	--	--	--	Do.
701	Kirby-Runnels well 3	Oil Reserves Corp.	1958	8,350	--	--	49	--	--	--	--	Do.
702	Kirby-Runnels well "B" 1-K	do	1960	8,450	--	--	41	--	--	--	--	Do.
* 33-602	E. D. Cain	John Cain	1937	33	36	Ch	80	17.3	May 27, 1942	B,H	D,S	Dug well. Concrete casing. Owner reported well completed in white sand from 29 to 33 ft.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
TZ-62-33-901	C. C. Shepard	C. C. Shepard	1926	40	1 1/4	Ch	63	--	--	J,E	D,S	Bored well.
902	E. J. Shepard	E. J. Shepard	1930	23	1 1/4	Ch	47	8.4	Apr. 30, 1964	N	N	Do.
903	H. C. Williams	--	1954	120	4	Ch	70	36	1963	A,E	D,S	Screened with 6 ft of 4-in. stainless steel screen from 114 ft to bottom.
34-101	Earl Hankamer well A-3	Kilroy Co. of Texas & Slick Oil Co.	1957	8,360	--	--	80	--	--	--	--	Oil test.
102	Earl Hankamer well 1-A	do	1956	8,352	--	--	78	--	--	--	--	Do.
103	White & West well 1	Scurlock Oil Co.	1960	11,267	--	--	52	--	--	--	--	Do.
104	T. R. Wright well 1	Christie, Mitchell & Mitchell	1954	8,705	--	--	49	--	--	--	--	Do.
201	C. E. Ebner	Coastal Water Wells	1954	332	20, 12, 10	Ch	47	13.1 17.3 16.5 18.7	Mar. 23, 1960 Feb. 6, 1964 Apr. 14, 1964 Feb. 25, 1965	T,-	Irr	Reported well pumped 3,970 gpm when drilled for rice irrigation. Not used 1961-64. When used, well is powered with tractor. Stainless steel, 0.030 and 0.002 gauge screen set at 250 ft to 330 ft in underreamed and gravel-packed section.1/
202	E. C. Hankamer well 6	Humble Oil & Refining Co.	1948	9,005	--	--	45	--	--	--	--	Oil test.
203	E. C. Hankamer well 3	do	1947	8,060	--	--	42	--	--	--	--	Do.
204	E. C. Hankamer well 1	do	1945	9,009	--	--	48	--	--	--	--	Do.
205	E. C. Hankamer well 4	do	1947	8,032	--	--	46	--	--	--	--	Do.
206	E. C. Hankamer well 1	Meridith & Co.	1955	8,517	--	--	52	--	--	--	--	Do.
207	White-West well 1	Lenoir M. Josey	1952	8,531	--	--	54	--	--	--	--	Do.
208	do	Hinkle Drilling Co.	1947	8,365	--	--	49	--	--	--	--	Do.
209	E. C. Hankamer well 8	Humble Oil & Refining Co.	1949	8,602	--	--	48	--	--	--	--	Do.
210	J. D. Kurth well 2	do	1952	8,309	--	--	52	--	--	--	--	Do.
211	J. D. Kurth well 1	do	1951	8,709	--	--	49	--	--	--	--	Do.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
TZ-62-34-212	E. C. Hankamer well 10	Humble Oil & Refining Co.	1951	8,700	--	--	49	--	--	--	--	Oil test.
213	E. C. Hankamer well 11	do	1952	8,258	--	--	51	--	--	--	--	Do.
214	E. C. Hankamer well 9	do	1951	8,705	--	--	49	--	--	--	--	Do.
215	Humble Oil & Refining Co.	-- Ballard	1950	--	4	--	49	7.9	May 1, 1964	N	N	Standby well for oil field supply.
216	do	do	1947	--	4	--	42	5.0	do	N	N	Do.
301	Earl C. Hankamer	Robert B. Allen	1962	8,014	--	--	46	--	--	--	--	Oil test.
302	Earl C. Hankamer well 1	Rowan Oil Co.	1955	8,829	--	--	46	--	--	--	--	Do.
303	Earl C. Hankamer well 5	Humble Oil & Refining Co.	1947	8,060	--	--	46	--	--	--	--	Do.
* 501	J. M. Bingham	J. M. Bingham	1937	22	1 1/4	Ch	46	10	1937	N	N	Driven well. Formerly supplied water for store. Abandoned 1964.
601	J. J. Ray	J. J. Ray	1950	23	1 1/4	Ch	41	9	1950	J,E, 1/3	D,S	Screen from 19 ft to bottom. Reported sand 0 to 23 ft. Owner reports water free of red color which is usual in wells in this area.
602	Sam Woods	Sam Woods	1939	18	1 1/4	Ch	38	--	--	C,H	D,S	Driven well.
701	Foley Dikes	Kilroy Co. of Texas & Slick Oil Co.	1956	9,020	--	--	44	--	--	--	--	Oil test.
702	B. E. Quinn well 1	Kilroy Co. of Texas	1955	9,502	--	--	44	--	--	--	--	Do.
703	E. C. Hankamer well 1	do	1956	9,017	--	--	43	--	--	--	--	Do.
801	W. A. Smith well 1	W-M Oil Co.	1939	8,000	--	--	42	--	--	--	--	Do.
802	Foley-Dikes well a-1	Kilroy Co. of Texas & Slick Oil Co.	1957	9,009	--	--	43	--	--	--	--	Do.
803	T. W. Bean well 1	do	1957	9,051	--	--	38	--	--	--	--	Do.
804	E. Hankamer well 1	--	1958	9,007	--	--	41	--	--	--	--	Do.
* 805	W. E. Bean	--	1932	40	1 1/2	Ch	40	11.6	May 21, 1964	Cf,E	D,S	Bored well.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
TZ-62-34-901	E. Hankamer well 1-D	Kilroy Co. of Texas & Slick Oil Co.	1956	9,515	--	--	34	--	--	--	--	Oil test.
35-101	E. Hankamer well C-1	do	1956	8,600	--	--	40	--	--	--	--	Do.
41-601	Gladys Price well 1	Tennessee Production Co.	1953	6,927	--	--	44	--	--	--	--	Do.
906	Pattillo-Quinn	Tejos Oil & Gas Co.	1956	5,663	--	--	38	--	--	--	--	Do.
* 907	Standard of Texas	C. E. Darden	1955	69	2	Ch	38	17.7	Feb. 20, 1964	J,E, 1/2	Ind	Screened from 63 ft to bottom.
* 42-101	Adolph Ebner	Layne-Texas Co.	1940	524	20, 10	Ch, Ev	37	6.6 5.2 25.0 26.6	Apr. 3, 1941 May 27, 1942 Feb. 5, 1964 Feb. 25, 1965	N	N	Screen failed. Well still records artesian levels and fluctuates with nearby pumpage.1/
* 102	do	Coastal Water Wells	1960	429	20, 12	Ch	37	25.6 26.9	May 23, 1960 Feb. 25, 1965	T,G	Irr	Measured discharge 2,700 gpm in 1960. Replaced well TZ-62-42-101. Stainless steel screen at 179-219 ft, and 470-429 ft. Gravel-walled and underreamed. Temp. 72°F.1/
301	E. C. Hankamer well 2	San Jacinto Petroleum Corp.	1953	10,514	--	--	32	--	--	--	--	Oil test.
302	E. C. Hankamer well 1	do	1953	9,834	--	--	31	--	--	--	--	Do.
303	E. C. Hankamer well 2	Chesser, Sutton & Dauts Drilling Co., & Colorado Oil & Gas Co.	1956	7,003	--	--	23	--	--	--	--	Do.
401	C. H. Cox	Coastal Water Wells	1954	544	20, 12	Ch	35	22.2 27.6 29.9	Feb. 5, 1964 Apr. 15, 1964 Feb. 25, 1965	T,G	Irr	Reported discharge 2,763 gpm when drilled. Completed with 80 ft of 0.022 stainless steel screen.1/
402	C. A. Dyer well 1	Humble Oil & Refining Co.	1948	7,504	--	--	36	--	--	--	--	Oil test.
501	E. C. Hankamer well 1	Ray Southworth	1952	7,103	--	--	34	--	--	--	--	Do.
502	-- Stevenson well 1	J. P. Owens & Chesser Sutton-Davis Drilling Co.	1956	7,402	--	--	30	--	--	--	--	Do.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
*TZ-62-42-503	O. H. Stephenson	A. C. Brown	1936	70	1 1/2	Ch	35	--	--	C,H	D,S	Six ft of screen on bottom.
601	Sabine Tram well 1	Republic Production Co.	1936	7,032	--	--	30	--	--	--	--	Oil test.
602	T. H. Perkins well 2	Houston Oil Co. & American Republic Corp.	1955	7,500	--	--	28	--	--	--	--	Do.
603	Sabine Motel L. S. Arrendell	-- Darden	1957	190	2	Ch	22	6.1	Apr. 27, 1964	J,E, 1/3	D,P	Supplies water for motel. Stainless steel screen from 184 ft to bottom. Reported water stains fixtures.
701	Bascome Funches	Coastal Water Wells	1953	590	16, 10, 8	Ch	30	27.8	Mar. 28, 1960	T,G	Irr	Measured discharge 1,140 gpm in 1964.[1]
702	-- Hankamer well B-1	Houston Oil Co. & American Republic Corp.	1951	7,904	--	--	32	--	--	--	--	Oil test.
801	-- Lindsey well 2	do	1952	8,100	--	--	27	--	--	--	--	Oil test.[2]
802	-- Hankamer well B-2	do	1951	7,342	--	--	34	--	--	--	--	Oil test.
803	-- Hankamer well 1	Peeler Bros.	1947	7,354	--	--	29	--	--	--	--	Do.
804	V. J. Morgan well 2	Christensen & Matthews	1955	7,501	--	--	32	--	--	--	--	Do.
805	H. L. Brown well 1	Houston Oil Co. & American Republic Corp.	1953	7,680	--	--	28	--	--	--	--	Do.
806	-- Hankamer well B-7	Houston Oil Co. of Texas	1952	7,351	--	--	33	--	--	--	--	Do.
901	Kelley Unit well 1	Texas Gulf Producing Co.	1949	8,552	--	--	30	--	--	--	--	Do.
902	R. C. Davis well 1	Texas Gulf Producing Co. & Raven Oil Co.	1949	8,140	--	--	17	--	--	--	--	Oil test.[2]
903	-- Morgan well 1	do	1948	8,007	--	--	35	--	--	--	--	Do.
904	L. A. Whidden	-- Darden	1957	270	2	Ch	34	30.6 33.3	Apr. 28, 1964 Feb. 24, 1965	N	N	Reported quit using water because of stain.
* 905	Frank Nelson	George Glidden	1941	293	2	Ch	30	8	Oct. 1941	J,E, 1/4	D,S	12 ft of screen on bottom.[1]

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
*TZ-62-42-906	J. C. Storms	Virgil Phelps	1942	78	2	Ch	30	--	--	Cf,H	Ind, D,S	Supplied water for sawmill and camp.
* 907	Pete Lavine	Blackie Jordan	1940	227	1	Ch	30	16	1940	C,H	D,S	Well reworked and deepened from 214 to 227 ft in 1962. Screened from 214 to 227 ft.
* 43-401	Deweyville Elementary School	--	1954	60	2	Ch	23	8	1954	J,E, 1	P	Supplies water for school.
* 402	Deweyville High School	-- Mosier	1961	300	4	Ch	25	--	--	J,E, 2	P	Do.
403	Lambrights Washateria	-- Lambright	1963	24	1 1/4	Ch	22	6	Feb. 1964	J,E, 3/4	Ind,P	Driven well. Screen from 20 ft to bottom. Supplies water for washateria.
* 404	-- Bickham	George Glidden	1927	105	8	Ch	25	12 12.8	Apr. 1942 Apr. 24, 1964	N	N	Reported discharge 350 gpm. Not used since 1944.
405	A. D. Lewis	--	1922	24	1 1/4	Ch	20	12	1922	C,H	D,S	Driven well. Unable to locate in 1964.
701	A. M. Phelan well 1	Harold L. Hunt, Jr. Trust Estate	1954	8,006	--	--	15	--	--	--	--	Oil test.
702	-- Hryhorchuk well 1	P. R. Rutherford Sohiot Truck Line	1958	8,116	--	--	15	--	--	--	--	Do.
50-205	C. A. Morgan well 1	Stanolind Oil & Gas Co.	1949	8,417	--	--	29	--	--	--	--	Do.

Orange County

UJ-62-49-601	D. E. Cohenour	Coastal Water Well Corp.	1946	658	20, 12	Ch	27	35.7	Dec. 20, 1962	T,G	Irr	Screened from 574 to 654 ft. Irrigated 240 acres of rice in 1959.
* 50-201	J. Austin Heard	do	1944	590	20, 12	Ch	26	31.4	Jan. 21, 1963	T,G	Irr	Steel screen at 586 ft.
302	-- Sokalski well 1	Woods Drilling Co.	1949	8,009	--	--	29	--	--	--	--	Oil test.

Sabine County

WS-36-52-402	Stark & Brown	K. E. Menen	1942	4,532	--	--	180	--	--	--	--	Oil test.
37-56-901	Jasper State Bank well 1	Petroleum Heat & Power Co.	1938	2,513	--	--	150	--	--	--	--	Do.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
Tyler County												
YJ-61-06-303	A. N. Owens well 1	John B. Goodhue	1957	4,003	--	--	180	--	--	--	--	Oil test.
15-401	Angelina County Land & Lumber Co.	Chapman Mineral Co.	1938	3,878	--	--	130	--	--	--	--	Do.
801	International Paper Co.	A. A. Spidle	1960	4,448	--	--	210	--	--	--	--	Do.
23-803	Kirby Lumber Co.	Oil Production Maintenance Co.	1954	6,605	--	--	150	--	--	--	--	Do.
24-801	Norman Hurd	Republic Production Co. & Houston Oil Co.	1936	8,039	--	--	65	--	--	--	--	Do.
31-301	Kirby-Millhome	Oil Reserves Corp.	1957	9,646	--	--	65	--	--	--	--	Do.
32-104	J. F. Parker well 5	Stanolind Oil & Gas Co.	1950	9,004	--	--	70	--	--	--	--	Do.
Hardin County												
LH-61-47-201	Kirby Lumber Co. well 1	Layne-Texas Co.	1952	625	20, 12, 10	Ev	83	74	Oct. 1952	T,E	Ind	Reported discharge 1,000 gpm. Drawdown 71 ft after 2 hours pumping at 1,001 gpm. Screen from 404-454; 500-510; 520-531; and 569-612 ft. Drilled to 700 ft, plugged back to 625 ft.
202	Kirby Lumber Co. well 2	do	1952	615	20, 12	Ev	85	61	Dec. 1952	T,E	Ind	Reported discharge 1,007 gpm. Drawdown 92 ft after 2 hours pumping at 1,007 gpm. Drilled to 717 ft, plugged back to 615 ft.
208	City of Silsbee well 3	do	1958	842	20, 12	Ev	80	59.2	June 6, 1962	T,E	P	Casing: 20-in. to 430 ft, 12-in. from 430 to 842 ft. Screen from 442-474; 528-558; 692-709; 738-754; and 801-842 ft. Drawdown 50 ft after 6 hours pumping at 877 gpm.
55-203	City of Beaumont	do	1962	795	26, 20, 14	Ev	27	45	Feb. 1962	T,E, 350	P	Reported discharge 3,530 gpm, Feb. 16, 1962. Drawdown 90 ft after 48 hours pumping at 3,530 gpm. Screen from 301-332; 386-491; 511-702; 629-646; and 673-775 ft.

See footnotes at end of table.

Table 5.--Records of wells in Jasper, Newton, and adjacent counties--Continued

Hardin County

Well	Owner	Driller	Date completed	Depth of well (ft)	Diameter of well (in.)	Water-bearing unit	Altitude of land-surface (ft)	Water level		Method of lift	Use of water	Remarks
								Below land surface datum (ft)	Date of measurement			
LH-61-55-204	City of Beaumont	Layne-Texas Co.	1958	800	26, 20, 14, 12	Ev	25	2.2 3.5	May 5, 1958 Dec. 29, 1959	T,E, 3	P	Reported discharge 4,530 gpm, May 7, 1958. Drawdown 120 ft after 48 hours pumping at 4,530 gpm. Screen from 311-363; 401-532; 549-579; 602-653; 663-701; 708-730; and 750-780 ft. Unused in 1959.

* For table of analyses of water from wells in Jasper, Newton, and adjacent counties see Table 7.
1/ For drillers' logs of wells in Jasper, Newton, and adjacent counties see Table 6.
2/ Electric logs of wells in Jasper, Newton, and adjacent counties in files of Texas Water Development Board.

Table 6.--Drillers' logs of wells in Jasper and Newton Counties

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)

Jasper County

Well PR-36-49-802

Owner: Gilmer Lumber Co. Driller: Jake Giles.

Soil	4	4	Sand, blue, water	40	1,077
Clay	14	18	Gumbo and shale	10	1,087
Sand	2	20	Rock	2	1,089
Gumbo, blue, and shale	362	382	Shale, brown, and gumbo	34	1,123
Rock	2	384	Rock	2	1,125
Gumbo, blue, and shale	76	460	Shale, brown, and gumbo	57	1,182
Rock	1	461	Rock	1	1,183
Gumbo, blue, and shale	50	511	Coal, lignite	4	1,187
Rock	2	513	Shale, brown, and gumbo	6	1,193
Gumbo, blue, and shale	52	565	Sand, blue, water	30	1,223
Sand	8	573	Shale, brown, and gumbo	28	1,251
Gumbo, blue, and shale	30	603	Sand, blue, water	11	1,262
Rock	1	604	Coal, lignite	3	1,265
Gumbo, blue, and shale	6	610	Rock	3	1,268
Rock	3	613	Sand, blue, water	17	1,285
Gumbo, blue, and shale	272	885	Shale, brown, and gumbo	5	1,290
Sand, blue	40	925	Sand, blue, water	30	1,320
Gumbo, blue, and shale	112	1,037			

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-36-57-102					
Owner: Paul A. Teegarden, Inc. Driller: Layne-Texas Co.					
Clay	9	9	Sand, lignite	20	182
Sand	57	66	Sand	13	195
Clay	51	117	Clay	27	222
Sand	9	126	Clay, sandy	69	291
Clay	5	131	Sand, salt and pepper	48	339
Sand	31	162	Clay	1	340
Well PR-36-57-901					
Owner: Harrisburg Water Supply Corp. Driller: C. C. Innerarity.					
Sand, surface	1	1	Shale, soft, blue	35	380
Clay, red	20	21	Shale, blue	65	445
Sand, gravel with clay	94	115	Shale, sand streaks	40	485
Sand	50	165	Clay, blue	110	595
Sand, clay streaks	40	205	Sand streaks	10	605
Clay	25	230	Clay, blue	75	680
Clay, soft	5	235	Sand	38	718
Sand	110	345			
Well PR-37-61-903					
Owner: Kountze Bros., well 6. Driller: --					
Clay, red, and sand	65	65	Sand, gray, artesian flow	20	85

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-37-61-903--Continued			
Rock, gray, sand ---------- 20	105	Sand, dark gray ---------- 19	784
Gumbo, blue, and shale ---------- 70	175	Marl, green ---------- 16	800
Gumbo, blue ---------- 88	263	Shale, green, hard streaks ---------- 35	835
Shale, green ---------- 12	275	Marl, green, with shell ---------- 145	980
Gumbo, blue ---------- 25	300	Marl, green, and rock ---------- 138	1,118
Shale, green ---------- 190	490	Rock and sand ---------- 2	1,120
Marl, green, and boulders ---------- 45	535	Marl, green ---------- 80	1,200
Marl, green ---------- 80	615	Shale, dark brown ------ 8	1,208
Sand, dark blue ---------- 15	630	Marl, green ---------- 21	1,229
Sand, dark gray ---------- 25	655	Sand, gray, artesian flow of salt water --- 12	1,241
Shale, dark gray ---------- 17	672	Shale, green ---------- 8	1,249
Shale, green ---------- 20	692		
Shale, green, and shell ---------- 73	765		

Well PR-37-61-904

Owner: Bob Boykin, well 1. Driller: Great Lakes Oil Syndicate.

Clay ---------- 80	80	Shale and boulders ----- 17	443
Sand, salt water -------- 19	99	Gumbo ---------- 77	520
Shale, sandy ---------- 301	400	Sand, white, sulfur water ---------- 32	552
Sand ---------- 3	403	Shale, brown ---------- 136	688
Gumbo, blue ---------- 23	426		

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-37-61-904--Continued			
Sand, blue, sulfur water ---------- 37	725	Shale and boulders ----- 14	1,154
Gumbo ---------- 314	1,039	Gumbo, gas ---------- 136	1,290
Shale, sandy ---------- 40	1,079	Sand ---------- 8	1,298
Gumbo ---------- 61	1,140		
Well PR-37-62-702			
Owner: B. F. Boykin, well 2. Driller: Midwest Co. of Texas.			
Soil, surface, and white sand ---------- 16	16	Shale ---------- 41	738
Shale ---------- 96	112	Shale, sandy, layers of sand and shells ------ 127	865
Sand, gray ---------- 40	152	Rock ---------- 1	866
Rock ---------- 3	155	Shale, hard ---------- 62	961
Shale, blue ---------- 69	224	Shale, shells and rock - 211	1,172
Sand, fine-grained, gray ---------- 45	269	Rock ---------- 3	1,175
Shale and sand --------- 68	337	Sand, shell, and rocks - 5	1,180
Shale ---------- 24	361	Shale and rock --------- 72	1,252
Shale and sandy shale -- 76	437	Sand ---------- 7	1,259
Shale, blue ---------- 74	511	Sand, shale, and shells ---------- 329	1,588
Shale, sandy ---------- 17	528	Shale, hard ---------- 11	1,599
Shale, gray ---------- 83	611	Sand and shale --------- 91	1,690
Sand and shale --------- 85	696	Sand, shale, and lignite ---------- 22	1,712
Rock ---------- 1	697		

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-37-62-702--Continued			
Shale and sandy shale -- 14	1,726	Rock ---------- 1	1,875
Rock and shale --------- 3	1,729	Shale, sandy ---------- 36	1,911
Sand and shale --------- 70	1,799	Shale, sandy, and lignite ---------- 75	1,986
Rock ---------- 1	1,800	Sand ---------- 10	1,996
Shale ---------- 42	1,842		
Sand and shale --------- 32	1,874		
Well PR-37-63-602			
Owner: H. Ralph, well 1. Driller: Guffey Oil Co.			
Clay ---------- 20	20	Sand and gravel -------- 40	460
Sand ---------- 25	45	Gumbo ---------- 80	540
Gravel ---------- 15	60	Shale ---------- 110	650
Sand, flowing water ---- 20	80	Sand, gravel, and water ---------- 150	800
Soapstone ---------- 60	140	Soapstone ---------- 50	850
Sand ---------- 20	160	Sand ---------- 90	940
Rock ---------- 20	180	Gumbo ---------- 60	1,000
Gumbo ---------- 20	200	Shale, loose ---------- 150	1,150
Sand ---------- 20	220	Gumbo ---------- 350	1,500
Gumbo ---------- 20	240	Sand and gravel -------- 50	1,550
Sand ---------- 110	350	Gumbo, gravel and boulders ---------- 165	1,715
Gumbo and gravel ------- 50	400	Rock ---------- 5	1,720
Shale ---------- 20	420		

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-37-63-602--Continued			
Gumbo ---------- 40	1,760	Gravel, coarse, and shale ---------- 60	2,100
Rock ---------- 10	1,770	Rock, soft, and gravel - 130	2,230
Gumbo ---------- 230	2,000	Gravel, hard, sand and water ---------- 47	2,277
Sand ---------- 40	2,040		

Well PR-37-63-801

Owner: I. S. Bean. Driller: Cleveland & East Texas Oil Co.

Clay, red ---------- 15	15	Limestone, water-bearing ---------- 10	192
Sand, fine, white ------ 5	20	Rock, fine-grained ----- 3	195
Limestone, soft, white - 42	62	Shale, green ---------- 24	219
Shale, green ---------- 3	65	Sand, white ---------- 1	220
Sandstone, limestone, mixed streaks -------- 21	86	Shale, green, blue, streaks of limestone - 86	306
Shale ---------- 2	88	Sand, fine, gray ------- 6	312
Sandstone, hard -------- 4	92	Clay, blue ---------- 9	321
Sandstone, soft -------- 12	104	Shale, blue ---------- 5	326
Shale, greenish -------- 24	128	Shale and sand streaks - 9	335
Sand, white ---------- 3	131	Sand, gray ---------- 10	345
Limestone ---------- 9	140	Shale, blue ---------- 3	348
Shale, green ---------- 4	144	Sand, fine, gray ------- 12	360
Shale, green, with limestone ---------- 32	176	Sand and shale --------- 5	365
Clay, blue, tough ------ 6	182	Limestone, soft -------- 15	380

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-37-63-801--Continued			
Clay, blue, and shale -- 9	389	Limestone, sheets of sand ---------- 17	500
Sand, white, fine-grained ---------- 26	415	Sand, fine, white ------ 24	524
Clay, blue, and shale -- 10	425	Sandstone, soft -------- 5	529
Limestone ---------- 10	435	Sand and shale --------- 462	991
Shale, blue ---------- 15	450	Rock ------------------- 1	992
Limestone ---------- 12	462	Sand ------------------- 1	993
Sand, fine, white ------ 11	473	Shale, blue, soft ------ 407	1,400
Shale, blue ---------- 10	483		

Well PR-37-63-904

Owner: Ray Prewitt. Driller: Merritt Bros.

Sand ------------------- 5	5	Soapstone ---------- 2	28
Clay ------------------- 17	22	Quicksand ---------- 8	36
Gravel ----------------- 4	26		

Well PR-37-64-402

Owner: U.S. Army Corps of Engineers. Driller: Paul Hardeman, Inc.

Clay, sandy, and sand -- 38	38	Shale, blue ---------- 51	211
Shale, blue, sandstone ---------- 106	144	Sand ------------------- 52	263
Sand ------------------- 16	160	Shale, blue ---------- 37	300

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Well PR-61-07-301

Owner: Tennessee Gas & Transmission Co. Driller: Layne-Texas Co.

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	4	4	Shale, sandy	8	201
Clay, red	10	14	Shale	8	209
Sand, gray	4	18	Rock	2	211
Sand and shale	46	64	Shale, sticky	19	230
Shale, hard	3	67	Shale, sandy	19	249
Sand, fine, shale layers	93	160	Shale, sandy	38	287
Shale	33	193			

Well PR-61-07-303

Owner: Tennessee Gas & Transmission Co. Driller: Layne-Texas Co.

Clay, sandy	31	31	Shale	101	303
Shale, blue	151	182	Sand	35	338
Sand	20	202	Shale, blue	91	429

Well PR-61-07-604

Owner: Martin Dies. Driller: Layne-Texas Co.

Clay, sandy	5	5	Clay, sandy	20	172
Sand and gravel	50	55	Sand, gray	52	224
Clay	31	86	Clay	88	312
Clay, sandy	44	130	Sand, gray	49	361
Clay	22	152	Clay	3	364

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-61-07-801					
Owner: State of Texas well 1. Driller: -- Adams.					
Sand, surface	5	5	Shale, packed	23	873
Clay	7	12	Gumbo	27	900
Sand, gray, water	38	50	Shale and boulders	40	940
Sand, yellow, and gravel	10	60	Gumbo	30	970
Sand, blue, water	60	120	Rock, broken	3	973
Shale	15	135	Shale, packed	27	1,000
Sand	190	325	Limestone, hard	4	1,004
Gumbo	35	360	Shale and gumbo	166	1,170
Sand, water	50	410	Rock	5	1,175
Gumbo	60	470	Gumbo	65	1,240
Sand	30	500	Sand, gray, water	60	1,300
Shale, packed	35	535	Gumbo and gypsum	198	1,498
Gumbo	143	678	Sand, water	20	1,518
Shale and boulders	22	700	Gumbo, tough	32	1,550
Gumbo	40	740	Packsand	50	1,600
Shale	60	800	Sand and shale	25	1,625
Gumbo	50	850	No record	705	2,350
Well PR-61-08-104					
Owner: Bert Hinson. Driller: Crews Water Well Service.					
No record	30	30	Shale	135	175
Sand, water	10	40	Sand, water	62	237

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Well PR-61-08-502

Owner: J. W. Campbell. Driller: Frank Balcar.

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
No record	208	208	Shale, blue	49	364
Clay	16	224	Clay	32	396
Shale	32	256	Shale, hard	10	406
Clay, red and yellow	16	272	Sand, white	19	425
Shale, sandy	43	315			

Well PR-61-08-903

Owner: -- Seale well 1. Driller: -- Seale.

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sand	60	60	Dolomitic rock, pyrites, quartz, sand, oil showing	9	767
Sand and rock	90	150	Dolomitic rock, pyrites, quartz, sand, yellow clay, oil showing	19	786
Clay, blue, and sand, at 275 ft, artesian water and gas; at 250 ft, oil showing	260	410	Quicksand, dolomitic rock, gumbo	22	808
Limerock	10	420	Gumbo, shale, gravel, dolomitic rock, quicksand, iron pyrites, oil showing	24	832
Clay, blue	100	520	Dolomitic rock, quicksand, yellow clay, lignite(?), slight oil showing	21	853
Limerock	5	525	Clay, hard, gray, calcareous concretions, limerock, pyrites	77	930
Gumbo and sand	150	675			
Limerock	6	681			
Gumbo	23	704			
Sand, oil showing	23	727			
Limerock	3	730			
Gumbo and shale	28	758			

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-61-08-903--Continued			
Quicksand, fine, concretions, much fine pyrites, splendid oil showing ---------- 11	941	Sand, fine gray, limerock concretions, some white quartz, black carbonaceous particles, considerable iron oxide ---------- 21	1,116
Shale, sand, fine quartz, dolomitic rock, iron oxide, calcite ---------- 79	1,020	Sand, fine gray, lime concretions, white quartz, black carbonaceous matter, magnetic iron oxide in abundance, oil showing good ---------- 12	1,128
Sand, fine white, pyrites, shale, large amount of lime ------- 40	1,060	Sandrock, white quartz - 42	1,170
Sand, fine white, pyrites, shale, some limerock ---------- 10	1,070	Sandrock, gas and oil showing ---------- 29	1,190
Shale, pebbles, variegated chips of flint rock, limerock, and pyrites ---------- 2	1,072	Sand, fine gray, carbonaceous particles, magnetic iron oxide ----- 80	1,270
Sand, extremely fine, gray, shell fragments, very fine white quartz, black carbonaceous matter, some clay and limestone, oil showing very good ---------- 23	1,095	Clay, bluish-gray, very fine sand, black particles, magnetic iron, quartz --------- 50	1,320
		Shale, hard, blue ------ 151	1,471

Well PR-61-15-201

Owner: State of Texas Parks and Wildlife Service.

Driller: Simmons Water Well Service.

Clay, brown ---------- 55	55	Gumbo, clay, rock strips ---------- 275	380
Sand, gray ---------- 50	105	Sand, blue ---------- 62	442

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)

Well PR-61-15-202

Owner: State of Texas Hen House Ridge. Driller: Simmons Water Well Service.

Clay	65	65	Sand	51	170
Shale, blue	54	119			

Well PR-61-15-603

Owner: U.S. Army Corp of Engineers, Sandy Creek Park. Driller: Simmons Water Well Service.

Clay	30	30	Sand and gravel	30	170
Sand, coarse	24	54	Shale	45	215
Shale, blue, and red, clay, sandy	36	90	Sand	45	260
Sand	50	140			

Well PR-61-15-901

Owner: B. O. Easely. Driller: George Bellinger.

Sand	14	14	Rock	2	141
Shale	125	139	Sand	40	181

Well PR-61-16-202

Owner: D. M. Thomas. Driller: Commodore Oil Co.

Surface	43	43	Gumbo	22	530
Sand, artesian water at 85 ft	396	439	Sand	135	665
Lime	16	455	Lime and gumbo	205	870
Sand	53	508	Sand	10	880

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-61-16-202--Continued					
Lime	40	920	Lime, artesian water	22	1,347
Packsand	30	950	Sand	18	1,365
Gumbo	10	960	Gumbo and shale	60	1,425
Sand	15	975	Lime and sand	45	1,470
Packsand	25	1,000	Sand	10	1,480
Lime and gumbo	143	1,143	Sand and shale	25	1,505
Lime, hard, and sand	37	1,180	Gumbo	25	1,530
Gumbo	35	1,215	Gumbo	15	1,545
Sand	25	1,240	Sand, salt water	25	1,570
Lime and gumbo	85	1,325	No record	1,934	3,504
Well PR-61-24-201					
Sand	20	20	Gumbo	43	183
Sand, water	5	25	Sand, salt and pepper, water	13	196
Clay	50	75	Gumbo, blue	19	215
Sand, water	10	85	Shale, soft	20	235
Clay	10	95	Shale, hard	25	260
Shale	45	140			
Well PR-61-32-606					
Sand, yellow	8	8	Sand, water	2	32
Quicksand	22	30	Clay	1	33

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-61-48-214					
Owner: Southern Pine Co. Driller: Frank Balcar.					
Clay, yellow	30	30	Gumbo, blue	21	115
Sand	3	33	Shale, sandy	35	150
Shale, yellow, sandy	19	52	Shale, blue	55	205
Clay	38	90	Clay, dark-colored	5	210
Quicksand	4	94	Sand and gravel	16	226
Well PR-61-48-401					
Owner: Champion Paper Co. Driller: L. B. Jenson.					
Loam, fine, sandy	2	2	Sand, coarse, white	49	638
Clay, red	23	25	Clay, blue	18	656
Sand, white	50	75	Clay, fine, blue	30	686
Clay, yellow	21	96	Clay, hard, blue	19	705
Sand, fine, blue	33	129	Sand, coarse, white	55	760
Clay, yellow	27	156	Clay, hard, blue	9	769
Sand, white	17	173	Clay, soft, blue	25	794
Clay, yellow	52	225	Sand, white	10	804
Sand, fine, blue	27	252	Clay, hard, blue	20	824
Clay, hard, yellow	134	386	Sandstone, fragmentary	4	828
Sand, white	90	476	Clay, hard, blue	82	910
Clay, blue	81	557	Sandstone, rotten	6	916
Sand, blue	22	579	Clay, blue	7	923
Clay, hard, blue	10	589	Sand, white	22	945

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-61-48-401--Continued			
Clay, hard, blue ------- 67	1,012	Sand, white ---------- 34	1,096
Sand, coarse, white ---- 19	1,031	Clay, blue ---------- 18	1,114
Gravel, fine ---------- 17	1,048	Sand, white ---------- 97	1,211
Gravel, coarse --------- 14	1,062		

Well PR-61-48-704

Owner: City of Beaumont. Driller: Frank Balcar.

No record ---------- 70	70	Gumbo ---------- 30	540
Clay ---------- 14	84	Sand ---------- 16	556
Shale, sandy ---------- 48	132	Shale ---------- 14	570
Clay ---------- 31	163	Gumbo ---------- 50	620
Shale, blue, sandy ----- 69	232	Shale ---------- 20	640
Packsand ---------- 28	260	Gumbo, blue ---------- 5	645
Shale ---------- 50	310	Sand ---------- 37	682
Sand, blue ---------- 17	327	Shale ---------- 53	735
Shale, sandy ---------- 78	405	Gumbo, yellow ---------- 57	792
Shale and gumbo -------- 75	480	Sand ---------- 22	814
Sand and shale --------- 30	510		

Well PR-61-48-801

Owner: T. H. Mabry. Driller: Wise & Fletcher.

Loam, fine, sandy ------ 2	2	Sand, yellow ---------- 12	18
Clay, yellow ---------- 4	6	Clay, gray ---------- 9	27

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-61-48-801--Continued					
Sand, white	23	50	Sand, coarse, white	53	684
Clay, yellow	33	83	Clay, blue	13	697
Sand, fine, blue	34	117	Sand, fine, blue	21	718
Clay, blue	35	152	Stone, soft	38	756
Sand, white	21	173	Clay, hard, blue	12	768
Clay, blue	61	234	Sand, coarse, white	31	799
Sand, fine, blue	30	264	Clay, hard, blue	54	853
Clay, blue	31	295	Unable to tell strata	15	868
Sand, fine, blue	61	356	Clay, hard, blue	68	936
Clay, gray	70	426	Clay, fine, blue	13	949
Sand, white	94	520	Clay, hard, blue	41	990
Clay, blue	63	583	Sand, white, water-bearing	22	1,012
Sand, fine, blue	37	620			
Clay, blue, hard	11	631	Clay, hard, blue and green	27	1,039

Well PR-62-01-406

Owner: City of Jasper. Driller: Layne-Texas Co.

No record	22	22	Sand, few red clay streaks	101	181
Sand	8	30			
Clay, white	14	44	Sand, coarse, and gravel	60	241
Sand	32	76	Clay	2	243
Clay, sandy	4	80	Sand	3	246

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-62-01-406--Continued					
Clay	14	260	Shale	5	653
Sand	18	278	Sand	10	663
Clay, white, blue	31	309	Shale and sand streaks	10	673
Sand and clay streaks	26	335	Shale	19	692
Clay, blue, and sand streaks	30	365	Sand and shale layers	11	703
Clay, sandy	28	393	Sand	43	746
Sand and shale streaks	16	409	Sand, lignite, and shale streaks	11	757
Sand	30	439	Sand	10	767
Sand, coarse, and fine gravel	43	482	Shale, few sand streaks	5	772
Shale	8	490	Shale and sandy shale streaks	26	798
Sand	5	495	Shale and sand streaks	17	815
Clay, red, white, and green	30	525	Shale, sandy	4	819
Sand and shale	28	553	Shale	21	840
Sand	25	578	Shale and sandy shale	15	855
Clay	1	579	Shale	17	872
Sand	8	587	Shale, sandy	9	881
Clay	2	589	Sand and shale streaks	14	895
Sand	3	592	Shale, sandy	47	942
Shale	1	593	Shale streaks of sand	17	959
Sand and streaks of lignite	55	648	Shale	27	986

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Well PR-62-01-406--Continued

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Shale and sand streaks - 71	1,057	Sand and shale streaks ---------- 20	1,254
Shale and layers of sand ---------- 20	1,077	Shale, sandy, and shale breaks --------- 35	1,289
Sand and shale layers -- 23	1,100	Sand and shale streaks - 4	1,293
Shale, sandy ---------- 12	1,112	Shale, sandy ---------- 14	1,307
Sand, coarse ---------- 8	1,120	Sand ---------- 3	1,310
Shale ---------- 5	1,125	Shale, sandy ---------- 10	1,320
Sand ---------- 5	1,130	Shale ---------- 13	1,333
Shale, sandy ---------- 7	1,137	Sand ---------- 6	1,339
Shale ---------- 44	1,181	Shale, sandy ---------- 8	1,347
Sand, fine ---------- 19	1,200	Sand ---------- 3	1,350
Shale ---------- 26	1,226	Shale ---------- 2	1,352
Shale, sandy, and sand - 8	1,234		

Well PR-62-01-409

Owner: City of Jasper. Driller: Layne-Texas Co.

Soil, sandy ---------- 2	2	Sand, gravel and clay streaks ---------- 68	139
Clay, sandy, red ------- 16	18	Clay, sandy ---------- 15	184
Clay, sandy, and gravel ---------- 11	29	Sand ---------- 21	205
Sand ---------- 7	36	Clay ---------- 15	220
Clay ---------- 7	43	Sand ---------- 31	251
Sand ---------- 28	71	Sand with clay --------- 114	365

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-62-01-409--Continued					
Clay	8	373	Sand	14	474
Sand and gravel	18	391	Shale, hard	42	516
Sand and lignite	12	403	Sand	65	581
Sand	49	452	Rock	1	582
Gumbo	8	460			

Well PR-62-01-501

Owner: B. G. Lindsey. Driller: Layne-Texas Co.

Soil	3	3	Clay and sandy clay	59	256
Clay	39	42	Sand and small gravel	34	290
Sand	8	50	Sand and clay	40	330
Clay	64	114	Sand and gravel	55	385
Sand	83	197	Clay	5	390

Well PR-62-01-701

Owner: Texas Electric Co., Inc. Driller: Layne-Texas Co.

Clay	32	32	Sand, white, clay layers	29	212
Sand, fine	10	42	Sand and sandy clay	40	252
Sand and gravel	79	121	Clay	12	264
Clay, sandy	31	152	Sand, coarse, and gravel	71	335
Clay, sandy, sand layers	19	171	Shale, broken	91	426
Sand	12	183			

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-62-01-701--Continued			
Sand ---------- 31	457	Shale ---------- 2	734
Shale, broken ---------- 26	483	Sand ---------- 15	749
Sand ---------- 64	547	Shale ---------- 17	766
Shale ---------- 36	583	Shale and sand layers -- 32	798
Sand and shale breaks -- 83	666	Sand ---------- 31	829
Shale ---------- 5	671	Sand and shale breaks -- 29	858
Sand ---------- 31	702	Shale, hard, gray ------ 91	949
Shale ---------- 5	707	Shale, hard ---------- 51	1,000
Sand ---------- 25	732		

Well PR-62-01-802

Owner: C. T. Flourney well 1. Driller: Helmerick & Payne, Inc.

Surface ---------- 60	60	Shale, gummy ---------- 47	780
Clay ---------- 90	150	Shale, sandy ---------- 25	805
Sand and gravel, water - 70	220	Shale ---------- 80	885
Clay, reddish-brown and yellow ---------- 69	289	Sand ---------- 65	950
Shale, green ---------- 55	344	Shale, gummy ---------- 3	953
Sand, water ---------- 75	419	Shale, green ---------- 75	1,028
Shale, blue and green -- 31	450	Sand and shale streaks - 52	1,080
Sand, water ---------- 10	460	Shale, sticky ---------- 5	1,085
Shale, green, yellow, and blue ---------- 260	720	Gumbo ---------- 25	1,110
Sand ---------- 13	733	Shale and streaks of sand ---------- 100	1,210

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-62-01-802--Continued			
Sand ---------- 30	1,240	Sand ---------- 14	1,912
Shale ---------- 5	1,245	Shale, hard ---------- 13	1,925
Rock and sand ---------- 7	1,252	Sand ---------- 10	1,935
Shale, green and blue gumbo ---------- 196	1,448	Shale, streaks of sand and gumbo ---------- 29	1,964
Sand, water ---------- 11	1,459	Sand, soft, white ------ 10	1,974
Shale, green, blue, sandy ---------- 121	1,580	Sand, salt and pepper -- 26	2,000
		Sand, coarse-grained --- 24	2,024
Sand, greenish-gray, water ---------- 6	1,586	Shale, sticky ---------- 9	2,033
Shale, gumbo and sandy shale ---------- 84	1,670	Shale with streaks of sand and lignite ----- 18	2,051
Sand, fine-grained, gray ---------- 21	1,691	Sand, fine-grained and sulfur ---------- 12	2,063
Shale, hard, sandy ----- 34	1,725	Shale and sand, water -- 6	2,069
Sand, gray, water ------ 10	1,735	Sand, fine-grained, gray ---------- 18	2,087
Gumbo, gray ---------- 13	1,748		
Packsand ---------- 26	1,774	Shale, blue, streaks of sand ---------- 19	2,106
Sand, coarse-grained, white ---------- 27	1,801	Gumbo, hard shale, shells, lignite, and streaks of sand with	
Shale, streaks of sand and gumbo ---------- 97	1,898	salt water ---------- 132	2,238

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-62-09-703					
Owner: C. F. Smith. Driller: Layne-Bowler Co.					
Soil	9	9	Gumbo	51	384
Clay	51	60	Clay	21	405
Sand	55	115	Sand, fine-grained	21	426
Clay	34	149	Sand, coarse-grained	20	446
Gumbo	12	161	Rock	8	454
Clay and boulders	32	193	Gumbo	11	465
Clay	42	235	Sand, fine-grained	29	494
Gumbo	15	250	Sand, coarse-grained	13	507
Gravel	27	277	Gravel	3	510
Clay, blue	3	280	Sand	3	513
Sand, white	53	333	Gumbo	10	523
Well PR-62-17-504					
Owner: G. T. Ellis. Driller: G. T. Ellis.					
Soil	10	10	Clay, red	108	130
Sand, fine	12	22	Sand	20	150
Well PR-62-17-903					
Owner: City of Kirbyville. Driller: Frank Balcar.					
Clay, red	4	4	Clay, yellow	38	84
Sand, white	24	28	Sand, gray	131	215
Shale and sand	18	46	Shale	33	248

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-62-17-903--Continued					
Sand	36	284	Gumbo and shale	94	875
Shale	12	296	Rock	15	890
Shale and sand	28	324	Shale and boulders	55	945
Clay	13	337	Gumbo	62	1,007
Rock, soft	22	359	Rock	2	1,009
Gumbo	21	380	Gumbo	56	1,065
Shale and boulders	62	442	Rock	7	1,072
Gumbo and shale	43	485	Gumbo	110	1,182
Sand	20	505	Sand and boulders	32	1,214
Shale	20	525	Gumbo	26	1,240
Gumbo	28	553	Sand	8	1,248
Shale	18	571	Gumbo and shale	50	1,298
Sand, coarse, red	37	608	Sand	19	1,317
Gumbo and shale	62	670	Gumbo and shale	103	1,420
Gumbo	111	781	Gumbo	7	1,427
Well PR-62-17-909					
Owner: Lewis Troy. Driller: Harvey Roff.					
Clay	20	20	Clay	120	150
Sand	10	30	Sand	35	185

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well PR-62-33-203					
Owner: Kirby Lumber Co. Driller: Frank Balcar.					
Clay, red	18	18	Clay	24	194
Sand, yellow	3	21	Sand, brown	57	251
Clay, reddish-gray	77	98	Shale, and rock	1	252
Shale	52	150	Gravel	8	260
Shale, sandy	20	170	Sand	20	280
Well PR-62-33-401					
Owner: Jasper County Water Control & Improvement District no. 1. Driller: Katy Drilling Co.					
Soil, surface, and clay	12	12	Clay	35	257
Sand and clay streaks	56	68	Sand	47	304
Clay	28	96	Clay	11	315
Sand	35	131	Sand and gravel	61	376
Clay	19	150	Clay	62	438
Sand and clay streaks	30	180	Sand	8	446
Sand and gravel	42	222	Clay	52	498
Well PR-62-41-801					
Owner: Mrs. Eunice Marceaux. Driller: Coastal Water Wells.					
Topsoil	4	4	Clay	25	121
Clay	31	35	Shale	67	188
Sand, white	61	96	Shale, sandy	12	200

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Jasper County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well PR-62-41-801--Continued			
Shale ---------- 30	230	Sand, fine and shale --- 40	520
Sand ---------- 46	276	Sand, fine ---------- 44	564
Shale, hard ---------- 14	290	Sand, fine, streaks of shale ---------- 69	633
Shale, sandy ---------- 10	300	Sand, fine ---------- 43	676
Sand ---------- 135	435	Sand, fine, streaks of shale ---------- 54	730
Shale ---------- 29	464		
Sand, fine ---------- 16	480		

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Newton County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well TZ-36-59-803					
Owner: Wier Long Leaf Lumber Co. Driller: McMasters & Pomeroy.					
Cinders	3	3	Clay	11	100
Sand, surface	12	15	Sand	18	118
Gravel	15	30	Clay	64	182
Sand	21	51	Sand and gravel	39	221
Clay	15	66	Clay	11	232
Sand	23	89			
Well TZ-62-10-310					
Owner: City of Newton. Driller: McMasters & Pomeroy.					
Sand	3	3	Sand and shale	30	94
Clay	4	7	Clay	21	115
Sand	21	28	Shale	37	152
Clay	4	32	Sand and gravel	37	189
Sand	26	58	Shale	11	200
Shale	6	64			
Well TZ-62-10-901					
Owner: Texas Eastern Pipeline Co. Driller: Raybord Drilling Co.					
Clay	12	12	Sand	55	250
Sand, white	148	160	Shale, white	10	260
Sand, fine, red	1	161	Sand, coarse, white, trace of lignite	40	300
Sandrock, hard	5	166			
Shale, white	29	195			

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Newton County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)

Well TZ-62-18-102, partial log

Owner: Southwestern Lumber Co. Driller: Tide Water Oil Co.

Sand, surface ---------- 360	360	Sand ---------- 10	760
Sand, hard ---------- 113	473	Shale ---------- 130	890
Sand, streaks of shale - 27	500	Sand and gravel -------- 116	1,006
Sand ---------- 15	515	Clay and shells -------- 34	1,040
Sand and gravel -------- 19	534	Sand and gravel -------- 45	1,085
Sand and clay ---------- 106	640	Shale, sandy, and lime, streaks of ---------- 727	1,812
Sand ---------- 15	655	Sand and gravel -------- 188	2,000
Sand and shale --------- 45	700	Shale and lime --------- 530	2,530
Shale, sticky ---------- 50	750	Total depth ----------	5,848

Well TZ-62-18-404

Owner: Southwestern Settlement & Development Co. Driller: W. T. Arnett.

Clay, red and white joint ---------- 47	47	Gumbo ---------- 5	337
Sand, blue ---------- 152	199	Rock, blue, hard ------- 1	338
Sulfur and shale ------- 48	247	Shale, blue and brown -- 107	445
Rock and soapstone ----- 1	248	Sand, blue ---------- 50	495
Sand, gray ---------- 29	277	Rock and soapstone ----- 2	497
Sand and shale, oil seepage ---------- 22	299	Shale, hard, blue ------ 38	535
Rock and soapstone ----- 1	300	Marl, blue ---------- 3	538
Sand, water ---------- 32	332	Sand, water, artesian flow ---------- 140	678

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Newton County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well TZ-62-18-404--Continued					
Gumbo	18	696	Shale, blue and yellow	467	1,269
Rock, hard, blue sandstone	1	697	Gumbo	43	1,312
Shale, blue, and brown, oil signs	73	770	Sand, mineral water, artesian flow	34	1,346
Marl, blue	18	788	Gumbo	6	1,352
Rock, hard, blue	2	790	Shale, blue	11	1,363
Sand, oil seepage	9	799	Gumbo, blue	19	1,382
Rock, blue, soapstone	3	802	Shale, blue and purple	113	1,495
Well TZ-62-19-301					
Owner: J. M. Inman. Driller: R. T. Briscoe.					
Clay	17	17	Sand	133	1,403
Sand, gray	359	376	Shale and sand	30	1,433
Shale and gumbo	465	841	Shale, sticky	14	1,447
Sand	122	963	Shale, sandy	59	1,506
Shale and lime	307	1,270			
Well TZ-62-34-201					
Owner: C. E. Ebner. Driller: Coastal Water Wells.					
Soil surface	10	10	Sand, fine	30	140
Sand, fine	90	100	Shale, sandy	60	200
Shale, blue	10	110	Sand, water	132	332

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Newton County

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)

Well TZ-62-42-101

Owner: Adolph Ebner. Driller: Layne-Texas Co.

Clay ----------	25	25	Clay ---------- 10	332
Sand, good, white ------	57	82	Sand, shale layers -----	55	387
Clay ----------	80	162	Sand, good ----------	31	418
Sand ----------	60	222	Shale, soft, sandy, and sand ----------	35	453
Clay, soft ----------	40	262	Sand ----------	71	524
Sand and clay, sandy ---	60	322			

Well TZ-62-42-102

Owner: Adolph Ebner. Driller: Coastal Water Wells.

Topsoil ----------	4	4	Sand, fine ----------	33	244
Clay ----------	21	25	Gumbo ----------	53	297
Shale, sandy ----------	13	38	Shale, sandy ----------	31	328
Sand, coarse, good -----	50	88	Sand, fine, gray -------	38	366
Clay ----------	32	120	Sand, fine ----------	21	387
Shale ----------	40	160	Sand, medium coarse to gravel ----------	39	426
Sand, fine ----------	46	206	Shale, gummy ----------	3	429
Shale ----------	5	211			

Well TZ-62-42-401

Owner: C. H. Cox. Driller: Coastal Water Wells.

Sand ----------	30	30	Sand, fine ----------	42	102
Shale ----------	30	60	Gumbo ----------	68	170

(Continued on next page)

Table 6.--Drillers' logs of wells in Jasper and Newton Counties--Continued

Newton County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well TZ-62-42-401--Continued					
Sand	5	175	Sand, fine	16	322
Gumbo	15	190	Gumbo	45	367
Sand	17	207	Shale, sandy	51	418
Gumbo	43	250	Sand, fine	32	450
Sand, fine	27	277	Gumbo	8	458
Sand, coarse	29	306	Sand	86	544

Well TZ-62-42-701

Owner: Bascome Funches. Driller: Coastal Water Wells.

Topsoil	3	3	Shale	310	435
Clay	37	40	Sand, fine	65	500
Sand, fine	72	112	Sand, coarse	90	590
Sand, coarse, and gravel	13	125			

Well TZ-62-42-905

Owner: Frank Nelson. Driller: George Glidden.

Dirt, white	2	2	Gumbo, blue	16	185
Clay	14	16	Sand, fine-grained, hard	8	193
Clay, sandy	8	24	Gumbo, blue	64	257
Clay, yellow	19	43	Sand, hard, packed, water	16	273
Sand, fine-grained	8	51	No record	20	293
Gumbo, blue	99	150			
Sand, coarse, water	19	169			

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties

(Analyses given are in parts per million except specific conductance, pH, percent sodium, sodium adsorption ratio, and residual sodium carbonate.)

Water-bearing unit
Geologic : Tcs, Catahoula Sandstone; Tj, Jackson Group; Ty, Yegua Formation.
Hydrologic: J, Jasper aquifer; Ev, Evangeline aquifer; Ch, Chicot aquifer.

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
Jasper County																						
PR-36-49-802	1,320	--	Tj,Ty	--	--	3.4	2.4	*416		183	604	41	--	--	--	1,330	--	--	--	--	--	--
b/ 57-102	340	July 10, 1959	Tcs	20	0.20	1	.5	*143		210	34	76	--	--	--	487	4.5	99	36	3.36	780	8.2
b/ 102	340	Apr. 5, 1960	Tcs	30	3.0	7.5	.1	*148		200	40	96	--	--	--	523	19	94	15	2.90	660	8.0
b/ 102	340	do	Tcs	16	2.0	2.3	.5	*151.5		200	39	83	--	--	--	519	8	98	7.3	3.12	656	7.6
202	17	May 14, 1942	J	--	--	20	5.6	*29		0	11	66	--	39	--	171	73	--	--	--	--	--
203	30	do	J	--	--	27	12	*30		12	8	73	--	76	--	232	118	--	--	--	--	--
c/ 401	156	Mar. 31, 1965	J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	50	6.5
402	32	May 14, 1942	J	--	--	1.6	.2	*6.0		12	2	3.5	--	1.0	--	20	5	--	--	--	--	--
501	41	do	J	--	--	.4	3.9	*3.0		6	2	10	--	3.0	--	25	17	--	--	--	--	--
701	84	do	J	--	--	34	3.9	*14		159	3	.5	--	0	--	133	102	--	--	--	--	--
b/ 901	718	May 3, 1964	J	10	.3	14.4	2.4	*47.1		78.1	59.0	16.0	--	--	--	227.3	46	69	3.0	.36	--	6.5
901	718	Oct. 27, 1964	J	69	2.0	16	1.5	21	6.8	76	21	12	0.2	.0	0.03	185	46	45	1.3	.32	219	6.3
903	25	May 14, 1942	J	--	--	14	7.3	*43		6	2	81	--	48	--	198	65	--	--	--	--	--
37-56-903	24	do	Tcs	--	--	3.6	.2	*28		12	6	30	--	14	--	88	10	--	--	--	--	--
61-801	19	May 5, 1942	Tcs	--	--	2.0	4.4	*2.5		6	2	6.0	--	16	--	36	23	--	--	--	--	--
901	986	do	Tj	--	--	1.6	3.2	*190		451	2	39	.7	0	--	459	17	--	--	--	--	--
901	986	Apr. 28, 1965	Tj	21	.07	.8	.2	193	2.2	449	5.0	37	1.0	0.0	1.5	483	3	99	48	7.30	765	8.0
903	1,249	Sept. 12, 1907	Ty	--	--	675	66	*4,880		217	9.8	8,700	--	--	--	15,100	1,960	--	--	--	--	--
62-703	155	May 5, 1942	Tcs	--	--	1.6	1.7	*148		134	2	156	--	0	--	375	11	--	--	--	--	--
63-601	360	May 7, 1942	Tcs	--	--	.4	1.2	*64		140	4	18	.1	1.0	--	158	6	--	--	--	--	--
701	422	Mar. 29, 1965	Tcs	43	.01	28	2.9	427	8.5	252	6.0	585	.7	.0	1.2	1,230	82	91	20	2.49	2,180	7.4
701	422	do	Tcs	--	--	--	--	--	--	260	6.6	820	--	--	--	--	120	--	--	1.86	2,900	7.3

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
c/PR-37-63-701	422	Mar. 29, 1965	Tcs	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	1,450	7.5
c/ 701	422	do	Tcs	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	2,200	8.5
702	535	do	Tcs	39	0.23	1.0	0.4	106	2.2	182	16	51	0.5	1.0	0.43	307	4	97	23	2.90	476	7.5
703	22	May 5, 1942	Tcs	--	--	12	4.4	*58		73	23	32	--	55	--	220	48	--	--	--	--	--
801	1,400	Apr. 11, 1908	Tcs	--	--	140	24	*2,060		531	12	3,060	--	--	--	5,450	448	--	--	--	--	--
802	17	May 7, 1942	J	--	--	6.8	11	*52		6	7	93	--	--	--	211	62	--	--	--	--	--
901	350	Apr. 29, 1965	Tcs	--	--	--	--	--		592	79	1,400	--	--	--	--	130	--	--	7.10	4,860	7.6
c/ 902	149	do	Tcs	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	1,600	--
c/ 903	330	do	Tcs	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	4,000	--
c/ 904	36	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	200	--
64-301	24	May 14, 1942	Tcs	--	--	--	--	*16		37	2	29	--	34	--	121	65	--	--	--	--	--
402	300	Nov. 18, 1964	Tcs	51	.22	2.0	.7	21	2.4	28	18	111	.1	.0	.09	121	8	81	3.2	.20	143	6.1
403	250	Nov. 19, 1964	Tcs	44	.40	4.8	.2	280	3.8	215	.2	318	1.0	1.0	1.8	761	13	97	34	3.26	1,350	7.2
b/ 403	250	Nov. 27, 1963	Tcs	26	.23	8	2	*350		354	2	352	--	--	--	1,096	28	96	29	5.24	1,700	7.7
b/ 403	237	do	Tcs	--	--	14	2	*351		322	0	360	--	--	--	--	45	99	23	4.38	1,650	8.8
701	19	May 7, 1942	J	--	--	2.0	10	*7.1		6	3	19	33	--	--	77	46	--	--	--	--	--
61-07-102	42	May 5, 1942	J	--	--	6.8	6.6	*32		12	3	47	.2	43	--	145	44	--	--	--	--	--
202	22	do	J	--	--	4.0	5.6	*20		18	2	26	--	27	--	94	33	--	--	--	--	--
302	344	Mar. 4, 1964	J	48	.17	1.5	.6	133	3.1	207	87	31	.3	.0	.41	407	6	97	24	3.27	619	7.7
306	17	May 7, 1942	J	--	--	8.4	2.7	*.9		18	3	5.0	--	11	--	40	32	--	--	--	--	--
601	300	May 5, 1942	J	--	--	1.2	1.9	*46		110	11	5.5	.2	1.0	--	121	11	--	--	--	--	--
603	338	Apr. 10, 1941	J	50	.03	4.5	.6	*42		100	13	6.2	0	.0	--	167	14	--	--	--	--	--
604	364	Apr. 15, 1942	J	--	--	4.8	1.0	*28		73	10	4.0	.3	0	--	85	16	--	--	--	--	--
610	100	May 6, 1942	J	--	--	5.6	1.7	*16		49	10	4.0	0	0	--	61	21	--	--	--	--	--
902	237	do	J	--	--	4.4	2.7	*1.4		12	4	7.0	.3	0	--	26	22	--	--	--	--	--
08-101	50	May 7, 1942	J	--	--	4.0	1.2	*3.9		12	2	4.5	--	6.0	--	28	15	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
PR-61-08-105	31	May 7, 1942	J	--	--	4.8	12	*41		18	2	62	--	60	--	191	63	--	--	--	--	--
106	40	do	J	--	--	2.8	5.1	*8.1		37	2	3.0	--	12	--	51	28	--	--	--	--	--
202	34	do	J	--	--	6.4	2.7	*16		49	2	5.0	--	16	--	72	27	--	--	--	--	--
301	1,366	do	J (?)	--	--	4.4	2.7	*3.0		18	7	3.5	0.4	0	--	30	22	--	--	--	--	--
401	209	do	J	--	--	1.6	3.2	*2.1		12	3	6.0	--	0	--	22	17	--	--	--	--	--
502	425	May 5, 1942	J	--	--	1.6	3.2	*3.0		12	7	3.5	.4	0	--	25	17	--	--	--	--	--
503	230	May 6, 1942	J	--	--	3.2	1.9	*1.8		12	3	5.0	--	0	--	21	16	--	--	--	--	--
505	22	do	J	--	--	4.0	5.6	*1.2		24	3	2.5	--	11	--	39	33	--	--	--	--	--
506	187	do	J	--	--	1.2	1.9	*1.8		6	3	4.5	.2	0	--	16	11	--	--	--	--	--
601	19	May 14, 1942	J	--	--	.4	2.7	*9.4		6	4	13	--	6.0	--	39	12	--	--	--	--	--
703	17	May 7, 1942	J	--	--	.8	2.4	*6.4		12	2	5.0	.1	8.0	--	31	12	--	--	--	--	--
801	6,024	Dec. 4, 1964	J	46	--	30	.3	*30		147	13	5.4	.1	.2	--	197	76	46	1.5	0.89	274	7.5
c/ 802	190	Mar. 11, 1965	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	6.8
803	25	May 8, 1942	J	--	--	21	12	*58		37	3	88	--	90	--	290	103	--	--	--	--	--
902	47	May 9, 1942	J	--	--	2.4	1.2	*2.1		--	5	5.5	--	3.0	--	19	11	--	--	--	--	--
15-601	55	May 8, 1942	J	--	--	28	3.9	*29		165	7	6.0	--	0	--	155	87	--	--	--	--	--
602	22	Mar. 3, 1964	J	--	--	--	--	--		166	10	6.5	--	--	--	--	118	--	--	.36	301	7.5
901	181	do	J	42	0.40	47	2.1	*17		174	9.8	6.9	.0	.0	--	211	126	23	.7	.33	316	7.5
16-102	22	May 8, 1942	J	--	--	--	1.5	*8.3		0	3	4.0	--	19	--	36	6	--	--	--	--	--
107	125	May 6, 1942	J	--	--	1.6	.2	*9.0		18	4	4.0	--	0	--	28	5	--	--	--	--	--
201	33	May 8, 1942	J	--	--	23	3.6	*33		79	3	28	--	46	--	176	72	--	--	--	--	--
301	13	do	J (?)	--	--	115	29		*.9	49	3	166	--	165	--	503	408	--	--	--	--	--
305	17	May 9, 1942	J	--	--	24	2.7	*39		12	8	7.9	--	33	--	192	72	--	--	--	--	--
402	64	Mar. 3, 1964	J	55	.01	25	1.6	8.6	5.1	91	9.2	7.4	.2	.0	--	157	69	20	.4	.11	198	6.5
c/ 402	64	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	6.7
501	22	May 8, 1942	Ev (?)	--	--	3.6	6.1	*43		6	3	54	--	55	--	168	34	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
PR-61-16-602	23	May 8, 1942	Ev(?)	--	--	6.0	1.5	*3.0		6	2	12	--	4.5	--	32	21	--	--	--	--	--
801	777	Jan. 11, 1964	J	69	2.8	18	2.2	*13		78	8.4	5.9	0.2	.2	--	155	54	34	0.8	0.20	170	6.1
904	48	May 9, 1942	Ev	--	--	2.4	1.2	*7.4		6	2	9.5	--	8.0	--	34	11	--	--	--	--	--
24-202	17	do	Ev(?)	--	--	20	1.5	*7.4		55	3	9.0	--	14	--	82	56	--	--	--	--	--
203	23	do	Ch	--	--	5.6	7.5	*9.4		18	3	20	--	24	--	79	45	--	--	--	--	--
301	30	do	Ch	--	--	3.2	4.9	*21		24	2	14	--	40	--	97	28	--	--	--	--	--
301	30	June 11, 1964	Ch	7.7	1.0	7.5	2.5	*11		13	4.8	18	.1	15	--	73	29	46	.9	.00	141	5.5
302	300	June 16, 1964	Ev	25	--	9.5	.8	5.4	2.8	43	.2	4.2	.1	.0	0.0	69	27	28	.5	.16	90	6.3
303	63	May 11, 1942	Ev	--	--	5.2	1.9	*1.2		18	2	4.0	--	1.0	--	24	21	--	--	--	--	--
401	104	June 16, 1964	Ev	43	.84	15	11	18	3.1	131	6.0	10	.2	.0	.01	170	83	31	.9	.49	256	6.6
503	24	May 11, 1942	Ch	--	--	.4	3.9	*3.5		6	2	5.5	--	12	--	30	17	--	--	--	--	--
605	41	May 9, 1942	Ch	--	--	4.4	3.9	*12		6	2	18	.2	24	--	68	27	--	--	--	--	--
607	27	May 16, 1942	Ch	--	--	4.0	1.5	*2.8		12	3	6.0	--	.5	--	24	16	--	--	--	--	--
902	172	June 10, 1964	Ch	60	.29	5.5	2.7	*16		61	.0	6.8	.1	.0	--	121	25	59	1.4	.50	124	6.2
904	300	do	Ev(?)	32	.03	3.0	.4	6.8	2.3	20	.4	6.9	.1	.2	--	62	9	55	1.0	.14	61	6.2
905	42	May 16, 1942	Ch	--	--	4.8	2.2	*2.5		18	3	5.5	--	.5	--	28	21	--	--	--	--	--
32-301	54	do	Ch	--	--	18	13	*51		31	2	82	--	82	--	263	98	--	--	--	--	--
301	54	May 20, 1964	Ch	16	.10	13	5.2	11	.7	18	.4	25	.0	35	.03	115	54	30	.7	.00	195	6.1
302	15	May 16, 1942	Ch	--	--	4.4	3.9	*19		12	3	22	--	30	--	88	27	--	--	--	--	--
601	1,470	Apr. 10, 1942	J	--	--	2.8	1.0	*117		305	7	4.0	1.0	0	--	283	11	--	--	--	--	--
601	1,470	Apr. 21, 1964	J	16	.02	2.5	.0	*114		290	8.4	4.1	1.0	.2	--	289	6	98	20	4.63	478	7.9
907	39	May 16, 1942	Ch	--	--	25	15	*112		49	15	121	--	174	--	486	124	--	--	--	--	--
40-304	230	do	Ch	--	--	8.4	2.7	*15		55	2	11	.2	3.0	--	69	32	--	--	--	--	--
305	32	May 12, 1964	Ch	12	.34	15	7.0	*12		24	3.6	13	.1	62	--	137	66	28	6.6	.00	214	6.0
501	285	Apr. 24, 1964	Ch	46	2.1	8.0	1.5	*17		58	3.6	8.6	.1	.2	--	114	26	59	1.5	.43	137	6.5
502	34	May --, 1942	Ch	--	--	20	17	*42		12	5	71	--	120	--	281	121	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
PR-61-40-503	27	May --, 1942	Ch	--	--	173	105	*418		171	17	775	1.0	645	--	2,220	865	--	--	--	--	--
603	25	do	Ch	--	--	2.8	2.4	*7.4		18	2	5.0	--	11	--	40	17	--	--	--	--	--
801	250	Apr. 23, 1964	Ch	58	5.3	16	3.2	22	3.1	76	3.2	26	.1	.2	--	169	53	46	1.3	0.18	234	6.0
802	11	do	Ch	35	--	.8	6.6	*66		75	3.6	25	.0	.0	--	141	29	71	2.7	.65	217	6.2
803	130	May 5, 1964	Ch	49	--	7.5	2.7	15	2.4	57	2.6	13	.1	.2	0.03	121	30	50	1.2	.34	143	6.8
804	32	May 19, 1942	Ch	--	--	4.8	5.1	*12		43	5	10	--	7.0	--	65	33	--	--	--	--	--
902	--	May 15, 1942	Ch	--	--	1.6	.2	*73		49	18	74	--	0	--	191	5	--	--	--	--	--
48-201	1,200	May 17, 1950	Ev	19	--	22	4.8	*46		191	8.0	7.0	--	.0	--	201	75	57	2.3	1.64	328	8.2
208	1,328	Nov. 18, 1953	Ev	18	.09	13	2.6	64	1.7	203	5.4	7.5	.3	.0	.20	213	43	75	4.2	.00	342	7.8
210	350	Feb. 18, 1964	Ev(?)	44	1.6	15	3.5	37	2.3	137	3.6	15	.2	.0	.05	188	52	60	2.2	1.21	271	7.3
211	267	Feb. 20, 1964	Ch(?)	42	.19	17	3.8	34	2.8	130	3.8	19	.2	.0	--	187	58	55	1.9	.97	274	7.6
212	380	do	Ev	24	.60	16	2.9	47	1.8	170	5.2	7.5	.3	.2	.08	189	52	65	2.8	1.75	316	7.7
214	226	Apr. 10, 1942	Ch	--	--	23	1.0	*34		122	2	23	--	0	--	151	61	--	--	--	--	--
215	25	May 15, 1942	Ch	--	--	7.6	7.5	*23		85	2	20	--	0	--	102	50	--	--	--	--	--
217	17	do	Ch	--	--	2.0	1.5	*34		12	3	50	--	1.5	--	98	11	--	--	--	--	--
301	1,342	May 19, 1953	Ev	19	.02	12	3.5	*70		213	6.3	8.0	--	.0	--	223	40	79	4.8	2.69	358	7.7
401	1,211	Apr. 10, 1942	Ev	--	--	.8	1.0	*106		262	4	12	.3	0	--	253	6	--	--	--	--	--
401	1,211	Aug. 7, 1953	Ev	18	--	--	--	*105		254	3	12	.6	.2	--	256	1	100	46	4.15	442	8.7
405	27	May 4, 1942	Ch	--	--	2.0	4.4	*26		6	20	38	--	0	--	93	23	--	--	--	--	--
501	1,070	Apr. 10, 1942	Ev	--	--	2.8	1.0	*115		281	5	18	0	--	--	280	11	--	--	--	--	--
501	1,070	Aug. 7, 1953	Ev	--	--	--	--	*122		285	3	20	.8	0	--	296	1	100	58	4.66	505	8.6
501	1,070	Feb. 18, 1964	Ev	17	.06	1.2	.2	*125		296	6.0	17	.7	.0	--	313	4	99	27	3.99	512	8.9
503	18	May 15, 1942	Ch	--	--	2.4	1.2	*3.9		6	2	9.0	--	0	--	22	11	--	--	--	--	--
701	1,250	Feb. 26, 1965	Ev	17	.03	1.5	.4	135	.4	342	6.0	14	.8	.2	.15	343	5	98	26	5.51	550	8.4
701	1,250	do	Ev	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	9.1
704	81	Mar. 5, 1941	Ev	--	--	--	--	*158		352	2	41	--	--	--	362	4	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
PR-61-48-801	1,039	Apr. 10, 1942	Ev	--	--	3.6	3.2	*107		281	4	14	0.3	0	--	270	22	--	--	--	--	--
801	1,039	Aug. 7, 1953	Ev	17	--	--	--	*116		283	2	15	.8	.2	--	286	4	98	25	4.56	484	8.6
903	75	May 15, 1942	Ch	--	--	3.6	1.7	*21		49	2	14	0	0	--	66	16	--	--	--	--	--
62-01-101	640	Oct. 20, 1964	J	12	0.09	1.2	.2	30	0.9	6	.0	2.9	.1	.8	0.01	23	4	47	.4	.02	24	5.8
102	282	do	J	20	.34	2.5	.9	66	3.7	22	9.6	3.4	.1	.0	.01	58	10	49	.9	.16	78	6.1
103	10	May 14, 1942	J	--	--	3.6	3.2	*17		18	4	14	--	24	--	75	22	--	--	--	--	--
201	22	May 13, 1942	J	--	--	14	1.2	*17		55	2	18	--	6.0	--	85	40	--	--	--	--	--
302	10	do	J	--	--	4.4	2.7	*44		18	2	58	--	24	--	144	22	--	--	--	--	--
401	800	Dec. 21, 1955	J	59	1.2	5.3	.6	8.1	4.3	25	12	3.5	.2	.3	.03	111	16	45	.9	.10	90	6.2
c/ 401	800	Feb. 10, 1965	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	5.8
c/ 402	634	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	5.8
c/ 404	594	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	6.0
b/ 406	1,352	Oct. 24, 1964	J	64	.45	11	1	*17		55	12	5	--	--	--	170	31	56	1.3	.28	123	6.22
b/ 406	1,352	Oct. 27, 1964	J	65	.49	13	1	*18		63	11	6	--	--	--	181	36	54	1.3	.31	142	6.28
b/ 406	1,352	Oct. 30, 1964	J	60	.46	12	1	*17		57	10	7	.25	1.2	--	170	35	53	1.2	.23	134	6.23
b/ 406	1,352	Nov. 1, 1964	J	60	.30	22	1	*20		99	9	6	.15	1.3	--	221	59	41	1.1	.83	188	6.76
b/ 406	1,352	Dec. 16, 1964	J	60	.11	13	1	*16		59	10	7	.37	1.4	--	169	36	49	1.2	.25	135	6.29
407	22	May 14, 1942	J	--	--	4.0	1.5	*2.1		12	2	4.0	--	4.0	--	24	16	--	--	--	--	--
408	27	May 13, 1942	J	--	--	4.4	2.7	*16		61	2	3.5	.2	0	--	59	22	--	--	--	--	--
409	582	Apr. 10, 1941	J	--	--	9.3	1.0	*10		35	14	4.1	.2	.0	--	126	27	--	--	--	--	--
502	196	May 13, 1942	J	--	--	5.6	.2	*15		49	2	4.0	--	0	--	51	15	--	--	--	--	--
602	25	do	J	--	--	--	1.5	*6.2		12	3	3.5	--	2.0	--	22	6	--	--	--	--	--
603	54	do	J	--	--	2.0	1.5	*8.3		24	2	4.5	--	.5	--	31	11	--	--	--	--	--
701	1,000	Feb. 11, 1965	J	70	.00	33	.4	23	5.7	156	10	4.7	.2	.0	.0	224	84	35	1.1	.88	275	7.3
c/ 701	1,000	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	7.8
704	16	May 18, 1942	J	--	--	12	2.7	*16		12	11	18	.2	36	--	102	42	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
PR-62-01-905	26	May 13, 1942	Ev(?)	--	--	91	10	*54		55	5	126	--	200	--	513	271	--	--	--	--	--
906	12	do	Ev(?)	--	--	0	1.5	*18		18	7	14	--	3.0	--	53	6	--	--	--	--	--
09-103	381	Apr. 15, 1942	J	--	--	20	1.7	*9.9		73	7	6.5	0.4	0	--	82	56	--	--	--	--	--
104	38	May 9, 1942	Ev(?)	--	--	6.4	2.7	*18		6	2	29	.4	22	--	84	27	--	--	--	--	--
501	27	do	Ev	--	--	48	2.7	*98		67	55	143	.1	38	--	418	132	--	--	--	--	--
602	71	May 12, 1942	Ev	--	--	2.4	3.9	*7.6		6	2	13	--	16	--	48	22	--	--	--	--	--
702	39	May 9, 1942	Ev	--	--	8.4	2.7	*3.7		31	2	5.5	--	6.0	--	43	32	--	--	--	--	--
802	32	May 11, 1942	Ev	--	--	8.8	3.6	*19		61	2	9.5	--	16	--	89	37	--	--	--	--	--
901	39	May 12, 1942	Ch	--	--	24	2.7	*14		85	3	12	--	16	--	114	72	--	--	--	--	--
10-401	42	do	Ev	--	--	10	1.5	*36		73	3	17	--	27	--	131	31	--	--	--	--	--
17-101	17	May 11, 1942	Ch	--	--	--	2.4	*8.3		12	2	10	--	2.5	--	31	10	--	--	--	--	--
201	29	May 12, 1942	Ch	--	--	4.4	3.9	*23		6	2	22	--	49	--	107	27	--	--	--	--	--
206	90	May 11, 1942	Ev	--	--	--	.2	*7.8		6	2	5.0	.2	4.5	--	23	1	--	--	--	--	--
207	47	do	Ch	--	--	5.2	6.3	*73		18	2	100	--	50	--	246	39	--	--	--	--	--
302	18	May 12, 1942	Ch	--	--	.4	2.7	*13		6	4	17	--	9.0	--	49	12	--	--	--	--	--
402	20	May 11, 1942	Ch	--	--	11	3.6	*66		43	5	81	--	38	--	226	42	--	--	--	--	--
403	18	May 16, 1942	Ch	--	--	8.4	3.9	*37		12	4	51	--	38	--	148	37	--	--	--	--	--
504	150	July 16, 1964	Ch	74	1.6	12	7.3	*25		104	.0	20	.2	.0	--	190	60	47	1.4	0.51	234	6.8
507	36	May 11, 1942	Ch	--	--	4.8	5.1	*29		12	5	46	--	20	--	116	33	--	--	--	--	--
508	35	May 16, 1942	Ch	--	--	4.4	2.7	*11		37	2	8.0	--	3.0	--	49	22	--	--	--	--	--
509	150	do	Ch	--	--	1.6	.2	*20		43	2	7.0	.1	0	--	52	5	--	--	--	--	--
706	156	do	Ch	--	--	2.4	1.2	*26		55	3	14	--	1.5	--	75	11	--	--	--	--	--
801	180	June 17, 1964	Ch	35	.04	3.0	.9	*10		24	.2	9.0	.0	.5	0.01	71	11	66	1.3	.17	74	6.1
802	17	May 16, 1942	Ch	--	--	.4	2.7	*21		18	2	19	--	17	--	71	12	--	--	--	--	--
901	1,564	Apr. 15, 1942	J	--	--	43	2.2	*23		183	7	6.0	.2	.0	--	171	116	--	--	--	--	--
901	1,564	July 17, 1964	J	39	--	47	1.4	*17		173	10	6.1	.1	.0	--	206	123	24	.7	.38	308	7.4

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
PR-62-17-902	325	Apr. 15, 1942	Ev	--	--	6.4	6.8	*12		67	2	7.5	1.4	0	--	69	44	--	--	--	--	--
903	1,427	Apr. 10, 1942	J	--	--	19	1.0	*38		146	7	3.5	.1	0	--	141	51	--	--	--	--	--
903	1,427	July 15, 1964	J	19	0.02	20	2.0	38	1.9	156	10	4.4	.2	.0	0.04	173	58	58	2.2	1.39	277	7.5
904	1,556	do	J	45	.01	46	1.5	12	4.1	166	9.8	6.1	.1	.0	.09	207	121	17	.5	.30	297	7.5
c/ 904	1,556	Mar. 9, 1964	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	7.7
905	1,490	July 15, 1964	J	30	.02	40	1.5	23	3.0	173	11	6.0	.1	.2	.01	200	106	31	1.0	.72	311	6.8
906	1,464	July 17, 1964	J	29	.02	40	.8	19	2.9	158	10	4.8	.1	.0	.02	185	103	28	.8	.53	285	7.0
907	448	Apr. 15, 1942	Ev	--	--	4.8	1.0	*11		37	2	5.0	--	0	--	42	16	--	--	--	--	--
25-102	22	May 16, 1942	Ch	--	--	10	3.9	*21		61	5	17	--	10	--	97	42	--	--	--	--	--
201	1,445	July 14, 1964	J	19	--	9.8	.6	*59		166	11	4.8	.2	.2	--	187	27	83	4.9	2.18	293	7.1
302	20	May 18, 1942	Ch	--	--	4.4	2.7	*11		12	2	17	0	11	--	54	22	--	--	--	--	--
303	260	May 19, 1942	Ch	--	--	--	1.5	*30		73	3	6.0	.1	0	--	77	6	--	--	--	--	--
307	14	May 18, 1942	Ch	--	--	16	2.7	*30		79	2	20	--	27	--	137	52	--	--	--	--	--
403	365	May 20, 1964	Ev	46	--	2.5	.9	*14		25	.0	14	.1	.2	--	90	10	76	1.9	.21	92	6.6
404	28	May 16, 1942	Ch	--	--	26	10	*120		49	3	174	.2	96	--	453	106	--	--	--	--	--
502	199	June 12, 1964	Ch	35	.40	2.0	1.2	*18		26	2.8	17	.1	.0	--	89	10	79	2.5	.23	108	6.3
504	29	May 18, 1942	Ch	--	--	15	3.6	*23		31	5	30	--	38	--	130	52	--	--	--	--	--
601	1,441	June 18, 1964	J	17	.0	2.2	.1	*94		237	8.8	3.9	.5	.0	--	244	6	97	17	3.77	392	8.3
604	150	May 19, 1942	Ch	--	--	4.0	1.5	*2.1		12	2	6.0	0	0	--	22	16	--	--	--	--	--
801	1,606	May 23, 1960	J	19	--	.5	.0	*95		a/231	9.8	6.0	--	.0	--	244	1	99	41	3.77	381	8.5
[illegible]02	30	May 18, 1942	Ch	--	--	14	2.7	*41		55	7	40	--	34	--	166	47	--	--	--	--	--
[illegible]1	42	May 16, 1942	Ch	--	--	2.4	2.7	*6.9		18	2	10	--	1.0	--	34	17	--	--	--	--	--
[illegible].100		Apr. 14, 1942	Ev	--	--	17	2.2	*39		146	4	7.5	.1	0	--	142	51	--	--	--	--	--
61		do	Ev	--	--	20	1.7	*36		146	4	6.0	.3	0	--	140	56	--	--	--	--	--
[illegible]3		do	Ch(?)	--	--	6.8	2.2	*27		61	3	23	--	0	--	92	26	--	--	--	--	--
[illegible]4		May 19, 1942	Ch	--	--	12	2.7	*13		12	4	26	--	25	--	89	42	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Jasper County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) [a]	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
[b]PR-62-33-401	498	June 2, 1959	Ch	29	0.08	4	1	*10		29	1	8	--	--	--	84	15	59	1.1	0.18	92	6.0
401	498	May 23, 1960	Ch	37	.03	2.2	1.2	9.2	2.4	20	.4	12	0.1	0.0	0.08	75	10	60	1.3	.12	78	5.7
401	498	Apr. 9, 1965	Ch	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	5.7
403	624	Apr. 24, 1964	Ev	16	.02	18	2.7	40	1.7	160	5.4	5.1	.3	.2	--	168	56	60	2.3	1.50	284	7.6
405	460	May 8, 1964	Ev	18	--	20	2.9	*48		186	5.0	5.7	.2	.5	.07	191	62	63	2.6	1.81	313	7.0
406	30	May 19, 1942	Ch	--	--	4.0	2.7	*33		12	10	26	--	45	--	127	21	--	--	--	--	--
407	17	May 15, 1942	Ch	--	--	4.0	1.5	*7.4		6	4	15	.3	1.0	--	36	16	--	--	--	--	--
408	262	Apr. 10, 1942	Ch	--	--	7.2	1.9	*9.9		37	2	11	0	0	--	50	26	--	--	--	--	--
501	17	May 19, 1942	Ch	--	--	4.8	5.1	*56		12	4	76	0	41	--	193	33	--	--	--	--	--
701	21	May 15, 1942	Ch	--	--	9.6	7.5	*14		37	3	29	--	14	--	95	55	--	--	--	--	--
802	22	do	Ch	--	--	--	.2	*25		24	3	20	--	4.5	--	65	1	--	--	--	--	--
803	18	May 19, 1942	Ch	--	--	4.0	1.5	*1.2		6	2	7.0	--	2.0	--	21	16	--	--	--	--	--
41-201	63	May 15, 1942	Ch	--	--	.4	3.9	*43		31	2	60	--	0	--	124	17	--	--	--	--	--
203	185	do	Ch	--	--	6.4	3.9	*6.7		31	2	13	.1	.5	--	48	32	--	--	--	--	--
401	680	do	Ev	--	--	3.6	.2	*102		262	2	10	.4	0	--	248	10	--	--	--	--	--
602	316	Feb. 20, 1964	Ch	56	.90	9.5	3.5	*23		79	4.2	13	.1	.0	--	148	38	57	1.6	.53	188	7.3
702	71	May 15, 1942	Ch	--	--	19	12	*14		85	2	40	--	0	--	129	98	--	--	--	--	--
801	730	May 25, 1960	Ch	49	.28	10	3.3	24	2.9	86	2.6	16	--	.2	.12	150	39	55	1.7	.64	187	6.5
803	65	May 15, 1942	Ch	--	--	28	22	*234		61	52	399	.2	0	--	765	159	--	--	--	--	--
804	111	Feb. 19, 1964	Ch	49	3.4	7.5	3.2	*27		82	1.6	15	.2	.2	--	144	32	65	2.1	.71	185	6.8
902	72	May 15, 1942	Ch	--	--	26	15	*170		67	26	291	--	0	--	561	124	--	--	--	--	--

Newton County

TZ-36-50-702	19	May 21, 1942	Tcs	--	--	16	10	*1.2		6	2	32	--	39	--	103	81	--	--	--	--	--
801	22	do	Tcs	--	--	4.4	2.7	*2.3		6	3	2.5	--	19	--	37	22	--	--	--	--	--
901	12	do	Tcs	--	--	21	6.3	*36		37	8	39	--	80	--	208	79	--	--	--	--	--
51-701	27	do	J	--	--	27	14	*94		43	3	120	--	150	--	429	123	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
TZ-36-52-404	48	May 20, 1942	J	--	--	4.8	5.1	*18		67	8	5.0	0.3	0	--	74	33	--	--	--	--	--
503	15	do	J	--	--	3.6	.2	*9.2		18	10	1.0	--	4.0	--	37	10	--	--	--	--	--
802	30	do	J	--	--	10	27	*68		12	3	117	--	132	--	363	137	--	--	--	--	--
57-904	20	May 22, 1942	J	--	--	9.2	3.4	*73		116	22	54	.1	2.5	--	221	37	--	--	--	--	--
58-102	23	do	J	--	--	10	1.5	*3.2		37	3	3.0	--	1.5	--	40	31	--	--	--	--	--
301	26	May 21, 1942	J	--	--	.4	3.9	*8.7		12	3	5.0	--	20	--	47	17	--	--	--	--	--
302	12	do	J	--	--	19	12	*83		6	3	144	--	84	--	348	98	--	--	--	--	--
59-101	23	May 22, 1942	J	--	--	10	2.7	*44		6	23	9.0	--	113	--	205	37	--	--	--	--	--
503	62	May 21, 1942	J	--	--	37	5.1	*44		183	2	32	.5	12	--	223	113	--	--	--	--	--
601	57	do	J	--	--	25	5.1	*46		165	2	32	--	0	--	191	83	--	--	--	--	--
701	22	do	J	--	--	6.4	3.9	*23		18	4	37	--	14	--	97	32	--	--	--	--	--
802	227	Dec. 3, 1964	J	18	0.02	2.0	.5	2.0	2.0	10	.2	3.5	.1	.2	--	34	7	31	0.3	0.02	32	6.8
803	232	May 21, 1942	J	--	--	4.0	1.5	*3.0		12	3	6.0	.3	0	--	24	16	--	--	--	--	--
901	120	May 20, 1942	J	--	--	8.4	1.2	*4.4		31	3	5.0	.2	0	--	54	26	--	--	--	--	--
60-101	400	Mar. 24, 1965	J	52	.0	10	.7	35	4.1	112	11	4.4	.2	0	--	172	28	70	2.9	1.28	212	7.6
c/ 101	400	do	J	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	190	7.0
c/ 201	160	Mar. 22, 1965	J	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	72	6.3
c/ 202	160	do	J	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	215	6.6
c/ 203	160	do	J	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	200	6.5
c/ 204	160	Mar. 24, 1965	J	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	198	6.6
205	168	do	J	60	.01	23	1.6	15	7.6	90	5.0	20	.2	0	0.01	176	64	31	.8	.20	256	6.9
c/ 205	168	do	J	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	160	6.9
c/ 207	--	do	J	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	220	6.7
208	22	May 20, 1942	J	--	--	8.0	10	*24		61	3	11	.1	55	--	141	61	--	--	--	--	--
404	52	do	J	--	--	10	10	*9.0		67	2	11	--	16	--	91	66	--	--	--	--	--
c/ 601	225	Mar. 22, 1965	J	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	250	7.6

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
TZ-36-60-602	225	June 1, 1960	J	50	--	34	0.7	*38		184	8.8	6.5	0.1	0.0	--	228	88	48	1.8	1.26	313	7.6
c/ 602	225	Mar. 22, 1965	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	260	7.9
603	27	May 20, 1942	J	--	--	24	1.5	*77		262	7	6.0	.6	0	--	246	66	--	--	--	--	--
c/ 605	260	Mar. 22, 1965	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	185	7.2
c/ 606	160	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	230	7.0
c/ 607	160	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	260	7.2
c/ 608	160	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	240	7.0
c/ 609	155	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	295	7.8
701	200	do	J	48	0.25	4.0	.5	5.6	5.1	20	10	3.1	.0	.0	0.01	87	12	40	.7	.09	70	7.4
c/ 701	200	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	75	6.2
702	24	May 20, 1942	J	--	--	3.6	3.2	*24		31	2	19	--	24	--	91	22	--	--	--	--	--
62-101	45	May 21, 1942	J	--	--	10	1.2	*14		61	2	3.0	--	6.0	--	66	31	--	--	--	--	--
62-02-202	50	do	J	--	--	10	2.7	*17		12	17	24	--	15	--	92	37	--	--	--	--	--
301	33	do	J	--	--	4.4	1.5	*3.7		12	3	6.0	--	4.5	--	29	17	--	--	--	--	--
401	45	May 22, 1942	J	--	--	14	1.5	*6.9		43	4	12	--	0	--	59	41	--	--	--	--	--
402	34	do	J	--	--	9.6	.2	*.9		18	3	4.0	--	4.5	--	31	25	--	--	--	--	--
501	15	do	J	--	--	6.0	1.5	*8.7		18	4	12	--	5.0	--	46	21	--	--	--	--	--
601	33	do	J	--	--	8.4	3.9	*9.2		18	4	10	0	30	--	75	37	--	--	--	--	--
703	16	May 21, 1942	Ev(?)	--	--	46	3.9	*26		122	9	52	.6	6.0	--	204	132	--	--	--	--	--
803	18	May 22, 1942	Ev(?)	--	--	2.4	2.7	*23		12	2	12	--	46	--	94	17	--	--	--	--	--
03-203	30	do	Ev(?)	--	--	21	2.4	*83		43	6	102	--	70	--	305	62	--	--	--	--	--
b/ 301	1,050	Sept. 13, 1964	J	24	.97	31	1	*86		120	28	99	--	--	--	400	81	70	4.2	.35	560	8.1
301	1,050	Dec. 3, 1964	J	42	2.1	14	.5	37	3.9	125	10	8.0	.2	.2	--	178	37	66	2.6	1.31	239	7.6
304	25	May 22, 1942	Ev(?)	--	--	4.8	3.6	*26		24	8	30	--	16	--	100	27	--	--	--	--	--
305	26	do	Ev(?)	--	--	6.4	2.7	*42		12	3	63	--	2.0	--	143	27	--	--	--	--	--
401	22	do	Ev	--	--	4.4	3.9	*2.1		18	3	6.0	--	6.0	--	34	27	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
TZ-62-03-501	16	May 22, 1942	Ev	--	--	191	14	*51		366	4	240	--	1.0	--	681	533	--	--	--	--	--
601	19	do	Ev(?)	--	--	2.0	1.5	*2.1		12	2	2.5	--	0	--	16	11	--	--	--	--	--
701	522	Dec. 4, 1964	J	35	1.4	14	1.7	*10		51	8.2	8.9	0.2	.2	--	103	42	34	6.7	0.00	133	6.7
702	56	May 23, 1942	Ev	--	--	2.0	1.5	*3.9		12	3	2.5	.1	3.0	--	22	11	--	--	--	--	--
902	23	May 22, 1942	Ev	--	--	6.4	3.9	*.2		6	2	18	--	0	--	34	32	--	--	--	--	--
04-102	185	Mar. 17, 1965	J	41	--	50	3.2	7.8	3.8	172	11	7.3	.1	--	0.00	209	138	11	.3	.06	302	7.9
c/ 102	185	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	270	7.1
103	18	May 22, 1942	J	--	--	4.4	1.2	*8.1		12	3	11	--	6.0	--	40	16	--	--	--	--	--
c/ 401	120	Mar. 16, 1965	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	260	7.2
c/ 402	230	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	175	7.0
503	12	May 22, 1942	Ev(?)	--	--	4.4	3.9	*22		24	26	11	--	16	--	95	27	--	--	--	--	--
701	53	do	Ev	--	--	1.6	.2	*2.3		6	3	1.5	--	0	--	12	5	--	--	--	--	--
10-101	22	May 23, 1942	Ev	--	--	2.0	1.5	*12		12	9	11	--	3.0	--	45	11	--	--	--	--	--
201	25	do	Ev	--	--	18	2.7	*5.3		73	3	3.0	.1	1.0	--	69	57	--	--	--	--	--
302	720	June 1, 1960	J	48	.27	65	1.7	7.7	4.8	31	9.2	8.2	.1	.0	.08	111	23	36	.7	.04	102	5.5
c/ 302	720	Feb. 11, 1964	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	5.9
b/ 308	1,370	Apr. 10, 1964	J	30	.79	10	2	*17		49	21	6	--	--	--	140	33	53	1.3	.14	120	7.0
b/ 308	1,370	Apr. 14, 1964	J	44	.87	12	2	*15		51	20	4	--	--	--	159	42	47	1.0	.00	132	7.2
309	1,210	Feb. 11, 1965	J	78	.01	8.8	.5	8.8	5.9	42	11	3.9	.3	.2	.00	139	24	38	.8	.21	113	6.6
c/ 309	1,210	do	J	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	6.4
310	200	Apr. 10, 1941	Ev	--	--	5.9	1.2	*6.3		26	2.1	7.0	0	0	--	62	20	--	--	--	--	--
402	39	May 24, 1942	Ev	--	--	15	12	*49		12	3	52	--	135	--	272	88	--	--	--	--	--
502	31	do	Ev	--	--	12	3.9	*26		12	3	18	--	82	--	151	47	--	--	--	--	--
503	260	Apr. 10, 1941	Ev	--	--	1.2	.8	*7.5		18	2.6	3.5	0	.3	--	35	6	--	--	--	--	--
601	26	May 25, 1942	Ev	--	--	8.4	3.9	*34		18	13	36	--	39	--	143	37	--	--	--	--	--
602	24	do	Ev	--	--	4.0	1.5	*3.5		0	4	5.5	--	14	--	33	16	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) g/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
TZ-62-10-701	16	May 24, 1942	Ch	--	--	8.4	3.9	*55		12	3	59	--	75	--	210	37	--	--	--	--	--
803	34	do	Ch	--	--	9.2	6.3	*50		18	12	37	--	96	--	220	49	--	--	--	--	--
11-102	68	May 23, 1942	Ev	--	--	5.6	.2	*17		55	2	3.5	--	1.0	--	56	15	--	--	--	--	--
201	22	do	Ev	--	--	8.4	2.7	*1.8		12	3	5.0	--	20	--	47	32	--	--	--	--	--
202	31	May 25, 1942	Ev	--	--	6.0	1.5	*5.5		12	2	9.5	--	9.0	--	40	21	--	--	--	--	--
401	21	do	Ev	--	--	2.0	1.5	*3.2		6	2	6.0	--	3.0	--	21	11	--	--	--	--	--
402	29	do	Ch	--	--	8.4	2.7	*35		12	12	43	--	30	--	137	32	--	--	--	--	--
501	37	do	Ch	--	--	26	17	*49		18	2	130	--	53	--	286	136	--	--	--	--	--
604	40	do	Ev	--	--	13	23	*67		12	2	120	0.3	116	--	347	129	--	--	--	--	--
802	20	do	Ch	--	--	6.4	3.9	*.2		18	2	7.0	--	7.0	--	36	32	--	--	--	--	--
902	812	Oct. 28, 1964	J	39	0.06	55	4.3	10	3.9	198	8.2	9.5	.1	.0	0.06	227	155	12	0.3	0.15	349	7.3
904	23	May 25, 1942	Ch	--	--	25	6.3	*161		37	65	240	.4	.0	--	518	89	--	--	--	--	--
12-401	16	do	Ev(?)	--	--	11	6.3	*33		18	15	31	--	65	--	170	54	--	--	--	--	--
701	302	Oct. 29, 1964	Ev	34	.01	21	3.1	29	2.7	144	5.6	6.7	.3	.0	.06	173	65	48	1.6	1.06	255	7.1
18-101	21	May 24, 1942	Ch	--	--	5.6	7.5	*60		49	4	59	--	60	--	220	45	--	--	--	--	--
201	30	do	Ch	--	--	5.2	6.3	*33		0	7	36	.1	63	--	151	39	--	--	--	--	--
304	18	May 25, 1942	Ch	--	--	10	2.7	*1.8		12	3	16	--	7.0	--	47	37	--	--	--	--	--
403	25	May 24, 1942	Ch	--	--	15	14	*24		6	2	47	--	90	--	195	93	--	--	--	--	--
404	1,495	--	J	--	--	85	5	*22		292	12	24	--	--	--	266	--	--	--	--	--	--
505	29	May 26, 1942	Ch	--	--	28	3.9	*58		183	3	39	--	7.0	--	229	87	--	--	--	--	--
601	38	do	Ch	--	--	16	10	*44		43	2	61	--	66	--	220	81	--	--	--	--	--
705	30	do	Ch	--	--	2.0	1.5	*5.3		6	3	8.0	--	4.0	--	27	11	--	--	--	--	--
804	350	do	Ch(?)	--	--	11	2.4	*53		171	3	7.0	0	0	--	160	37	--	--	--	--	--
805	150	do	Ch(?)	--	--	4.0	1.5	*8.5		18	2	12	.2	0	--	37	16	--	--	--	--	--
807	25	do	Ch	--	--	4.0	1.5	*1.4		12	2	4.0	--	2.0	--	21	16	--	--	--	--	--
901	14	do	Ch	--	--	14	1.5	*9.9		67	3	3.0	.2	0	--	65	41	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) a/	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
TZ-62-19-102	14	May 25, 1942	Ch	--	--	4.4	2.7		*7.6	6	3	15	--	12	--	48	22	--	--	--	--	--
202	26	do	Ch	--	--	5.6	7.5		*13	12	2	16	--	48	--	98	45	--	--	--	--	--
202	26	July 29, 1964	Ch	--	--	--	--		--	6	--	10	--	8.5	--	--	16	--	--	--	63	6.5
301	1,506	Apr. 15, 1942	J,Ev	--	--	24	4.6		*6.9	92	3	10	0.4	0	--	94	78	--	--	--	--	--
307	28	May 25, 1942	Ch	--	--	4.4	2.7		*4.6	24	2	7.0	--	0	--	33	22	--	--	--	--	--
308	22	do	Ch	--	--	2.0	1.5		*6.0	12	2	2.0	--	11	--	31	11	--	--	--	--	--
401	20	do	Ch	--	--	8.8	5.1		*56	12	11	78	0	42	--	207	43	--	--	--	--	--
402	16	May 26, 1942	Ch	--	--	8.4	3.9		*4.1	49	3	1.0	--	2.0	--	46	37	--	--	--	--	--
605	20	May 25, 1942	Ch	--	--	2.0	1.5		*3.5	15	2	3.0	--	0	--	20	11	--	--	--	--	--
701	18	May 26, 1942	Ch	--	--	2.0	1.5		*.7	6	2	4.0	--	0	--	13	11	--	--	--	--	--
802	500	Oct. 13, 1964	Ev	51	1.1	16	1.7	7.7	2.5	64	4.8	7.6	.1	.0	0.01	122	47	25	0.5	0.11	143	6.3
25-306	529	Apr. 15, 1942	Ev	--	--	17	1.0		*8.5	61	4	7.0	.1	0	--	68	46	--	--	--	--	--
26-103	24	May 26, 1942	Ch	--	--	9.6	7.5		*52	12	3	81	--	50	--	209	55	--	--	--	--	--
104	24	do	Ch	--	--	6.0	1.5		*14	43	2	6.0	--	6.0	--	57	21	--	--	--	--	--
203	1,300	Mar. 9, 1965	J	24	.00	21	.9	39	1.9	156	11	3.7	.2	.0	.04	179	56	59	2.3	1.44	267	7.5
c/ 203	1,300	do	J	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	8.1
204	46	May 26, 1942	Ch	--	--	4.4	3.9		*1.8	18	3	7.0	--	4.0	--	33	27	--	--	--	--	--
301	17	do	Ch	--	--	2.4	2.7		*.7	12	2	4.5	--	0	--	18	17	--	--	--	--	--
404	48	do	Ch	--	--	12	17		*70	43	2	107	--	81	--	310	101	--	--	--	--	--
503	200	May 27, 1964	Ch	49	.12	2.5	.9		*13	30	.0	9.1	.1	.2	--	90	10	74	1.8	.29	85	6.6
506	40	May 26, 1942	Ch	--	--	39	12		*22	61	33	55	--	80	--	241	148	--	--	--	--	--
610	285	July 9, 1964	Ch	60	.24	32	3.2		*17	134	4.6	10	.2	.0	--	193	93	28	.8	.34	255	7.0
611	647	do	Ev	50	3.5	25	1.8		*12	99	3.8	7.3	.1	.0	--	149	70	27	.6	.23	193	6.6
614	20	May 26, 1942	Ch	--	--	4.4	2.7		*4.1	18	2	10	--	0	--	32	22	--	--	--	--	--
902	165	May 22, 1964	Ch	41	1.1	6.2	1.6		*12	26	3.8	16	.1	0	--	94	22	54	1.1	.00	111	6.4
903	20	May 26, 1942	Ch	--	--	15	6.3		*27	6	2	41	--	72	--	166	64	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical analyses of water from wells in Jasper, Newton, and adjacent counties--Continued

Newton County

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3) [a]	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
TZ-62-33-602	33	May 27, 1942	Ch	--	--	11	5.1	*52		37	2	66	--	44	--	198	48	--	--	--	--	--
34-501	22	do	Ch	--	--	10	1.5	*1.6		24	2	6.0	--	5.0	--	38	31	--	--	--	--	--
805	40	do	Ch	--	--	8.8	5.1	*3.5		43	3	9.0	--	0	--	50	43	--	--	--	--	--
41-907	69	Feb. 20, 1964	Ch	50	10	35	9	*228		44	20	428	0.2	.5	--	803	166	75	7.7	0.00	1,500	6.3
[b] 42-101	524	1942	Ch,Ev	--	--	10.4	3.4	*49.5		79.3	.8	58.0	--	--	--	161	40.0	--	--	--	--	--
102	429	May 25, 1960	Ch	56	--	10	4.6	37	3.4	58	5.2	54	--	0	0.00	210	44	63	2.4	.07	279	6.3
503	70	May 26, 1942	Ch	--	--	12	2.7	*60		55	3	88	0	0	--	193	42	--	--	--	--	--
905	293	May 27, 1942	Ch	--	--	6.4	2.7	*52		122	3	25	.1	0	--	149	27	--	--	--	--	--
905	293	Apr. 28, 1964	Ch	38	6.6	12	3.4	*39		111	2.4	24	.3	.2	--	175	44	66	2.6	.94	270	6.3
906	78	May 27, 1942	Ch	--	--	4.4	2.7	*80		85	12	81	--	0	--	222	22	--	--	--	--	--
907	227	do	Ch	--	--	22	1.5	*30		104	4	26	.3	0	--	135	61	--	--	--	--	--
43-401	60	Feb. 17, 1964	Ch	46	.60	19	5.0	37	1.7	142	3.6	22	.3	0	.05	205	68	53	1.9	.97	299	7.4
402	300	do	Ch	49	.42	18	4.6	37	1.7	147	3.2	16	.3	.0	.04	202	64	55	2.0	1.13	294	7.4
404	105	Apr. 15, 1942	Ch	--	--	20	4.6	*40		146	3	22	.3	0	--	162	68	--	--	--	--	--

Orange County

UJ-62-50-201	590	May 23, 1960	Ch	48	--	7.8	3.9	33	2.5	81	4.4	28	--	0.2	0.05	168	36	65	2.4	0.62	225	6.2
201	590	July 1964	Ch	--	5.9	--	--	--		78	--	28	--	--	--	--	32	--	--	.64	230	6.9

[a] Includes the equivalent of any carbonate (CO_3) present.
[b] Analysis by Curtis Laboratories; Microbiology Service Laboratories; The Pope Testing Laboratories.
[c] Field test analysis.
* Sodium and potassium calculated as sodium (Na).

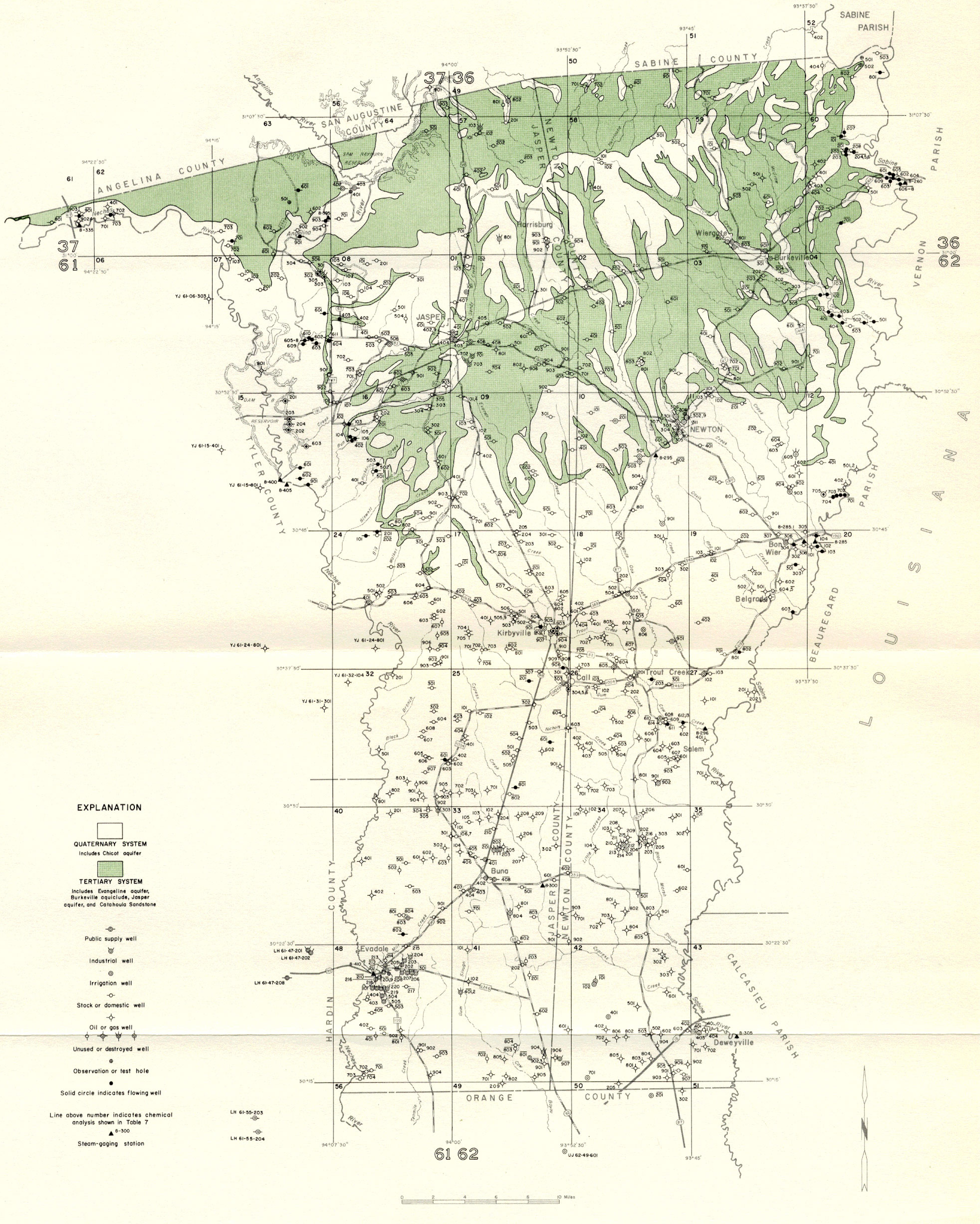


Figure 27

Geologic Map Showing Location of Wells, Springs, and Stream-Gaging Stations in Jasper and Newton Counties and Adjacent Areas

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

Base from U. S. Geological Survey topographic quadrangles and county maps of Texas State Highway Department

Geology from Bernard (1950)

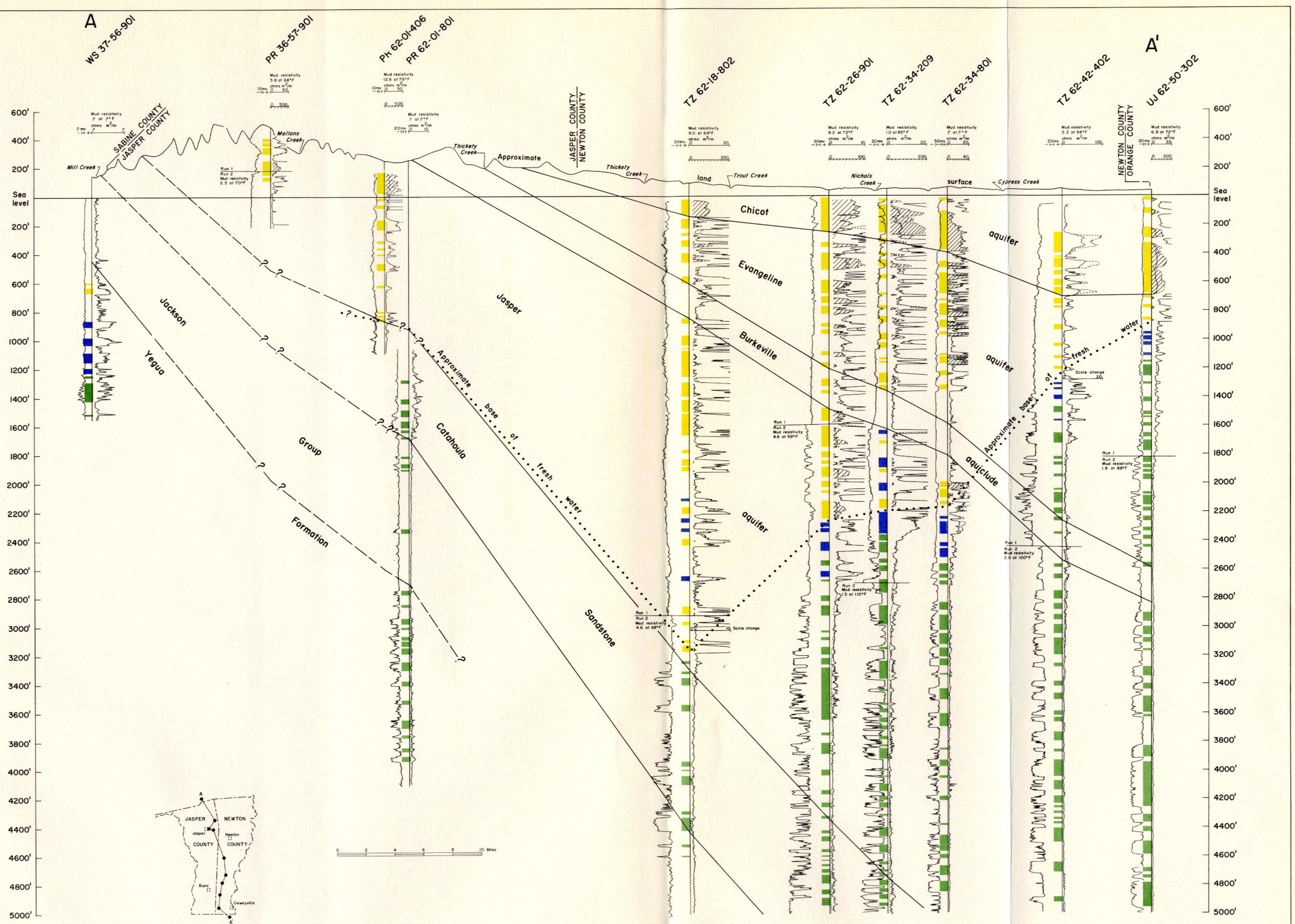


Figure 28

Geologic Section A–A', Sabine, Jasper, Newton, and Orange Counties

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

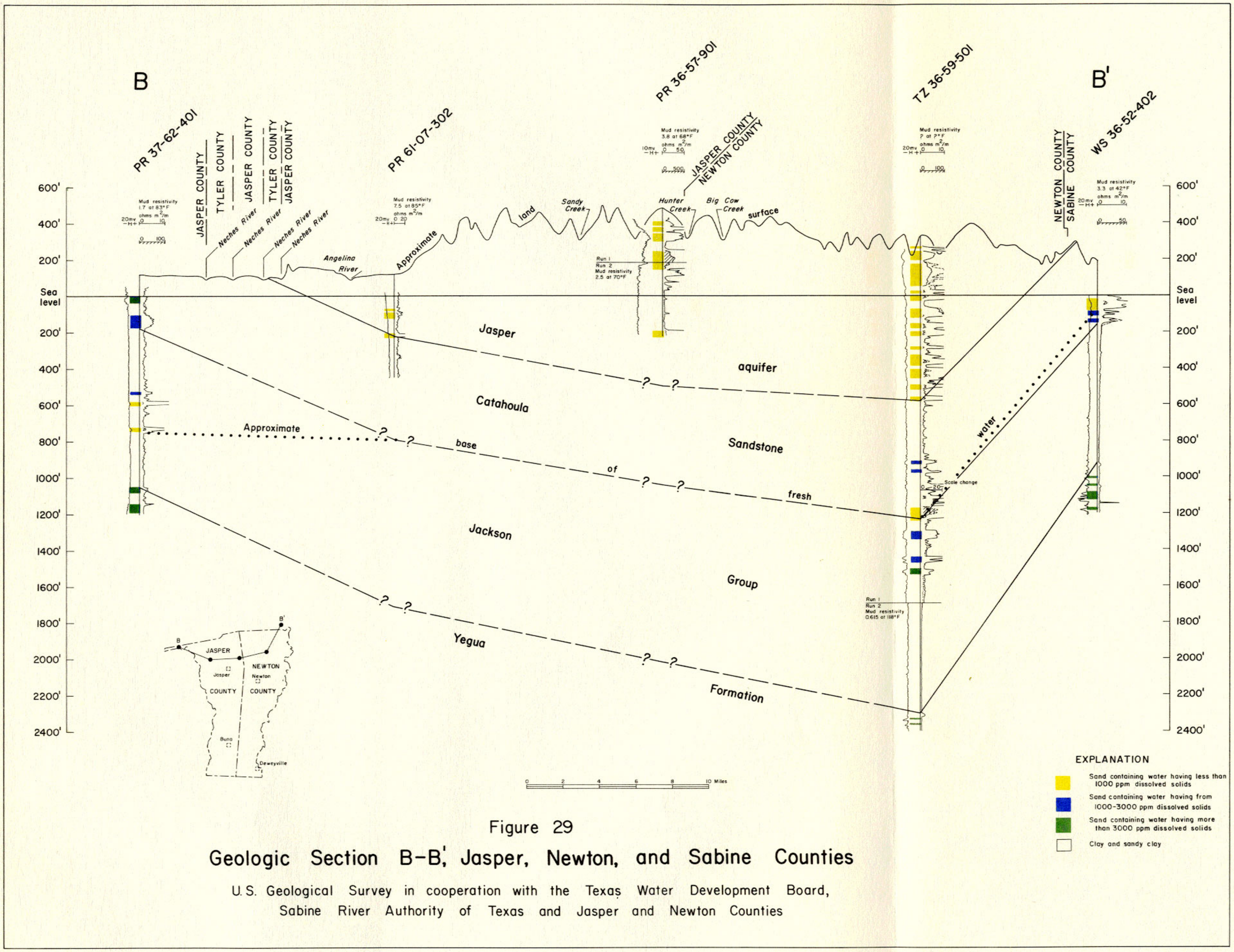


Figure 29

Geologic Section B–B', Jasper, Newton, and Sabine Counties

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

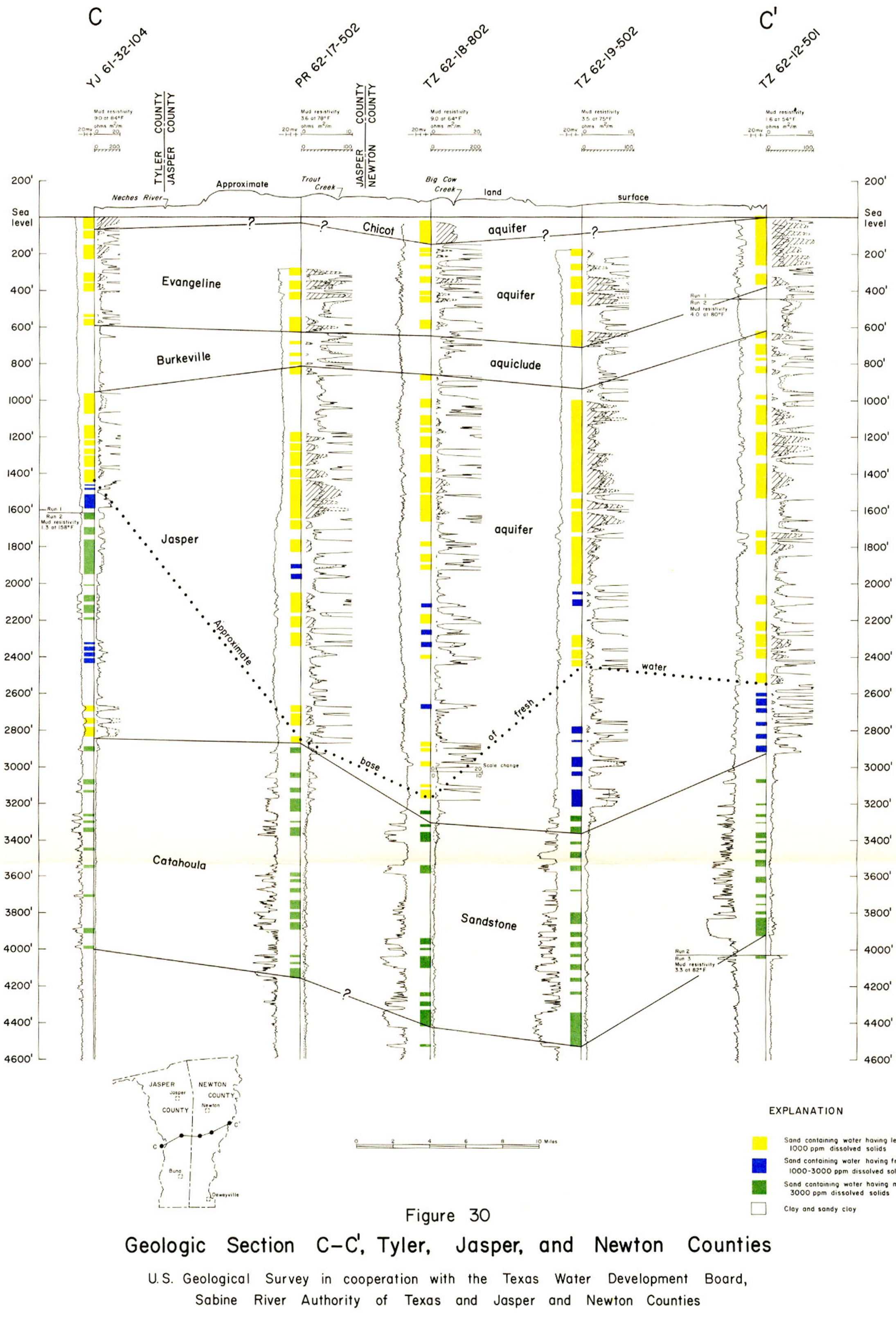


Figure 30

Geologic Section C–C', Tyler, Jasper, and Newton Counties

U.S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties

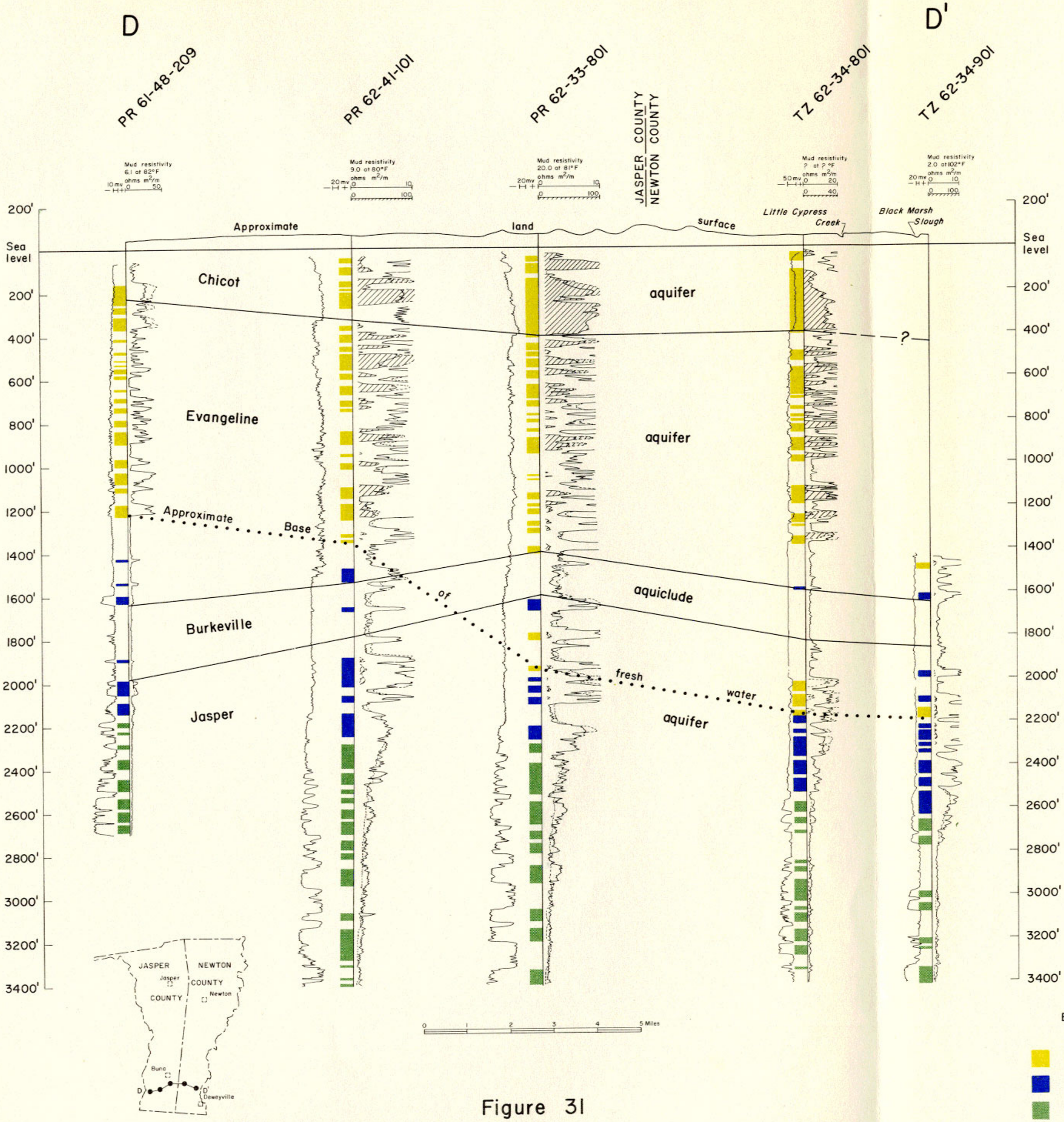


Figure 31

Geologic Section D-D', Jasper and Newton Counties

U. S. Geological Survey in cooperation with the Texas Water Development Board, Sabine River Authority of Texas and Jasper and Newton Counties