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PRELIMINARY REPORT ON THE GEOLOGY AND GROUND-WATER RESOURCES OF REEVES COUNTY, TEXAS

By

D. B. Knowles and Joe W. Lang

Prepared in cooperation with the Geological Survey, and the
Bureau of Reclamation, United States Department of the Interior

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INTRODUCTION

Location and general features of the area

Reeves County is in the Toyah Basin in the Trans-Pecos region of Texas, near the southeast corner of New Mexico. It is bounded on the north by Loving and Ward Counties, on the east by Pecos County, on the south by Jeff Davis County, and on the west by Culberson County. The land surface ranges from a gently sloping plain in the eastern and central parts of the county to rolling and broken hills in the south and west. It rises from about 2,500 feet above sea level along the Pecos River in the eastern part of the county to 4,500 feet in the foothills of the Davis Mountains on the southwest. The county has an area of 2,600 square miles and, according to the 1940 census, it had a population of 8,006 or an average of about 3.1 persons per square mile. The principal cities and towns and their populations in 1940 are: Pecos (county seat), 4,855; Balmorhea, 1,000; and Toyah, 464. This represents an urban population of almost 80 percent.

Previous investigations

The geology in parts of the Pecos River Basin has been studied intermittently for many years. Several reports that cover large regions and others that are confined to local areas have been prepared, but no previous report on the geology and ground-water resources of Reeves County has been published.

An investigation of the geology and ground-water resources of the Balmorhea area in the southern part of Reeves County was made in 1931-33 1/.

A joint investigation of the Pecos River Basin in New Mexico and Texas was made in 1939-41, and the reports of the participating agencies were published in 1942 2/. Most of the ground-water work carried out in connection with those studies in Texas was done by P. E. Dennis and Joe W. Lang under the immediate supervision of A. N. Sayre of the U. S. Geological Survey. Their part of the published reports contains a large amount of geologic and hydrologic data as related to the occurrence and movement of ground water.

1/ White, W. N., Gale, H. S., and Nye, S. S., Geology and ground-water resources of the Balmorhea area, western Texas: U. S. Geol. Survey Water-Supply Paper 849-C, 1941.

2/ The Pecos River joing investigation, report of the participating agencies, National Resources Planning Board, June 1942.

Purpose of the present investigation

The present investigation was started in the fall of 1946 by the U. S. Geological Survey and Texas Board of Water Engineers through a cooperative agreement with the Bureau of Reclamation. The purposes of this renewed activity are to bring together available data on the development of ground water to date, especially with reference to irrigation with water from wells in the vicinity of Pecos; to record the effects that past and present withdrawals of water are having on the supply; and, if practicable, to determine the optimum development of well irrigation in the county.

This is a progress report. It includes a part of the records that were collected in 1939-41, the information that was obtained during the fiscal year ending June 30, 1947, and a resume of some of the fundamental data that were given in the report of the National Resources Planning Board. It contains the records of 342 wells and 16 springs, the drillers' logs of 83 wells, and chemical analyses of water from 184 wells and 11 springs. The well records are given on pages 28 to 61, the drillers' logs on pages 62 to 80 , and the chemical analyses on pages 81 to 87 . The report has two maps; plate 1 shows locations of many domestic and stock wells in Reeves County, and plate 2 shows the locations of irrigation wells in the vicinity of Pecos.

Acknowledgments

The writers thank the many persons who have contributed information for this report. Representatives of oil companies, water-well drillers, well owners, and well operators furnished drillers' logs and other pertinent well data. The section on the geology incorporates parts of the manuscript reports by H. S. Gale and P. E. Dennis. The investigation was made under the supervision of W. N. White, district engineer , retired, and W. L. Broadhurst, district geologist in charge of ground-water work in Texas.

GENERAL GEOLOGY

The geologic formations exposed in Reeves County range in age from the Rustler formation of late Permian age to the Recent alluvium. They consist mostly of sandstone, siltstone, clay, shale, gypsite, conglomerate composed of quartzose material and limestone, volcanic boulders and pebbles, and sand partly cemented by calcium carbonate. The Rustler formation is exposed in the extreme northern part of the county. Beneath the Rustler formation but unexposed in Reeves County are thick sections of anhydrite, gypsum, salt, limestone, and other sediments of the Salado and Castile formations, which were deposited upon the rocks of the Delaware Mountain group of Permian age. The evaporite beds of the Salado and Castile are mainly chemical residues that were probably formed in large, shallow inland basins which had intermittent connections with the sea. Redbeds of late Permian(?) and Traissic age successively overlie the Rustler in parts of the northern half of the county. They were probably laid down as near-shore deposits during the intermittent transgressions of the sea, and by debris-laden streams on the continental land masses. Lower Cretaceous rocks are exposed in several places along the Reeves-Culberson County line and along Salt Draw and Cottonwood Draw west and northwest of Toyah. Marine limestones of Lower and Upper Cretaceous age and volcanic deposits of Tertiary age form the surface of the foothills and front range of the Davis Mountains in the southern and extreme southwestern parts of the county. Quaternary deposits that consist of clay, silt, sand, gravel, and boulders crop out at the surface or lie below a thin veneer of soil throughout much of the county. In places the deposits are cemented with calcium carbonate and form ledges of well-consolidated rock.

STRUCTURE

General features

Reeves County is in the extreme southwestern part of the broad structural Permian Basin or geosyncline that occupies much of western Texas, eastern New Mexico, and parts of Oklahoma and Kansas. In the southern part of this great geosyncline an uplift strikes approximately north-northwest, to which Cartwright 3/ applied the name Central Basin Platform. This Platform, which has a width ranging from about 30 to 35 miles and a length of approximately 200 miles, divides the southern Permian Basin into two subsidiary basins, the Midland Basin, commonly referred to as the main Permian Salt Basin, on the east, and the Delaware Basin on the west. Reeves County lies entirely within the Delaware Basin.

In general, all the rocks have a low regional dip to the east and southeast; but throughout much of the area rocks of the Rustler and younger formations, in addition to some tilting and warping, show considerable deformation through slumping caused by the removal of large quantities of soluble material from the underlying beds. Evidence of solution and subsidence, such as sinkholes, slumped beds, and disintegrated drainage, are present over most of the county.

The Delaware Basin is roughly an ellipse in outline. Its maximum development occurred during late Permian time when, according to Lang, 4/ it was an area of more intense negative movement than the main Permian Basin.

Hill 5/ applied the name Toyah Basin to that part of the Pecos Valley lying between the vicinity of the Texas-New Mexico line and the Edwards Plateau, and between the High Plains on the east and the mountains on the west; and most writers have continued to use his term in the physiographic sense. It was not known until many years after Hill's application of the term, when deep borings for oil were made, that a broad, deep structural basin occurred beneath the topographic basin. The buried structural basin, however, does not coincide in every respect with the Toyah Basin as described by Hill. It lies beneath southeastern Eddy and southwestern Lea Counties, New Mexico, and all of Loving and Reeves Counties, the western parts of Winkler, Ward, and Pecos Counties, and parts of Jeff Davis and Culberson Counties, Texas.

The geologic structure of Reeves County as a whole is relatively simple, although in local detail it is rather complex and in most places obscure. The older rocks throughout most of the area are concealed by an alluvial mantle and the only means of studying their structure is from well logs, many of which are available as a result of the extensive exploration for oil that has been carried on in this area for several years. In general, all the rocks dip gently to the

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3/ Cartwright, L. D., Jr., Transverse section of Permian basin, west Texas and southeast New Mexico: Am. Assoc. Petroleum Geologist Bull., vol. 14, p. 970, 1930.

4/ Lang, W. B., Upper Permian formation of Delaware basin of Texas and New Mexico: Am. Assoc. Petroleum Geologists, Bull. vol., 19, No. 2, p. 262, 1935.

5/ Hill, R. T., Physical geography of the Texas region: U.S. Geol. Survey Topo. Atlas, folio No. 3, pp. 8-9, 1900.

east or southeast; however, the regional east dip of beds younger than the Salado formation is interrupted by many small, irregular structural features resulting from slumping and caving caused by the solution and removal by circulating ground water of the Salado formation.

Delaware structural basin

The Delaware Basin is the result of downwarping. According to King 6/ part of the subsidence was no doubt caused by greater compaction of the sediments laid down in the basin than in the surrounding areas, and part by isostatic adjustment. He states:

> The tendency of sedimentation not to keep pace with subsidence in the basin area suggests that sedimentation and subsidence were independent processes. If so, the basin did not subside because it was loaded with sediments, although isostatic adjustments due to loading might have helped accentuate the process. Sedimentation seems to have gone on passively, filling up the hollows created for it by tectonic processes, and when sufficient material was not washed in, the hollows were not entirely filled.

The Delaware Basin reaches its maximum depth in eastern Reeves County between Toyah Lake and the Pecos-Reeves County line where the top of the Delaware Mountain group is about 2,500 feet below sea level. The slope of the basin on the west is gentle, but on the east the slope is very steep and terminates rather abruptly against the Central Basin Platform.

Within the basin during late Permian time great thicknesses of chemical precipitates, fine clastic clays, sandstones, and some limestones accumulated. The Castile formation, overlying the Delaware Mountain group, has a maximum thickness of more than 2,100 feet and is confined to the basin. The Salado formation overlaps the Castile to the east and southeast and extends across the Central Basin Platform into the main Permian Basin. To the west in Reeves County the thick salt section of the Salado has been mostly removed by subsurface erosion and the Rustler formation overlaps the Salado.

Local structural features caused by solution

All the upper Permian formations underlying Reeves County are made up largely of rocks that are more or less soluble in water. The most extensive of such rocks are salt, gypsum, anhydrite, and limestone. Of these rocks, salt is the most readily dissolved; gypsum and anhydrite, though less soluble than salt, dissolve fairly rapidly; and limestone, which is relatively insoluble in pure water, dissolves slowly in water containing carbon dioxide. Surface water acquires a certain amount of carbon dioxide from the air and soil, and after sinking into the ground the water is capable of dissolving limestone as well as

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6/ King, P. B., Permian of west Texas and southeastern New Mexico, Am. Assoc. Petroleum Geologists, Bull. vol. 26, pp. 622 and 728, 1942.

salt, gypsum, and anhydrite. Circulating ground waters, therefore, dissolve and carry off varying amounts of the soluble rocks through which they pass, and either discharge the dissolved material into surface streams or deposit it in other places. If sufficient material is removed the unsupported overlying rocks cave in. This caving may be expressed at the surface by undrained depressions, sink-holes, and very erratic local deformation of the beds.

The irregular depressions in the surface of the Rustler formation, especially in the vicinity of the Pecos River appear to have originated by removal of salt in the Salado formation because the beds beneath the Salado are not involved in the superficial structure. The greater amount of solution in the Salado has occurred in the area adjacent to and west of the Pecos River from the city of Pecos northward to the Texas-New Mexico line and west of Toyah Creek. Very little or no salt is present in the Salado in the Pecos area, whereas from Toyah Lake eastward to the Reeves-Pecos County line, and across the Pecos River in Ward County, the salt section is several hundred feet thick. The line of delimitation of salt is commonly referred to by oil geologists as the "salt scarp".

Some of the best evidence of slumping caused by solution of the underlying beds is found in the jumbled appearance of the Rustler strata in the outcrop area on the Texas-New Mexico line near Red Bluff reservoir. The dolomitic limestone, which is very prominently displaced, is often warped, broken into large blocks, and highly deformed. In fact there is so much deformation that it is almost impossible to determine the regional geologic structure.

Geologic structure in the Balmorhea area

The geology and ground-water resources of the Balmorhea area have been discussed in considerable detail by White, Gale, and Nye 7/ . In connection with the geologic structure and its relation to the occurrence of ground water in the area, the following is quoted from that publication:

> There is an unconformity between the Upper Cretaceous series and the overlying lavas, the Cretaceous rocks having been folded into gentle anticlines and synclines and extensively eroded in the epoch between the withdrawal of the Upper Cretaceous sea and the deposition of the Tertiary lavas. Therefore, it cannot be predicted which part of the Cretaceous series will be found immediately beneath the base of the lavas in any particular locality.
>
> Both lava flows and Cretaceous strata were involved in folding subsequent to the distribution of the lava, but this is relatively insignificant in the small section of these beds included in the diagram. The faulting to which the whole section has been subjected and which is an important feature in the section is believed to have taken place in early Pleistocene time and to have affected all the rocks in the area except such Pleistocene gravels or alluvium as have accumulated since that deformation. Aside from the permeability of the strata themselves, the geologic structure is undoubtedly the controlling factor that determines the movement of the water underground and the existence and location of the big springs.

7/ White, W. N., Gale, H. S., and Nye, S. S., Geology and ground-water resources of the Balmorhea area, western Texas; U. S. Geol. Survey Water-Supply Paper 849-C, 1941.

GEOLOGIC FORMATIONS AND THEIR WATER-BEARING PROPERTIES

Permian rocks

Delaware Mountain group.- The oldest rocks of hydrologic importance in Reeves County belong to the Delaware Mountain group. Named by King 8/, the three formations making up the group are, in ascending order, the Brushy Canyon, Cherry Canyon, and Bell Canyon formations. They consist predominately of fine to coarse-grained sandstones with interbedded thin layers and lenses of limestone and a few persistent limestone members ranging in thickness from about 20 feet to 150 feet. At their ourcrops in the Delaware Mountains in Culberson County these rocks have a total thickness of about 2,700 feet. In Reeves County they are buried beneath younger strata to depths ranging from 2,500 to 5,200 feet. Many oil tests have been sunk to the Delaware Mountain group, and generally where no oil is found in them highly mineralized water is encountered in varying amounts, which in some places is under sufficient hydrostatic pressure to flow.

Castile and Salado formations.- Overlying the Delaware Mountain group in Reeves County is a mass of strata, ranging from about 2,000 to 4,500 feet in thickness, consisting largely of evaporites. This constitutes the Ochoa series which is made up, in ascending order, of the Castile, Salado and Rustler formations, and the Dewey Lake redbeds. It is possible that the Dewey Lake redbeds occur in Reeves County, but because they have not been distinguished from Pierce Canyon redbeds of Triassic age and because the redbeds are largely of the same character insofar as they affect the hydrology, all the redbeds of the area between the Rustler formation and the Santa Rosa (?) sandstone are included in the discussion of the Pierce Canyon redbeds. The Castile and Salado formations will be discussed together largely because of their stratigraphic relationship, lack of aquifers, and other common physical relations. The outcrop of the Castile formation has been described by King 9/; and the results of subsurface work in the Delaware Basin have been described by Lang 10/, Adams 11/, and Kroenlein 12/.

The Castile formation consists largely of massive beds of gray anhydrite, which is marked throughout by thin light and dark laminae, some sandstones, and some clean white rock salt. Drill records indicate that near the center of the Delaware Basin the formation is more than 2,100 feet thick. The overlying Salado formation consists essentially of halite and a number of thin but very persistent beds of anhydrite, polyhalite, and other potash salts, and some reddish sandy shale. The insoluble part of the formation may be exposed at a few places in the Gypsum Plain near the west edge of the Rustler Hills. However, in the western part of the Delaware Basin most of the formation has been removed by erosion and the Rustler probably overlaps the beveled edge of the Salado in all or nearly all of western Reeves County. The Salado occupies the eastern part of the Delaware structural basin and extends northward and eastward over the Central Basin Platform. The western boundary of the Salado extends from a place near the junction of the Pecos-Reeves-Jeff Davis County lines to the Pecos River below Pecos; northwestward to the vicinity of the Texas-New Mexico line the Salado is essentially confined to the area east of and roughly parallel to the river. The maximum thickness of the Salado formation is somewhat more than 2,000 feet in eastern Reeves County.

8/ King, P. G., op. cit., p. 577, 1942.

9/ King, P. B., op. cit., p. 611, 1942.

10/ Lang, W. B., Upper Permian formation of Delaware Basin of Texas and New New Mexico: Am. Assoc. Petroleum Geologist Bull., vol. 19, pp. 262-270, 1935.

11/ Adams, J. E., Oil pool of open reservoir type, idem., vol. 20, pp.783-785, 1935.

12/ Kroenlein, G. A., Salt, potash, and anhydrite in Castile formation of southeast New Mexico, idem., vol. 23, pp. 1682-1693, 1939.

Neither the Castile nor the Salado is a water-bearing formation. The Salado, however, has a very important effect on the hydrology of the region. It is the chief source of the salt that contaminates the Pecos River water below Carlsbad, New Mexico. Slumping, which has resulted from the removal of salt from the Salado by circulating ground water from the overlying Rustler formation, has contributed to the disintegration of the surface drainage and to the formation of deep basins in which hundreds of feet of alluvium has been deposited. The over-deepened basin in the Pecos area contains alluvial fill to depths of about 1,700 feet and is entirely surrounded by rocks ranging in age from Permian to Cretaceous.

Rustler formation.- The Rustler formation overlies the Salado formation unconformably in eastern Reeves County, but west of the Pecos River, from the vicinity of Pecos northward to Red Bluff reservoir the Salado has been removed and the Rustler formation overlaps the Castile formation. The Rustler outcrop area extends in a southerly direction from the Texas-New Mexico line, where the formation is exposed in the bed of Pecos River, almost to the Davis Mountains. It forms the Rustler Hills of eastern Culberson County, from which the formation takes its name. On the outcrop, the Rustler is about 200 feet thick and consists of dolomitic gray limestone commonly pitted with small holes, calcareous buff sandstone, and some chert conglomerate at the base. Eastward beneath the surface the limestone is overlain by anhydrite, redbeds, and in some places halite; and the underlying sandstone member becomes thicker and contains beds of limestone and redbeds. The maximum thickness of the formation in this county is probably about 500 feet. The base of the formation is in many places rather difficult to identify, especially where there has been considerable solution in the underlying Salado formation.

The Rustler is the oldest formation in Reeves County that yields water of moderately satisfactory quality for stock and irrigation. Most wells that penetrate the Rustler find water in the porous dolomite that forms the middle part of the formation. The principal mineral constituent of the generally rather highly mineralized water is calcium sulfate; and the chloride, which is considered detrimental for irrigation and stock water, is relatively low. The water usually is accompanied by hydrogen sulfide gas and is commonly referred to as sulfur water; however, the gas passes off upon aeration and does not impair the usefulness of the water.

In the northern part of the county no flowing water is known to have been found in the Rustler formation, but south and southeast from Pecos large flows have been reported. Most of the oil tests in southern Reeves and northern Pecos Counties have encountered flows of sulfur water in or near the top of a porous brown dolomite in the formation, but a few wells have penetrated the entire section without reporting any water-bearing beds. Such is the report for the Eppenauer well at Hoban (No. I-47), 16 miles south of Pecos, where the entire formation was drilled through without finding any water or any evidence of the porous dolomite. Eleven miles east and a little south of the Eppenauer well, the Southern Crude No. 1 Kloh oil test (No. I-63) was drilled in 1929, and it was reported to have been abandoned as an oil test because of the large flow of water from the Rustler formation, which was identified as extending from a depth of 1,250 feet to the bottom of the hole at 1,531 feet. It is reported that the well had a flow of about 225 gallons a minute from a depth of 1,280 feet, and still more water was encountered as the drilling penetrated deeper. In 1936 another well (I-64) was sunk into the Rustler in the vicinity of the Southern Crude well for the purpose of obtaining water for irrigation. The first flowing water was encountered at 1,276 feet in limestone, and the flow increased slightly when the drill penetrated broken limestone and sand from 1,372 to 1,380 feet. Eight-inch casing was cemented at 1,260 feet. When this well was visited on April 19, 1947, it had a flow of 234 gallons a minute. Several other wells in this general vicinity, mostly reconditioned oil tests, tap the Rustler formation and serve as stock wells.

Water enters the Rustler formation in its outcrop area in the Rustler Hills in the eastern part of Culberson County, in the extreme northern part of Reeves County, and possibly in the stretch near the Texas-New Mexico line where the Pecos River crosses the outcrop. The greatest amount of recharge is probably contributed in Culberson County by the storm-water discharge of Salt Draw, Cottonwood Draw, Screwbean Draw, and their tributaries, which rise in the Delaware Mountain and flow eastward across the outcrop. Direct penetration of rain falling on the porous limestone in the Rustler Hills also contributes some water.

Analyses made in the Geological Survey laboratory show that, in general, the flowing water from the Rustler formation contains dissolved solids ranging from about 2,000 to 4,000 parts per million, but as the principal dissolved mineral is calcium sulfate the water is not injurious to vegetation. In 10 analyses the range in dissolved solids was from 2,118 to 4,390 parts per million, and the range in chloride was from 24 to 482 parts per million.

Perhaps the chief disadvantage to economic development of the Rustler water is the depth at which it is found. Depths that range from 900 to 1,800 feet in the area of more prolific flow would make the installation of wells rather expensive.

Triassic and Permian (?) rocks

Pierce Canyon redbeds possibly including the Dewey Lake redbeds.- Overlying the Rustler formation in the Delaware Basin is a small thickness of redbeds, for which Lang 13/ has proposed the name Pierce Canyon redbeds. These redbeds were originally assigned to the Permian, but in a subsequent paper 14/ they were transferred to the Triassic system because they were found to be conformable with the overlying Triassic rocks. Page and Adams 15/concluded that the lower part of the redbed section in the Midland Basin is of Permian age and have proposed for it the name Dewey Lake formation. Whether these beds extend westward to the Delaware Basin in Reeves County is uncertain, but it is possible that both the Dewey Lake and Pierce Canyon redbeds may be represented in the redbeds of that area. However, insofar as they affect the hydrology of the area, all the beds between the top of the Rustler formation and the base of the massive Santa Rose (?) sandstone are largely of the same general character and are discussed as one unit in this report.

The Pierce Canyon redbeds crop out at several places in the northern part of Reeves County and in the vicinity of the Big Valley diversion dam 15 miles east of Pecos, where the Pecos River flows across the strata for several miles. Beneath the area of the deepest alluvial fill, which lies between Pecos and Toyah and extends from the intersection of U. S. Highway 285 and State Highway 276, near the Pecos River on the north, to the vicinity of Salt Draw near Hoban on the south, the redbeds have been either partly or completely removed by erosion. Dennis 16/ reports that there is some evidence of pre-Cretaceous removal of these beds in the Toyah area. West and northwest of Toyah the beds in the Trinity group overlap the redbeds and are in direct contact with the Rustler formation.

13/ Lang, W. B., Upper Permian formation of Delaware Basin of Texas and New Mexico: Am. Assoc. Petroleum Geologist, Bull., vol. 19, No. 2, p. 264, 1935.

14/ Lang, W. B. The Permian formations of the Pecos Valley of New Mexico and Texas, idem., vol. 21, footnote 38, p. 876, 1937.

15/ Page, L. R., and Adams, J. E., Stratigraphy of the eastern Midland Basin: Am. Assoc. Petroleum Geologists Bull., vol. 24, pp. 62-63, 1940.

16/ Dennis, P. E., Water-resources of Pecos River basin report "B", manuscript report in files of U. S. Geol. Survey.

Logs of wells indicate that the Pierce Canyon redbeds differ widely in thickness in short distances, the average thickness being about 350 feet. In some places in the northern part of Reeves County near the outcrop, the rocks yield small quantities of highly mineralized water to stock wells. The low permeability of the rocks and consequent poor circulation tends toward high mineralization of their contained waters. Consequently these beds are unimportant aquifers.

Santa Rosa (?) sandstone.- A sandstone, tentatively correlated with the Santa Rosa sandstone, overlies the Pierce Canyon redbeds. The Santa Rosa sandstone, which was named by Darton 17/ from its type area near Santa Rosa, New Mexico, consists of two gray sandstone beds separated by a shale and sandstone member. It is prominently exposed in bluffs along the Pecos River in the vicinity of Fort Sumner, New Mexico. South of Fort Sumner it crops out in many places east of the river as far south as the Texas State line 18/.

Massive and cross-bedded sandstone crops out in northeastern Loving County, forms a prominent west-facing escarpment in western Ward County, and is exposed in a quarry a few miles east of Barstow. In eastern Reeves County the sandstone forms the pronounced escarpment east of Barrilla Creek, overlooking Toyah Lake. It crops out or lies directly beneath a mantle of alluvium in a broad terrace that extends from the vicinity of Toyah Lake southeastward into Pecos County. South and east of the escarpment which forms the western and northern edge of this terrace, it is overlain by Lower Cretaceous rocks. In the immediate vicinity of Toyah Lake the sandstone has been partly eroded away and covered with alluvium, and in this area it contains water of poor quality (see analysis for well E-118). To the north and west of Toyah Lake the sandstone has been completely removed by erosion, as shown by the logs of several wells. It is not known to be present elsewhere in Reeves County.

There are several fairly wide gaps between outcrops of this sandstone in Reeves County and the southernmost definitely recognized Santa Rose sandstone in New Mexico. The sandstone, however, has many characteristics of the Santa Rosa of New Mexico and was probably coextensive with it. It is therefore tentatively referred to as the Santa Rosa sandstone in this report. The Santa Rosa (?) sandstone is an important aquifer in or near its outcrop area in eastern Reeves County. It is an important source of supply for farm use and stock and the Pecos municipal supply is obtained from shallow wells (wells E-121-E-125) in this sandstone on the south side of the Pecos River about 11 miles southeast from the city.

Triassic sandstones are generally fine-grained and tightly cemented, and as a rule they have a low permeability. However, where the rocks crop out and are weathered, where there is fracturing, or where they consist mostly of coarse-grained sand free from shale, wells may yield several hundred gallons a minute. The Pecos city wells yield from about 150 to 350 gallons a minute each.

The source of the water in the Santa Rosa (?) sandstone is direct penetration of rainfall on the terrace, the surface of which is quite sandy in many places, and infiltration from flood waters of several intermittent streams that cross the terrace. Barrilla Creek cuts against the terrace on the west and may also contribute to the recharge. Water levels in wells that tap the sands indicate that the water table slopes northward toward the Pecos River; the gradient is less than the land surface so that depths to water become less as one approaches the river.

17/ Darton, N. H., Geologic structure of parts of New Mexico: U. S. Geol. Survey Bull. 726-G, p. 183, 1922; redbeds and associated formation in New Mexico: U. S. Geol. Survey Bull. 794, p. 287, 1928.

18/ Pecos River Joint Investigation, pt. 2, p. 32, 1942.

Cretaceous rocks

Lower and Upper Cretaceous series.- The Cretaceous system is represented in Reeves County by approximately 1,500 feet of sand, conglomerate, limestone, marl, and shale. In Reeves County the outcrops of the Cretaceous rocks form an almost continuous belt that extends from the headwater of Screwbean Draw on the Reeves-Culberson County line, 15 miles south from the Texas-New Mexico line, southward to the Davis Mountains and then southeastward along the front of the mountains to the vicinity of Balmorhea. The rocks are also exposed in the foothills of the mountains east of Balmorhea and at a few places on Hackberry Draw on the Reeves-Pecos County line, and they form a part of the cap of the prominent west-facing escarpment east of Toyah Lake.

The Lower Cretaceous rocks in this region are of great economic importance because of the large springs that issue from them. San Solomon and Phantom Lake Springs in the Balmorhea area in Reeves County, and Comanche, Leon, San Pedro, and Santa Rosa Springs in the Fort Stockton area in Pecos County, are among the most important sources of water supply in the Trans-Pecos region. These springs are believed to have their source in an extensive network of fissures and solution passages in limestones of the Lower Cretaceous.

The Upper Cretaceous rocks in Reeves County crop out in the foothills along the Davis Mountains and in a small area north of the Texas and Pacific Railroad between Toyah and San Martine. The rocks are made up in large part of soft marly sediments that weather to a characteristic lemon yellow or rusty colors of red and yellow on exposure. On the whole, the rocks of the Upper Cretaceous series are relatively impermeable and essentially non-water-bearing. Where they have been dropped down by faulting and lie against the Lower Cretaceous rocks, they may serve as barriers and cause the water to rise to the surface as springs. Such structural conditions appear to be responsible for the large springs near Balmorhea.

The following regarding conditions in the Balmorhea area is quoted from the abstract of U. S. Geol. Survey Water-Supply Paper 849-C 19/.

> .... The group of springs around Balmorhea occur in the floor of the valley of Toyah Creek. They have been divided into artesian springs--Phantom Lake, Giffin, and San Solomon Springs; and gravity springs--Toyah Creek, Saragosa, East Sandia, and West Sandia Springs. The combined discharge of the springs during dry years is about 23,000 gallons a minute, of which amount the artesian springs supply more than 90 percent.
>
> The underground reservoir which supplies the artesian springs is the fractured and cavernous Lower Cretaceous limestone. This limestone, about 500 feet thick, is underlain by impermeable rocks, probably of Permian age, and is overlain by impermeable Upper Cretaceous strata that have a maximum thickness of about 500 feet. These are in turn overlain in the mountains by Tertiary lava and on the plains by gravel and other surficial deposits. The Lower Cretaceous limestone is at the surface or covered by a thin layer of gravel in a belt that lies athwart the stream channels and extends from Gomez Peak southeastward along the foothills of the Davis Mountains. In this belt all the streams suffer

19/ White, W. N., Hale, H. S., and Nye, S. S., op. cit., pp. 83-84, 1941.

heavy seepage losses. From this belt the limestone dips gently northeastward to the axis of a northwestward-trending syncline and then rises to the surface in the vicinity of Phantom Lake, where a part of the water is discharged. About 1,000 feet northeast of this lake is a northwestward-trending fault of small displacement, on the northeast side of which the limestone is downthrown. Northeastward from this fault the limestone rises gently and appears at the surface about a mile to the northeast, where it is again downfaulted, but the throw is not sufficient to affect the movement of the water. For several miles to the north the water-bearing Lower Cretaceous limestone is covered by 400 to 500 feet of impermeable Upper Cretaceous strata.

It is believed that the Lower Cretaceous rocks are again near the surface and covered by only a thin mantle of gravel and other surficial deposits at San Solomon and Giffin Springs and that just northeast of the springs a fault crosses the valley along which the impermeable Upper Cretaceous rocks are faulted into a position opposite the Lower Cretaceous rocks, thus obstructing further northward movement of the water in the Lower Cretaceous limestone and forcing it to issue as large springs.

Between this fault and Brogada the Lower Cretaceous rocks are believed to lie at a depth of about 500 feet and are overlain by Upper Cretaceous strata and a blanket of gravel and other surficial deposits, which are the source of the water of Toyah Creek, Sandia, and Saragosa Springs. Northeast of Brogada the Lower Cretaceous lies at a greater depth, and the mantle of gravel is much thicker.

Wells put down to the limestone in the vicinity of San Solomon and Giffin Springs would decrease the flow of the springs. The effect of wells in limestone between the fault near these springs and the Brogada Hills on the flow of the springs would depend on the completeness with which the fault cuts off northward movement of ground water in the limestone. If the movement of water across the fault has been prevented, the limestone may be nearly impervious and the water in it may be highly mineralized. Wells in the surficial gravel near Balmorhea may yield a few second-feet of water, but such wells may deplete the flow of Toyah Creek, Saragosa, or Sandia Springs. Wells in the Saragosa district, north of Brogada Hills, would probably encounter the limestone at 1,000 to 1,200 feet. The yield of such wells cannot be predicted but they would not be expected to interfere with the springs.

The evidence tends to show that the basal sands (Trinity group) of the Cretaceous rocks contribute comparatively little water to the discharge of the large springs at Balmorhea. In other parts of Reeves County, however, these sands appear to be important sources of supply.

The outcrop of rock strata which has been mapped on the geologic map of Texas as belonging to the Trinity group forms an irregular belt along the Reeves-Culberson County line west and northwest of Toyah. This outcrop is about 28 miles long and about 4 to 12 miles wide, and it is divided into several segments by stream valleys. In places the rocks are sandy, conglomeratic, and solidly cemented by lime and silica, and they form a resistant cap throughout much of the area. These strata lie unconformably upon the Rustler formation of Permian age. A section of rocks which crops out near the Reeves-Culberson-Jeff Davis County corner, has been described by Baker 20/ as follows:

> The basal Comanchean beds in the northwest corner of the area mapped (south of a point between Boracho and Plateau section houses on the Texas & Pacific Railway) are of conglomeratic sandstone with pebbles of sandstone and chert of various colors, well-rounded and ranging up to two inches in size, with a brownish to reddish matrix, prevailing dark red in color, micaceous, and fine to coarse-grained, with a maximum thickness of 100 feet. This overlies some 300 feet of bluish, brecciated, and cherty limestone, which is probably upper Hueco.

In the Artie Baker well (D-14), an oil test 500 feet deep, about 10 miles north-northwest of Toyah, 410 feet of Cretaceous rocks was encountered, of which 153 feet was logged as "heaving sand and water" or sand and water, and the remainder as limestone, gray limestone, and marl. These sands belong to the Trinity group.

West and northwest of Toyah the Lower Cretaceous rocks yield water to numerous wells and springs. Pelican Spring and Burnt Spring (D-22 and D-44), two of the largest springs visited, had yields estimated as 35 and 25 gallons a minute, respectively. Analyses of water from these springs, and from wells in the area drawing from the Cretaceous rocks show the water to have a rather high mineral content--the dissolved solids of the samples analyzed ranged from 2,040 to 3,890 parts per million. The sulfate is especially high. The springs issue from holes in the tops of mounds 3 to 8 feet high of gypsum precipitated from the spring water.

In and near Toyah several wells flow sulfur water from depths ranging from about 450 feet to 850 feet. This water has much the same characteristics as the Rustler water, being somewhat low in chloride and high in sulfate. Some of it may be derived from the Rustler formation and some from the sands and limestones of the Trinity group because the section of redbeds that usually separates the Rustler formation from the Cretaceous beds is absent in places or is very thin in this area. This might allow mixing of the water in the Trinity with water from the Rustler aquifers. There has been some slumping and faulting of the rock strata, probably due to solution of the underlying Salado formation, and this would induce the mixing of waters in different formations. The Texas and Pacific Railroad well, the High School well at Toyah, and the Mitchell well about a mile south of Toyah, range in depth from 813 to 860 feet and probably draw from the Cretaceous rocks. All the wells flow. The pressure in the High School well on April 28, 1947, was sufficient to raise the water 45 feet above the land surface.

Sufficient detailed logs are not available by which the eastern limit of the Cretaceous rocks in the western part of the county can be defined. Cretaceous rocks have not been definitely identified in logs of oil tests or water wells in the area of deep alluvial fill which lies in the central part of the county.

20/ Baker, C. L., and Bowman, W. F., Geologic exploration of the southeastern front range of Trans-Pecos Texas: Univ. of Texas Bull. 1753, p. 114, 1917.

Water levels in wells suggest that the boundary between the deep fill and the Cretaceous area may follow more or less closely along the line designated X-Y on plate 1. The water levels on the east side of this line average about 125 feet deeper than those on the west side. For example, the water levels in shallow wells D-26, 27, 30, and 31 at Toyah and immediately north of the town average about 35 feet below the surface as compared with an average of 167 feet in wells D-32, 33, 34, and 36, a short distance to the northeast. Cretaceous rocks extend at least as far east as well D-29.

Evidence afforded by outcrops, well logs, and the chemical character of the ground water points to the probability that Lower Cretaceous rocks underlie a relatively thin mantle of alluvium throughout the greater part of eastern Reeves County east of Toyah Creek. The principal exception occurs in the extreme northeastern part of the county, where the Cretaceous is absent and a thin alluvial cover is underlain by Triassic sandstone and shale. The water in the Cretaceous rocks in the eastern part of the county, mostly in the sands of the Trinity group, is generally of comparatively good quality, being much lower in dissolved minerals than the water in similar rocks in the western part of the county. The small amount of water derived from this zone at most places, although usually sufficient for domestic and stock use, makes this source of doubtful value for such purposes as irrigation where large quantities are required. A well that yields 40 gallons a minute from sands in the Trinity group is generally considered a very good well.

Tertiary volcanic rocks

In the Balmorhea area volcanic rocks having a total thickness of 1,500 to 2,000 feet were deposited on the eroded surface of the Upper Cretaceous rocks during early Tertiary time. Today they form the capping of the Davis and Barrilla Mountains and many ridges and hills. They occupy a belt that receives greater rainfall than the adjoining Toyah Basin. Most of the lava is exceedingly porous and permeable - it is fractured, jointed, and full of cavities, and therefore absorbs much of the water that falls on it. Some of the water later emerges as springs at the outcrop of the clay-like tuff beds beneath. The volcanic rocks, in general, rest upon the impervious clay of the Upper Cretaceous series. Where this contact lies above the beds of the streams, most of the water absorbed by the volcanic rocks is brought to the surface within the mountain area. Many small springs of this type are found in the extreme southern part of Reeves County.

In structurally depressed areas the volcanic rocks dip below the beds of the streams, and where this occurs the porous lava provides large storage reservoirs for the accumulation of ground water. Water thus stored probably cannot penetrate directly to the Lower Cretaceous limestones and sands because of the basal volcanic tuff (early Tertiary) and Upper Cretaceous clay, both of which are relatively impermeable. According to White, Gale, and Nye 21/, the largest structural depression of this nature near Balmorhea is on the axis of a long syncline extending from Limpia Creek at the place where the creek flows between the Davis and Barrilla Mountains northwestward beyond Cherry Canyon.

The water from the lava is of excellent chemical quality, usually containing only about 200 to 400 parts per million of dissolved solids. The wells that supply the town of Balmorhea draw water from the highly weathered lava that underlies the alluvium. The volcanic rocks occupy relatively small areas in Reeves County and probably will not yield large supplies of water.

21/ White, W. N., Gale, H. S., and Nye, S. S., op. cit., p. 94.

Quaternary rocks

Quaternary deposits underlie the surface of Reeves County to depths ranging from a few feet to more than 1,700 feet. They consist largely of a heterogeneous mass of clay, fine-grained sand, numerous lenses of coarse gravel, and conglomerate that are made up for the most part of limestone pebbles and boulders, and igneous detritus that contain subordinate amounts of quartzose material. The rock particles were derived from the Delaware, Apache, Davis, and associated mountains on the west and southwest, and from the upper reaches of the Pecos River. They were transported to the area chiefly by waters of the Pecos River and its western and southwestern tributaries, and were deposited in deep sinks and ancient stream channels. Some of the silts and gypsites, however, are of lacustrine origin. Hence, there are great differences in the character and thickness of the deposits within short distances. In the Humble Oil Company, Balmorhea Livestock Company well, 5 miles southwest of Pecos, gravels consisting of pebbles of volcanic rocks were present in the drill cuttings down to the redbeds at a depth of 1,165 feet. Six miles southeast of that well and about 2 miles from the upper end of Toyah Lake, the Forest Development Company, Prewit test well (I-13), penetrated only 370 feet of alluvium. The Sid Richardson, Brown boring, 7 miles northwest of Pecos, penetrated 1,750 feet of alluvial fill, and several other borings almost as far north as the intersection of U. S. Highway 285 with State Highway 276 have penetrated thicknesses ranging from 1,500 to 1,600 feet.

In and near Pecos, logs of typical wells show that beneath the superficial material there is a layer of gypsite 8 to 40 feet thick, which is underlain by a bed of gravel that differs considerably in thickness and generally contains water that is not under artesian pressure. Below the gravel is a series of relatively impermeable clays and silts. Lenses of gravel within and below this clay contain artesian water. In places, especially south of the railroad in Pecos, the artesian aquifer consists of one bed of gravel and sand, but in other places it includes several beds which contain water of similar quality and under similar artesian head.

The older alluvium of the Quaternary deposits supplies a large part of the well water used in Reeves County. In and near Pecos the artesian aquifer in these deposits in most places furnishes fairly large quantities of water to flowing and pumped wells.

The younger alluvium underlies the flood plain and lower terraces along the Pecos and its tributaries. In general it is less than 25 feet thick and is composed of fine to medium-grained, loosely cemented sand, silt, and locally reworked gypsite and gravel. In many places these materials are rather permeable and rapidly take in and transmit the water that is applied for irrigation. In some places, however, they are less permeable and give rise to serious problems of drainage.

In the town of Pecos, one source of shallow water in the younger alluvium is the downward percolation of rainfall or surface runoff, but a part of the water comes from the uncapped and leaking artesian wells. Around many of the wells that are allowed to flow continually, solution channels have developed leading the water directly into the shallow sands, and enough of the gypsite has been dissolved by the flowing water to cause the development of rather large sinks. In the vicinity of Pecos, the water table ranges in depth from the surface at Pecos Playa, 2½ miles southeast of town, to about 15 feet. The water table slopes southeastward toward the river and the gradient directly along the water table is about 6 or 7 feet to the mile. Pecos River is an effluent stream and acts as a large drainage ditch both for the Pecos and Toyah Lake areas and for the Barstow, Grandfalls, and Imperial irrigation districts.

DEVELOPMENT OF GROUND-WATER SUPPLIES FROM SPRINGS

Irrigation with water from springs was started in Reeves County near Balmorhea about 1853. Development progressed gradually until the flow of the springs during the irrigation seasons was fully diverted. The following statement regarding the flow of San Solomon Spring, Phantom Lake Spring, and Giffin Springs is made in Water-Supply Paper 849-C, page 99:

> The discharge of all three springs was well sustained even during several successive dry years. Phantom Lake Spring has a somewhat wider variation in flow than the other two. The lowest discharge of San Solomon Spring recorded by the Geological Survey was 26.5 second-feet on April 26, 1923, and the highest was about 71 second-feet on October 7, 1932. The lowest recorded flow of Phantom Lake Spring was 10 second-feet on October 16, 1931, and the highest 114 second-feet October 2 and 3, 1932. The discharge of the Giffin Springs is relatively small, the smallest recorded daily flow being 2.9 second-feet March 4, 1925, and the largest between 6 and 7 second-feet in October 1932.

In order to irrigate more land, a reservoir was built in 1914 to store flood water from Toyah Creek, and the winter flow of the springs. The Reeves County Water Improvement District No. 1, comprising the Balmorhea area, was organized in 1915 and included 12,184 acres of land. According to a water-service report submitted by the district to the Texas Board of Water Engineers, a total of 10,650 acres was irrigated in 1946.

DEVELOPMENT OF GROUND-WATER SUPPLIES FROM WELLS

Central part of county near Pecos and Hoban

Irrigation from wells in Reeves County apparently started about 1890, when several flowing wells in and near Pecos were used to irrigate gardens and small truck farms. A letter from J. B. Gibson, former County and District Clerk, Reeves County, addressed to the U. S. Geological Survey on May 26, 1898, stated that within a radius of 2 miles from Pecos there were between 40 and 50 constantly flowing artesian wells, most of which were between 250 and 260 feet deep.

During the period 1910 to 1930 the development gradually was extended to areas of non-flowing water west of Pecos and southwest of the city near the Balmorhea Highway (State 17) to and beyond Hoban. However, progress was slow and less than 40 irrigation wells were being used in the county in 1941. Since 1941 there has been renewed interest in irrigation with water from wells. The inventory which was made during the winter and spring of 1946-47 shows that between 55 and 60 wells were used during the irrigation season of 1946, and that 82 wells of large capacity were about ready for use on April 1, 1947. Of the 82 wells, 52 are in grid E in the Pecos area and 30 are in grid I in the Hoban area (see pl. 2). Included in the total figure are well E-118 near the Pecos City well field and wells I-62 and I-64 about 21 miles southeast from Pecos. Well E-118 draws from Triassic sandstone and wells I-62 and I-64 from the Rustler formation. All the others draw from the older alluvium of the deep valley fill. With the exception of a few wells in the immediate vicinity of Pecos all the alluvial wells of large capacity used for irrigation are outside the area of artesian flow.

Most of the flowing wells in the vicinity of Pecos have small yields, and many of them cease flowing when irrigation wells in nearby areas are heavily pumped. When in use the water is devoted mostly to domestic supplies, stock, and irrigation of yards or small gardens.

During the investigation of 1939-41, a partial inventory of wells showed that there were about 200 flowing wells in and near Pecos and that a large number of older wells, some of which were drilled between 1880 and 1900, had been abandoned. Therefore, the total number of wells that had been drilled in the area probably greatly exceeded 200. The wells range in depth from about 100 feet to more than 300 feet. A generalized description of the formations encountered from top to bottom, according to drillers' logs of numerous wells, is as follows: surface material consisting of soil, in many places underlain by a varying thickness of caliche or gypsite; a bed of gravel ranging considerably in thickness from place to place and generally containing water that is not under artesian pressure; a series of relatively impermeable clays and silts; and then beds of sand and gravel from which the flowing water is derived.

In the area north of the Texas and Pacific Railroad tracks in Pecos, the first flowing water is generally encountered between 125 and 175 feet below the land surface, but south of the tracks it is generally found between 190 and 200 feet. There is considerable variation in depth to and thickness of the beds even in closely spaced wells and it is not possible to correlate the beds from well to well. This fact suggests that the beds are lenticular; the shallower beds far north of the railroad may pinch out southward. As a matter of fact, only one bed that yields artesian water is reported in many of the wells south of the railroad, whereas two or more beds are reported in wells north of the railroad.

The pumped irrigation wells north, west, and south of Pecos and in the vicinity of Hoban, and the flowing wells in Pecos, draw water from a common artesian reservoir. Most of the pumped wells range in depth between 170 and 380 feet, the average depth being about 215 feet. Most of the wells have encountered several beds of sand and gravel which are separated by beds of clay. So far as known, none of them has penetrated the entire thickness of the alluvial deposits, which in places exceeds 1,500 feet but apparently consists mostly of relatively impermeable material below depths of a few hundred feet.

Available information on each well is given in the well table; and the drillers' logs and partial chemical analyses of water from several wells in each area are given on pages 62 to 87 . The average yield of 30 pumped wells that were measured in April 1947 was about 1,150 gallons a minute; the average pumping lift in 15 wells was 65 feet; and the average specific capacity of 13 wells was 47 gallons a minute per foot of drawdown. (See following table).

Results of preliminary pumping tests of irrigation wells in Reeves County, Texas, April 1947

Well	Owner	Depth of well (feet)	Yield (gallons a minute) a/	Water level below land surface		Specific capacity c/
				Static b/	Pumping	
E-64	John Ivy No. 1	380	1,215	26.9	--	--
E-65	Neal S. Thompson	319	1,120	23.8	--	--
E-71	J. W. Brooks No. 2	225	1,296	26.5	56.6	43.1
E-72	Mrs. B. G. Smith	212	499	34.3	--	--
E-73	Harold Wendt No. 2	220	1,066	48.2	67.4	55.5
E-74	Harold Wendt No. 1	228	874	36.4	--	--
E-79	Jack Wendt	222	812	43.2	90.7	17.1
E-80	L. D. McNeil	217	1,880	39.0	--	--
E-81	do.	217		39.9	83.5	--
E-83	Neal S. Thompson	180	1,071	29.7	--	--
E-85	W. B. Evans	217	855	37.0	93.8	15.1
E-93	Jack Williams	170	--	71.7	96.6	--
E-99	Ord Gary	168	662	117.8	--	--
I- 1	do.	187	1,386	98.3	--	--
I- 2	do.	203	944	98.3	125.5	34.8
I-19	J. W. Pratt	120	815	--	--	--
I-20	do.	193	896	12.6	--	--
I-21	Kyle Watts	195	1,323	13.9	30.3	80.6
I-22	O. T. Caldwell	150	1,890	20.9	44.9	78.8
I-23	O. D. Johnson	136	1,660	15.6	37.1	77.2
I-24	do.	136	1,642	14.6	35.8	77.4
I-25	do.	120	1,314	16.2	--	--
I-26	J. H. Watts	153	1,426	17.9	--	--
I-27	Pat B. Watts	137	1,161	19.5	57.3	30.7
I-29	E. H. Hannon & A. Gardner	140	805	28.1	67.2	20.6
I-46	A. R. Eppenauer No.2	210	1,075	19.9	54.0	31.5
I-47	A. R. Eppenauer No.3	500	1,109	--	--	--
I-48	A. R. Eppenauer No.1	210	1,125	17.3	38.4	53.4
I-49	Mrs. H. T. Collier	80(?)	1,150	15.3	--	--
I-62	Edgar Martin	1,402	234	Flowing	--	--

a/ Yields measured with a current meter.
b/ Static water levels measured in winter of 1946-47.
c/ Gallons a minute per foot of drawdown.

Extent of the artesian reservoir.- As explained on pages 12 and 13, there is some evidence that the artesian reservoir may extend west and southwest from Pecos about to the line which passes between Hermosa and Toyah and is designated X-Y on plate 1. The eastern boundary apparently extends from the vicinity of the Pecos River east of Pecos southward along Toyah Creek almost to Balmorhea. The reservoir apparently does not extend north or east from Pecos much beyond the Pecos River. Studies of available data indicate that the areal extent of the reservoir does not exceed 350 to 400 square miles.

From the vicinity of Toyah northeastward toward Pecos and from the vicinity of Balmorhea northward toward Hoban, the slope of the land surface is greater than the slope of the water surface in the wells penetrating alluvium. For example, in well E-100, which is 2 miles south from Hermosa, the water stands 119 feet below the land surface; in well E-69, which is $3\frac{1}{4}$ miles west from Pecos, the water is about 38 feet below the land surface; and in Pecos the water will rise above the land surface. In well H-42, which is 4 miles east of Balmorhea, the water is 193 feet below the surface, and in the wells near Hoban it is from 9 to 19 feet. Apparently there is a change from water-table conditions in the western and southwestern parts of the area to artesian conditions in the eastern part.

Source of ground water.- The hydraulic gradient of the ground water in the artesian reservoir is toward the Pecos River. The river is an effluent stream and therefore does not contribute to the artesian aquifer; conversely, some water is discharged from the aquifer into the river.

Considerable recharge to the alluvium probably occurred in the area at the southern end of the basin from Toyah Creek before the water from the large springs near Balmorhea was diverted for irrigation. From the fall of 1931 to the fall of 1933 the flow from the springs averaged about 55,000 acre-feet a year, although that amount may be somewhat greater than the longtime average. Perhaps some of the spring water still finds it way from the irrigated fields down to the water table, but in all probability the amount of recharge from that source has been greatly reduced.

Recharge to the alluvial deposits in the water-table area along the western boundary is probably derived chiefly from storm waters discharged by Cottonwood Creek, Salt Draw, Ninemile Draw, Cherry Canyon Creek, and numerous tributaries, many of which head in the Delaware and Apache Mountains in eastern Culberson County and the Davis Mountains in northern Jeff Davis County. The streams have well-defined channels until they reach the alluvial plain in west-central Reeves County. In the Hermosa Flat area, and on the plain between Salt Draw and Saragosa, much of the storm water spreads over the alluvial gravel and sinks downward to the water table. Some recharge doubtless is also contributed from local precipitation and from older rocks, but the amount is probably small. The annual runoff and extent of the contributing areas have not been studied; and, therefore, no attempt is made to estimate the recharge to the alluvium. From these areas of intake the water moves eastward and northeastward beneath confining beds of clay into the artesian reservoir.

Withdrawals of ground water.- It is difficult to make even a rough estimate of the total quantity of water discharged from the artesian aquifer by the wells of small flow in Pecos. During the summer, small drafts are made upon this supply for irrigation of lawns, shrubs, etc., although the city water is now used extensively for that purpose. Doubtless many wells from which the casings have been pulled, or wells in which the casings have rusted through, allow the artesian water to be discharged continuously into the shallow ground-water reservoir. For example, it is reported that several years ago about 20 wells were drilled in a real estate subdivision north of the Texas and Pacific Railroad tracks, but the casings were pulled when the lots were not sold. A few of these wells still flow at the surface. The water sinks into depressions or sinkholes in the gypsite flats near the wells and probably follows along solution channels in the gypsite to the water table. Other sinks in the flats may mark the sites of wells that have caved in and are now covered. About a mile west of Pecos four wells flow into a series of sinks and solution channels in the gypsite, and many of the old flowing wells are located in sinks into which their water is discharged. Part of the water finds its way into the shallow gravel through solution channels dissolved in the gypsite and may eventually enter the river through seeps, although a large part of it is dissipated by evaporation and transpiration where the water table is near the surface.

As to the irrigation wells, estimates based on data obtained from the irrigators by P. E. Dennis, of the Geological Survey, indicate that in 1940 approximately 11,000 acre-feet of water was pumped from the alluvium to irrigate 2,460 acres of land on 21 farms. No estimates are known of the quantities of water pumped in previous years. According to data obtained by V. W. Rupp, of the Geological Survey, the acreage irrigated in 1931-33 was less than half the acreage in 1940.

The present investigation included an inventory of pumpage from nearly all the irrigation wells, and in April 1947 the yields of many wells were measured with a current meter. The following table gives the number of acres irrigated, the number of hours the pumps were operated, the measured yield, the computed acre-feet of water pumped per well, and the amount of water applied in acre-feet per acre for 19 wells in Reeves County.

Pumpage data for 19 irrigation wells in Reeves County, Texas, 1946

Well No.	Acres irrigated	No. hrs. pumped	Yield (gpm)	Acre-feet pumped	Amount of water applied, acre-feet per acre
E-74	188	2,640	874	425	2.3
E-76	90	2,880	900	475	5.3
E-80	160	2,880	1,880	1,000	6.2
E-81		2,880			
E-82	48	800	368 1/	54	1.1
E-83	145	3,000	1,071	580	4.0
E-85	138	3,288	855	510	3.7
E-92	317	1,900	680	445	1.4
E-93		1,900	600		
I- 1	233	1,000	1,386	600	2.6
I- 2		2,000	944		
I-19	140	1,440	815	735	5.2
I-20		3,168	896		
I-21	67	1,380	1,323	340	5.1
I-23	200	1,680	1,660	1,015	5.1
I-24		1,680	1,642		
I-26	70	700	1,426	185	2.6
I-27	70	700	1,161	150	2.1
I-49	101	1,174	1,150	250	2.5

1/ Yield measured by Soil Conservation Service, U. S. Department of Agriculture.

The pumpage inventory shows that a total of about 4,200 acres was irrigated in 1946. The average amount of water applied as computed for the 19 wells listed in fore-going table, was 3.5 acre-feet per acre. On this basis it is estimated that the total withdrawal for irrigation in the Pecos and Hoban areas in 1946 was about 14,500 acre-feet.

Fluctuations of water levels in wells.- Data regarding the fluctuations of water levels in the Pecos area are very meager. A well in Pecos, which was drilled 214 feet deep in 1886 for the Texas and Pacific Railway Company, was reported to have had a head of 28 feet above the land surface. In 1940 the water in the well was about 7 feet above the land surface, indicating a decline of 21 feet in 54 years.

Comparison of water-level measurements that were made in 1931-33 with those made in 1940-42 shows no appreciable change; in some wells there were small rises and in others small declines. Hydrographs showing a few winter measurements from 1940 to 1947 in four wells in the irrigated area west of Pecos are given in figure 1, and the available winter measurements of water levels in 15 wells are shown in the table on pp.20-21. Measurements of water levels in April 1947 were made after pumpage for irrigation had started and the water levels in wells had declined considerably. Therefore, they should not be correlated with previous winter measurements.

Water levels in wells in Reeves County, Texas, in feet above (+) or below land surface

Well E-37

Jim Moore, in Pecos.

Jan. 16, 1940	+ 5.40
Feb. 6, 1941	+ 5.40
Feb. 28, 1942	+ 6.08
Apr. 29, 1947	0.54

Well E-38

Ed Otto, in Pecos.

Jan. 16, 1940	+ 7.00
Feb. 6, 1941	+ 6.90
Feb. 28, 1942	+ 7.51
Apr. 28, 1947	+ 1.20

Well E-39

W. W. Dean, in Pecos.

Jan. 15, 1940	+ 4.20
Feb. 6, 1941	+ 5.20
Feb. 23, 1942	+ 6.50
Apr. 29, 1947	1.90

Well E-40

B. T. Riggs, in Pecos.

Feb. 6, 1941	+ 2.65
Jan. 31, 1942	+ 3.29
Dec. 30	+ 2.38
Apr. 29, 1947	3.24

Well E-42

William Rossman, in Pecos.

Mar. 1, 1940	+14.50
Feb. 5, 1941	+12.80
Feb. 28, 1942	+15.30
Dec. 30	+12.60
Apr. 29, 1947	+10.7

Well E-43

E. C. Langston, $\frac{3}{4}$ mile north of Pecos.

Mar. 1, 1940	+17.50
Feb. 5, 1941	+18.10
Feb. 28, 1942	+19.90
Dec. 30	+16.80
Apr. 29, 1947	+10.0

Water levels in wells in Reeves County, Texas -- Continued

Well E-44

E. B. Kiser, ½ mile north of Pecos.

Mar. 1, 1940	+13.60
Feb. 5, 1941	+13.90
Feb. 28, 1942	+14.50
Apr. 29, 1947	+ 6.5

Well E-64

John Ivy No. 1, 3¾ miles southwest of Pecos.

June-July 1927	25
Mar. 4, 1931	25.56
Mar. 1, 1932	23.61
Feb. 5, 1940	25.41
Feb. 12, 1941	25.73
Feb. 23, 1942	24.10
Dec. 30, 1942	25.48
Dec. 14, 1946	26.87
Jan. 27, 1947	26.94

Well E-70

J. W. Brooks No.1, 3¾ miles southwest of Pecos.

Feb. 13, 1941	32.92
Feb. 28, 1947	33.68

Well E-72

Mrs. B. G. Smith, 4¼ miles southwest of Pecos.

Feb. 3, 1940	31.83
Feb. 14, 1941	31.91
Jan. 28, 1947	34.35

Well E-80

L. D. McNeil, 4½ miles west of Pecos.

Feb. 3, 1940	36.90
Feb. 13, 1941	37.18
Jan. 28, 1947	39.03

Well E-83

Neal S. Thompson, 3½ miles west of Pecos.

Feb. 13, 1941	25.62
Jan. 28, 1947	29.69

Well E-87

H. C. Bryan, 4½ miles northwest of Pecos.

June-July 1927	34
Mar. 4, 1931	33.26
Mar. 1, 1932	33.55
Feb. 3, 1940	35.41
Feb. 13, 1941	36.39
Mar. 2, 1942	32.01
Dec. 30	33.61
Nov. 5, 1946	34.21
Jan. 28, 1947	34.98

Well I-21

Kyle Watts, 12 miles southwest of Pecos.

Mar. 11, 1941	13.92
Jan. 27, 1947	13.88

Well I-25

O. D. Johnson, 13½ miles southwest of Pecos.

June-July 1927	16.5
Mar. 4, 1931	16.22
Feb. 2, 1932	16.48
Mar. 11, 1940	15.8
Nov. 15	15.49
Jan. 27, 1947	16.18

Although the measurements of water levels were made during a period of several years, they have very little significance in the absence of records of withdrawals during the period. However, they do tend to show that there has been no serious decline of water levels.

The artesian wells in Pecos have sufficient pressure to flow during the winter when there is no pumping for irrigation in the areas west and southwest from the city; in summer the pressure is reduced and many of the wells do not flow. During the irrigation season the water levels in wells in Pecos respond quickly to withdrawal from irrigation wells several miles away, but the exact relationship between the lowering of the water levels and the withdrawal of water has not yet been determined.

Northwestern part of county near Orla

This area is covered by grids A and B in figure 1. All the water wells recorded in the area are used for domestic purposes and stock. The depths of the wells range from 47 to 229 feet, and the depths to water range from about 10 to 135 feet. The shallower wells are on the lower terraces of the Pecos River, in the bottoms of the larger draws, and in the depressions; the deeper wells are on the uplands. Well B-1 is reported to draw from the Rustler formation but the other wells draw from the younger and older alluvium. Available drillers' logs, although meager, indicate that no large supplies of good water are to be expected from the alluvial deposits in this area. As to the Rustler formation, well B-1 yields highly mineralized water and this does not seem very encouraging.

Western part of county near Toyah

This area covers grids C and D and the northern parts of grids G and H. In and near Toyah numerous windmill wells obtain small quantities of water from alluvial deposits in which water-table conditions prevail. The depths of the wells range from about 30 to 150 feet and the depths to the water table range from about 20 to 35 feet below the land surface.

Flowing water has been obtained from a few wells near Toyah at depths ranging from 500 to 1,000 feet. The water occurs under considerable pressure, but the maximum flows reported are about 300 gallons a minute from wells of the Texas and Pacific Railroad and Toyah High School. The quality of the water and the abrupt increase in depths to water a few miles east from Toyah suggest that the artesian reservoir in the Toyah area is not directly connected to the artesian reservoir in the Pecos area.

Most wells in this area yield water that is rather highly mineralized although it probably would be suitable for irrigation. However, several wells have been drilled to depths of about 1,000 feet and encountered only meager supplies. Water for railroad use at Toyah is obtained from a small surface reservoir in Jeff Davis County.

Southern part of the county near Balmorhea

This area covers the southern parts of grids G and H and grids K and L. Most of the wells in the area are used for domestic purposes and stock. Wells H-32 and H-33 furnish the supply for Balmorhea, but their yields are small. In general, the wells near Balmorhea are less than 60 feet deep and depths to water range from about 10 to 40 feet. However, in the outlying parts of the area the depths of the wells range from about 150 feet to more than 500 feet and the depths to water range from 130 to 230 feet.

A discussion of the ground-water resources in the Balmorhea area is given in U. S. Geological Survey Water-Supply Paper 849-C.

Eastern part of the county

No large supplies of water have been developed in this area, which covers grids F and J, and the wells are used chiefly for watering stock. A few of the wells draw water from the alluvium, but most of the wells in grid F and the northern part of grid J penetrate the Triassic sandstone or the Rustler formation. Some of the wells in the southern part of the area draw from the Lower Cretaceous rocks.

Three wells (J-3, J-15, and J-22) have a flow of water from the Rustler formation. Well J-3 is 1,400 feet deep and is reported to have a flow of about 25 gallons a minute. The other two wells were drilled as oil tests and are now used as water wells, but the depths at which the flowing water was encountered are not known.

QUALITY OF WATER

The chemical character of the principal ground-water reservoirs in Reeves County is shown by the analyses from 221 representative wells given in the tables at the end of this report. The samples were collected and analyzed by the U. S. Geological Survey. The analyses show only the dissolved mineral content of the water and do not in general indicate the sanitary condition of the water. The chemical constituents of the water were determined by the methods in general use by the Geological Survey.

Chemical constituents in relation to use

Waters containing less than 500 parts per million dissolved solids are generally satisfactory for domestic uses; waters having more than 1,000 parts per million are generally not widely used for household purposes, for they are likely to contain enough of certain constituents to produce a noticeable taste or to make the water unsuitable in some other respect. The hardness of water receives the most attention for domestic purposes, and if the hardness is above 250 to 300 parts per million it is advantageous to soften the water for household use.

The suitability of water for irrigation depends largely on the total quantity of soluble salts and the ratio of the quantity of sodium to the total quantity of sodium, calcium, and magnesium. Much of the water applied to an agricultural area evaporates and the use of waters of higher mineral content will result in saline soils under certain conditions of soil drainage and water application.

The water analyses may be reported in a number of ways. For most purposes the quantities may best be reported as parts of dissolved substance by weight in a million parts of solution. This is the system ordinarily used by the Geological Survey and used in this report.

Waters used for irrigation, however, are frequently reported in equivalents per million so as to show the relative proportion of the dissolved ions. The equivalents per million are found by dividing the parts per million of a substance by its equivalent weight. For example, the equivalent weight of sodium is 23. Then if 46 parts per million of sodium was reported the equivalents per million would be 46 ÷ 23 or 2.

Table of equivalent weights used in water analyses

Calcium (Ca)	20	Bicarbonate (HCO_3)	61
Magnesium (Mg)	12.2	Sulfate (SO_4)	48
Sodium (Na)	23	Chloride (Cl)	35.5
Potassium (K)	39.1	Nitrate (NO_3)	62

(To convert dissolved solids in parts per million to tons per acre-foot, multiply solids in parts per million by 0.00136.)

Sodium percentage is an expression of the quality of an irrigation water used to predict the effects of the use of the water on the physical properties of the soil. It is determined by the formula $\frac{Na \times 100}{Ca+Mg+Na}$ where Ca, Mg, and Na are expressed in equivalents per million. If they are expressed in parts per million the following formula may be used:

$$\text{Sodium percentage} = \frac{\frac{Na}{23} \times 100}{\frac{Ca}{20} + \frac{Mg}{12.2} + \frac{Na}{23}}$$

If a water had the following analysis in parts per million,

Na = 115 Ca = 40 Mg = 24.4,

the sodium percentage would be as follows:

$$\text{Sodium percentage} = \frac{\frac{115}{23} \times 100}{\frac{40}{20} + \frac{24.4}{12.2} + \frac{115}{23}} = \frac{500}{9} = 56\%$$

If a value for potassium is given in the analysis the number of potassium equivalents is added to the sodium equivalents before the calculations are made.

In a discussion of the tentative standards of irrigation waters 22/, it was pointed out that waters containing more than 2,000 parts per million of dissolved solids (2.7 tons per acre-foot), and having sodium percentage of 75 or greater, may be injurious to most crops and unsatisfactory for all but the most tolerant crops.

22/ Magistad, O. C., and Christiansen, J. E., Saline soils their nature and management: U. S. Dept. of Agri. Circ. 707, 1944.

Composition of ground water in Reeves County

The analyses of ground waters in Reeves County show wide differences in the concentration of dissolved solids. The chemical character of waters found in different aquifers was discussed in more detail in the preceding summary of geologic formations and their water-bearing properties. The dissolved solids in the ground waters of Reeves County, with the exception of the shallow water in the younger alluvium, usually exceed 1,000 parts per million, although only a relatively small number of samples collected contained more than 4,000 parts per million of dissolved solids. Less than 20 percent of the wells sampled yield water having a total mineral content less than 1,000 parts. Most wells produce a characteristic calcium sulfate water, and only a few wells yield water having a sodium percentage above 60.

Dissolved solids in water from most wells that penetrate the Rustler formation in the vicinity of Pecos and southward range from 2,000 to 4,000 parts per million, and the waters, containing predominately calcium sulfate, have a low sodium percentage and probably could be used successfully for irrigation.

The Santa Rosa (?) sandstone east and southeast of Toyah Lake yields water of good quality suitable for domestic uses and for irrigation. Most wells produce water having dissolved solids less than 1,000 parts per million and a low percentage of sodium.

The waters encountered in wells in the vicinity of Toyah and from springs west of Toyah are similar in composition to the waters in the Rustler formation but are somewhat lower in mineral content. Calcium and sulfate are the principal mineral constituents. The analyses show that the waters are characterized by a low sodium percentage and generally have dissolved solids near or slightly above 3,000 parts per million. The spring waters that issue from the Cretaceous rocks in the vicinity of Balmorhea are less concentrated than most ground waters in Reeves County; the dissolved solids in these waters are only about 2,000 parts per million. They are satisfactory for irrigation of many crops where good drainage is provided. These waters contain about equal amounts of sulfate and chloride in contrast to the high sulfate content of the Cretaceous waters around Toyah.

Wells in and near Pecos in the artesian aquifer generally yield water having dissolved solids within the range of 2,000 to 3,000 parts per million and a sodium percentage less than 60. Considerable acreage planted to cotton, alfalfa, forage crops, and cantaloupes has been successfully irrigated for a number of years from wells in this area.

The water in the shallow alluvium along the Pecos River in Reeves County is generally more highly mineralized than water in the deeper alluvium; it often contains large amounts of sodium chloride and is characterized by a higher sodium percentage.

SUMMARY AND CONCLUSIONS REGARDING DEVELOPMENT OF WELLS FOR IRRIGATION IN THE ALLUVIAL BASIN

Pecos has been noted for its flowing wells since about 1880. In 1898 it was reported that within a radius of 2 miles from the town there were between 40 and 50 constantly flowing artesian wells, most of which were between 250 and 260 feet deep. The exact number of such wells now in the area is not known, but about 200 were located during the investigation in 1940. Many of the wells are not cased or have faulty casings, and a part of the water is discharged into the shallow gravel from which it is lost through transpiration, evaporation, and seepage into the Pecos River. The average yield of the wells is small.

Irrigation with water from these wells apparently was started in a small way about 1880. About 1910 the development of irrigation wells of large capacity began outside the area of flowing wells west and southwest of Pecos. However, progress was slow and less than 40 wells were being used in 1941. Interest has been revived since 1941, and 82 irrigation wells were equipped for operation or were about ready for use on April 1, 1947.

Most of the irrigation wells draw from alluvial sand and gravel in an elongated trough some 10 to 15 miles wide, extending from the Pecos River north of Pecos southward to the vicinity of Balmorhea. The alluvium ranges considerably in thickness and character. It is a heterogeneous mass of sand and gravel strata or lenses interbedded with thick beds of clay and silt, and in places it extends to depths of more than 1,500 feet.

The irrigation wells are confined chiefly to two areas, one just north and west from Pecos and the other 10 to 20 miles south. A few of the wells have a flow, but the water levels in nearly all of them are at comparatively shallow depths beneath the land surface. Most of the irrigation wells are equipped with deep-well turbine pumps and gasoline engines, and many of them yield between 1,000 and 2,000 gallons a minute. In April 1947 the average measured yield of 30 wells was 1,150 gallons a minute, the average pumping lift was about 65 feet, and the average specific capacity of the wells was about 47 gallons a minute per foot of drawdown.

Available data indicate that the artesian head dropped 20 feet or more during the early period of development. However, the decline of ground-water levels in the areas of well irrigation from 1931 to 1947 was small, and indicates that thus far the aquifers have not been seriously overdrawn. It seems likely that some increase in withdrawals could be made without seriously depleting the supply. A moderate increase in withdrawals for irrigation would cause further lowering of the water level in the area of flowing wells in and near Pecos and might eventually lower the head to such an extent that water would not flow from those wells even in winter when the head is highest, thus salvaging some of the water that is now lost by leakage from defective wells into the shallow gravels. This would have the further advantage of reducing objectionable waterlogged conditions in parts of the area which are known to be caused in part by the leakage.

Large-scale development of ground water for irrigation will necessarily result in concentration of wells in relatively small areas because much of the land of the alluvial basin is not suitable for irrigation. This condition precludes uniform distribution of wells throughout the regional extent of the aquifer. The amount of water that can be withdrawn economically at any one place depends not upon the quantity in storage but upon the transmission capacity of the aquifer, and eventually upon the rate of recharge at the areas of intake, which lie along the western and southern boundaries of the basin. The transmission capacity of the aquifer is of immediate importance. If the wells are too closely spaced and the rate of withdrawal in any locality during the irrigation season exceeds the transmission capacity of the aquifer in that locality, the yield of the wells may begin to decline within a short time and the pumping lift will increase perhaps beyond the economic limit.

Detailed pumping tests should be made during the winter when most of the pumps are idle in order to compute the coefficient of storage and transmissibility of the aquifer. Even with these data it will be difficult if not impossible to compute, within a reasonable degree of accuracy, the annual removal of water from storage within the aquifer or the future drawdown in wells to be expected with a given rate of increase in pumpage, owing to the irregularities of the water-bearing beds within comparatively short distances. However, the results of pumping tests would aid materially in computing interference between wells in a given locality during the seasons of heavy withdrawal. Further periodic observations of water levels in wells and pumpage inventories are needed to provide information regarding the effects of pumping on the ground-water reservoir, both locally and in the region as a whole.

Records of wells and springs in Reeves County, Texas
All wells are drilled unless noted in the remarks column

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
A- 1	37 miles northwest	B. T. Biggs	World Oil Co.	--	3,006	--	f/3,068
B- 1	44 miles northwest	H. T. Collier	--	1940	147	6	e/2,881
B- 2	41 miles northwest	J. E. Skinner	Clyde Simmonds	1933	85	6	e/2,904
B- 3	38 miles northwest	Red Bluff Dam	--	--	--	4	--
B- 4	35 miles northwest	W. A. Tunstill	Frankley and Rice Oil Co.	1938	3,210	--	f/2,906
B- 5	34 miles northwest	T. & P. Lands Trust	General Crude Oil Co.	1937	3,590	--	f/2,780
B- 6	35 miles northwest	Hall Olds	--	1930	84	7	e/2,872
B- 7	36 miles northwest	T. & P. Lands Trust	Grisham-Hunter Oil Co.	--	3,350	--	f/3,020
B- 8	30 miles northwest	John Camp	--	Old	173	--	--
B- 9	do.	J. Y. Crum	--	Old	105	--	--
B-10	29½ miles northwest	T. & P. Lands Trust	Humble Oil Co.	--	3,880	--	f/2,781
B-11	27 miles northwest	Herman Linley	Lang Buchanan	1941	148	6	--
B-12	25 miles northwest	W. B. Burchard	--	Old	229	5	--
B-13	23½ miles northwest	L. W. Anderson	--	Old	108	6	--
B-14	22 miles northwest	H. B. Wallace	--	Old	47	4	--
B-15	20 miles northwest	L. W. Anderson	--	--	75	8	f/2,721
C- 1	32 miles northwest	L. Ford	--	--	68	6	--
C- 2	32 miles west	A. B. Tinnin	--	Old	31	5	e/3,281
D- 1	28½ miles northwest	W. A. Burchard	--	Old	113	36	--
D- 2	28 miles northwest	Neal Burchard	--	Old	300+	8	--
D- 3	26 miles northwest	W. A. Burchard	--	--	268	4	--
D- 4	25½ miles northwest	W. B. Burchard	--	1900?	300	6	--
D- 5	22½ miles northwest	W. A. Burchard	--	--	--	4	--

a/ Figures preceded by a plus (+) sign represent water levels above land surface. All others are below land surface.

b/ Method of lift: C, cylinder; E, electric; G, gasoline or butane; O, oil or diesel; W, windmill; Cf, centrifugal; T, turbine; J, jet; H, hand. Number indicates horsepower.

Chemical analyses of water from most of these wells and springs are given in the table of analyses

(Most wells draw water from alluvium)

Well	WATER LEVEL Below or above land surface (ft.) a/	Date of measurement	Method of lift b/	Use of water c/	Remarks g/
A- 1	--	--	--	--	Oil test. See log.
B- 1	33.6	Aug. 19, 1942	C,W	S	Water from Rustler formation.
B- 2	72.9	Nov. 16, 1940	None	N	
B- 3	10.0	Mar. 20, 1941	None	N	Supplied water for camp during construction of dam.
B- 4	--	--	--	--	Oil test. See log.
B- 5	--	--	--	--	Do.
B- 6	66.2	May 11, 1941	C,W	D	
B- 7	--	--	--	--	Oil test. See log.
B- 8	110.5	May 11, 1941	C,W	S	
B- 9	66.5	Aug. 7, 1940	C,W	S	
B-10	--	--	--	--	Oil test. Rustler formation reported at 1,765 feet.
B-11	116.5	June 21, 1941	C,W	S	See log.
B-12	133.6	Jan. 4, 1940	C,W	S	
B-13	89.5	Aug. 7, 1940	C,W	S	
B-14	26.3	do.	C,W	S	
B-15	49.5	do.	C,W	S	
C- 1	59.6	Oct. 5, 1939	C,W	S	
C- 2	27.8	Sept. 21, 1940	C,W	S	
D- 1	56.8	Mar. 14, 1940	C,W	S	Dug. Known as "Corouthers' well".
D- 2	42.8	do.	None	N	
D- 3	--	--	C,W	S	Known as "Oscar well".
D- 4	165.4	Mar. 13, 1940	C,W	S	
D- 5	--	--	C,W	S	

c/ Use of water: P, public supply; Ind, industrial; Irr, irrigation; D, domestic; S, stock; N, not used.
d/ Altitude by instrumental leveling.
e/ Altitude by aneroid barometer.
f/ Altitude from oil company well log.
g/ GPM abbreviation for gallons per minute.

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
D- 6	19½ miles northwest	Wanda Hanks	--	1912	170	5	--
D- 7	18 miles northwest	do.	--	--	300+	6	--
D- 8	18½ miles northwest	F. C. Hyde	--	Old	74	--	--
D- 9	14 miles northwest	Wanda Hanks	--	--	227	6	e/2,866
D-10	11½ miles west	Elmer Wadley	--	Old	207	--	e/2,852
D-11	11 miles west	do.	--	--	190	6	e/2,813
D-12	17½ miles west	A. B. Burchard	--	--	63	7	--
D-13	20 miles west	do.	--	--	75	--	--
D-14	22½ miles west	Artie Baker	Artie Baker	1938	500	8	--
D-15	20 miles west	A. B. Burchard	--	--	178	6	--
D-16	21 miles northwest	do.	--	--	255	--	--
D-17	25½ miles west	Tat Oil Co. H. F. Anthony	Tom Simmonds & R. Byall	1939	2,000	--	--
D-18	28½ miles west	J. M. Speed	--	Old	68	6	--
D-19	22½ miles west	A. B. Burchard	--	--	Spring	--	--
D-20	23½ miles west	E. Bernsteine	--	--	Spring	--	--
D-21	25 miles west	Tri-State Credit Men's Association	--	--	Spring	--	--
D-22	27 miles west	E. Bernsteine	--	--	Spring	--	--
D-23	27 miles southwest	M. B. James	--	--	Spring	--	--
D-24	26½ miles southwest	R. J. Burr	--	--	Spring	--	--
D-25	24 miles southwest	R. L. Parker	Clyde Simmonds	1940	88	--	e/3,112
D-26	17½ miles southwest	E. B. Daniel	--	1939	160	5	e/2,900
D-27	do.	R. N. Burchard	--	--	60	8	--
D-28	17 miles southwest	C. V. T. Montgomery	Grisham and Hunter Oil Co.	--	4,065	--	f/2,891
D-29	14½ miles southwest	W. H. Groves	May and Bitten Oil Co.	--	4,133	--	f/2,827
D-30	16 miles southwest	E. B. Daniel	--	--	60	6	e/2,879

(Most wells draw water from alluvium)

Well	WATER LEVEL Below or above land surface (ft.) a/	Date of measurement	Method of lift b/	Use of water c/	Remarks g/
D- 6	139.0	Aug. 8, 1940	C,W	S	
D- 7	274.7	do.	C,W	S	
D- 8	71.0	June 24, 1940	C,W	S	
D- 9	212.5	Nov. 21, 1940	C,W	S	
D-10	174.6	Sept.13, 1940	C,W	S	
D-11	149.2	do.	C,W	S	
D-12	39.4	Mar. 14, 1940	C,W	S	
D-13	66.0	Nov. 16, 1940	C,W	S	
D-14	20.8	May 16, 1940	--	--	Oil test. See log.
D-15	147.7	Mar. 14, 1940	C,W	S	
D-16	241.3	do.	C,W	S	
D-17	62.8	Nov. 4, 1939	--	--	Water from Cretaceous sands. Oil test.
D-18	58.9	Oct. 5, 1939	None	N	
D-19	--	--	Flows	S	Johnson Spring. Flow estimated 6 gpm.
D-20	--	--	Flows	S	Twin Spring. Flow estimated 10 gpm.
D-21	--	--	Flows	S	Canyon Spring. Flow estimated 6 gpm.
D-22	--	--	Flows	S	Burnt Spring. Flow estimated 25 gpm.
D-23	--	--	Flows	S	Torez Spring. Flow estimated 2 gpm.
D-24	--	--	Flows	S	Petican Spring. Flow estimated 35 gpm.
D-25	71.6	Sept.20, 1940	C,W	S	Water from Cretaceous rocks. See log.
D-26	21.2	Sept.13, 1940	C,W	--	Water probably from Cretaceous rocks.
D-27	26.8	do.	C,W	D,S	
D-28	--	--	--	--	Oil test. See log.
D-29	--	--	--	--	Do.
D-30	53.7	Sept.13, 1940	C,W	S	

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
D-31	15½ miles west	R. S. Burchard	--	Old	51	--	e/2,857
D-32	14½ miles southwest	E. B. Daniel	--	--	190	6	e/2,827
D-33	13 miles west	R. S. Burchard	--	--	185	5	e/2,818
D-34	11½ miles southwest	E. B. Daniel	--	--	156	--	e/2,774
D-35	10 miles west	Elmer Wadley	--	Old	139	5	--
D-36	10½ miles southwest	Billie Prewit	F. McDaniels	1938	137	5	e/2,764
E- 1	15 miles northwest	L. W. Anderson	--	Old	186	7	--
E- 2	13 miles northwest	T. S. Ingle	--	Old	171	5	--
E- 3	do.	Nasario Lara	L. F. Buchanan	1939	198	6	d/2,652.54
E- 4	12½ miles northwest	J. E. Couch	do.	1939	160	5	d/2,562.74
E- 5	8 miles northwest	H. H. Johnson, et al.	Dunnigan Bros. and Brahney Oil Co.	--	4,688	--	f/2,620
E- 6	9 miles northwest	T. S. Ingle	--	Old	77	5	--
E- 7	11½ miles northwest	L. W. Anderson	--	Old	101	4	--
E- 8	11 miles northwest	S. M. Prewit	Exploration Oil Co.	--	2,900	8	f/2,741
E- 9	8 miles northwest	do.	--	--	29	5	e/2,640
E-10	7 miles northwest	W. H. Browning	L. F. Buchanan	1912	500	10, 5	--
E-11	4½ miles northwest	S. M. Prewit	--	Old	--	--	--
E-12	6 miles northwest	T. S. Ingle	L. F. Buchanan	1939	51	6	e/2,614
E-13	6½ miles northwest	Mrs. M. S. Grissom	do.	--	55	6	--
E-14	5½ miles north	J. E. Couch No. 1	Tom Simmonds	1946	250	12	--
E-15	5½ miles northwest	J. E. Couch No. 2	do.	1946	150	12	--
E-16	do.	J. E. Couch No. 3	do.	1946	143	12	--
E-17	5 miles northwest	Paul Armstrong	do.	1946	135	10½	--

(Most wells draw water from alluvium)

Well	WATER LEVEL Below or above land surface (ft.) a/	Date of measurement	Method of lift b/	Use of water c/	Remarks g/
D-31	43.8	Nov. 2, 1940	C,W	S	
D-32	168.3	Aug. 8, 1940	C,W	S	
D-33	164.6	Sept.13, 1940	C,W	S	
D-34	145.4	do.	C,W	S	
D-35	134.5	Feb. 14, 1941	C,W	S	
D-36	122.6	Feb. 13, 1942	C,W	S	
E- 1	173.6	Nov. 6, 1940	C,W	S	
E- 2	135.4	May 11, 1941	C,W	S	
E- 3	23.4	Mar. 4, 1942	C,W	S	See log.
E- 4	35.0	May 14, 1941	C,W	S	Do.
E- 5	--	--	--	--	Oil test. See log.
E- 6	42.0	May 11, 1941	C,W	S	
E- 7	81.5	Oct. 6, 1940	C,W	S	
E- 8	124+	Sept.16, 1940	C,W	S	Oil test completed as water well.
E- 9	18.4	do.	C,W	S	
E-10	--	--	C,W	S	Clay reported below 72 feet.
E-11	32.2	Sept.16, 1940	C,W	S	Formerly used for irrigation.
E-12	20.0	May 14, 1941	C,W	S	
E-13	11.6	do.	C,W	S	
E-14	15.5	Feb. 10, 1947	--	Irr	Casing: 135 feet, slotted from 80 to 131 feet. Pump not installed in Apr. 1947.
E-15	16.5	Nov. 4, 1946	--	Irr	Casing: 134 feet, slotted from 56 to 134 feet. Pump not installed in Apr. 1947. Drawdown reported 80 feet after 10 days pumping at 800 gpm in 1946. See log.
E-16	15.3	Jan. 29, 1947	--	Irr	Casing: 144 feet, slotted from 56 to 144 feet. Pump not installed in Apr. 1947.
E-17	16.9	Nov. 4, 1946	T,E, 30	Irr	Casing: 135 feet, slotted from 35 to 135 feet. Pump set at 74 feet. Drawdown reported 57 feet after 7 hours pumping at 1,500 gpm in 1946. See log.

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
E-18	4 miles north	John Lopoo	L. F. Buchanan	1928	96	6	--
E-19	$3\frac{1}{2}$ miles northwest	J. E. Couch	R. N. Couch	1906	400	--	--
E-20	do.	E. C. Schwalbe	L. F. Buchanan	1938	76	8	--
E-21	do.	W. E. Reeder	--	--	65	6	--
E-22	do.	C. D. Boyd	C. D. Boyd	1939	36	9	e/2,601
E-23	$3\frac{3}{4}$ miles northwest	Carl Taylor No. 2	Tom Simmonds	1946	60	10	--
E-24	do.	Carl Taylor No. 1	L. F. Buchanan	1940	126	5	--
E-25	do.	G. G. Breen	Clyde Simmonds	1939	74	8, 6	--
E-26	$3\frac{1}{2}$ miles northwest	W. K. Poitevint	Tom Simmonds	1942	200	8	--
E-27	do.	W. H. Sherwood	L. F. Buchanan	1940	76	8	--
E-28	$2\frac{1}{2}$ miles northwest	L. W. Lewis	Joe Kraus	1914	134	3	d/2,586.41
E-29	$2\frac{3}{4}$ miles northwest	B. Kraus	do.	Old	--	5	--
E-30	$2\frac{1}{2}$ miles northwest	Ronald Roberson	--	1915	135	4	d/2,585.34
E-31	$2\frac{1}{4}$ miles northwest	do.	--	--	--	4	--
E-32	2 miles northwest	Reba Morgan	Sib Honeycutt	1925	165	6	d/2,595.08
E-33	$1\frac{3}{4}$ miles northwest	do.	do.	1925	165	6	d/2,592.64
E-34	$1\frac{1}{2}$ miles northwest	-- Davis	--	1938	--	6	d/2,592.03
E-35	$1\frac{3}{4}$ miles west	Jess Mendanhall	--	Old	--	4	d/2,591.39
E-36	do.	Tolbert Garrett	Tom Simmonds	1938	226	8	d/2,594.10
E-37	In Pecos	Jim Moore	--	--	--	6	d/2,585.86
E-38	do.	Ed Otto	N. Yarbourh	--	--	8	--
E-39	do.	W. W. Dean	do.	--	320	8	--
E-40	do.	B. T. Biggs	L. F. Buchanan	1936	285	6	--
E-41	do.	L. F. Buchanan	do.	1937	210	3	--

(Most wells draw water from alluvium)

Well	WATER LEVEL Below or above land surface (ft.) a/	Date of measurement	Method of lift b/	Use of water c/	Remarks g/
E-18	11.6	May 14, 1941	C,W	D,S	
E-19	--	--	Flows	S	
E-20	27.3	Feb. 5, 1947	T,G,--	Irr	
E-21	--	--	Cf,G,--	Irr	Dug and drilled. Pump set at 16 feet.
E-22	22.4	Feb. 12, 1941	Cf,G,--	Irr	Dug and drilled. Casing: 36 feet, slotted from 26 to 36 feet. Pump set at 14 feet.
E-23	24.1	Jan. 25, 1947	T,E,3	Irr	Casing: 60 feet, slotted from 30 to 60 feet. Pump set at 42 feet. Yield reported 300 gpm.
E-24	--	--	Cf,E,3	Irr	Dug and drilled. Casing: 105 feet. Pump set at 12 feet. See log.
E-25	23.7	Feb. 12, 1941	T,G,--	Irr	Casing: 8 inch to 54 feet, 6 inch from about 54 to 74 feet. Pump set at 46 feet. Drawdown 12 feet while pumping about 300 gpm in 1940.
E-26	--	--	T,G,--	Irr	Casing: 200 feet, slotted from 80 to 200 feet. Pump set at 60 feet.
E-27	21.3	Feb. 5, 1947	None	N	Formerly used for irrigation. See log.
E-28	+ 0.4	Apr. 29, 1947	Flows	S	
E-29	--	--	Flows	S	
E-30	+ 5.9	Apr. 29, 1947	Flows	D	
E-31	--	--	Flows	D,S	
E-32	+ 3.4	Feb. 28, 1942	Flows Cf,G,5	D,S	
E-33	--	--	Flows Cf,G,--	--	
E-34	+ 4.8	Dec. 21, 1939	Flows Cf,-	D,S	
E-35	1.5	Apr. 29, 1947	H	D,S	
E-36	4.2	do.	--	--	
E-37	0.5	do.	--	D	
E-38	+ 1.2	Apr. 28, 1947	Flows	--	
E-39	1.9	Apr. 29, 1947	--	--	
E-40	3.2	do.	C,W	--	
E-41	+ 6.0	Feb. 28, 1942	Flows	--	

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
E-42	In Pecos	William Rossman	Lang Buchanan	1937	246	5	--
E-43	$\frac{3}{4}$ mile north	E. C. Langston	--	Old	--	6	--
E-44	$\frac{1}{2}$ mile north	E. B. Kiser	Tom Simmonds	1933	190	7	--
E-45	$\frac{3}{4}$ mile northwest	W. H. Boyd No. 1	do.	1944	211	7, 6	--
E-46	$1\frac{1}{4}$ miles northwest	W. H. Boyd No. 2	do.	1945	210	8, 7	--
E-47	$1\frac{1}{4}$ miles north	W. H. Lee No. 1	--	Old	200	8	--
E-48	$1\frac{1}{2}$ miles north	W. H. Lee No. 2	Tom Simmonds	1941	200	7	--
E-49	do.	W. H. Lee No. 3	Lang Buchanan	1942	200	7	--
E-50	do.	W. H. Lee No. 4	Tom Simmonds	1942	199	6-5/8, 5-3/16	--
E-51	$2\frac{1}{4}$ miles north	A. Schmid	--	1902	89	5	--
E-52	$2\frac{1}{2}$ miles north	do.	Tom Simmonds	1938	308	6	--
E-53	$1\frac{1}{4}$ miles east	S. M. Prewit	J. R. Simmonds	1917	440	6	--
E-54	do.	Reynolds Estate	Clyde Simmonds	--	124	7	--
E-55	$2\frac{1}{4}$ miles east	S. M. Prewit	--	--	--	$4\frac{1}{2}$	--
E-56	$3\frac{1}{2}$ miles east	Denver Perkins	--	--	66	5	--
E-57	$2\frac{3}{4}$ miles southeast	V. B. Mays	--	--	225	$5\frac{1}{4}$	--
E-58	$1\frac{1}{2}$ miles south	Port Daggett	--	1940	114	5	--
E-59	$2\frac{1}{2}$ miles southwest	R. D. Copeland	--	Old	--	6	d/2,603.75
E-60	do.	do.	T. J. Simmonds	1940	250	10	d/2,605.25
E-61	3 miles southwest	A. R. Eppenauer	L. F Buchanan	1939	300	8	--
E-62	$3\frac{1}{4}$ miles southwest	W. A. Gardner	Tom Simmonds	1932	143	8	d/2,612.48
E-63	$3\frac{3}{4}$ miles southwest	John Ivy No. 2	C. C. and H. Drilling Co.	1947	213	20, 16	--

(Most wells draw water from alluvium)

Well	WATER LEVEL: Below or above land surface (ft.) a/	WATER LEVEL: Date of measurement	Method of lift b/	Use of water c/	Remarks g/
E-42	+10.7	Apr. 29, 1947	Flows	--	
E-43	+10.0	do.	Flows	D	
E-44	+ 6.5	do.	Flows	--	Supplies water for swimming pool.
E-45	+ 7.5	Apr. 26, 1947	Flows	Irr	Casing: 7-inch to 145 feet; 6 inch from about 145 to 211 feet, slotted from 145 to 211 feet. Flow reported 430 gpm in Oct. 1944.
E-46	+ 7.5	do.	Flows	Irr	Casing: 8 inch to 141 feet; 7-inch from about 141 to 210 feet, slotted from 141 to 210 feet. Flow reported 525 gpm in May 1945.
E-47	--	--	Flows	Irr	
E-48	--	--	Flows	Irr	
E-49	--	--	Flows	Irr	
E-50	--	--	Flows	Irr	Casing: 6-5/8 inch to 158 feet; 5-3/16 inch from 149 to 199 feet, slotted from 158 to 199 feet. Flow reported 400 gpm in 1942. See log.
E-51	9.8	May 14, 1941	C,W	D,S	
E-52	+ 6.8	Oct. 18, 1940	Flows Cf,E,--	S	
E-53	8.6	May 14, 1941	None	N	
E-54	5.4	do.	C,W	S	
E-55	1.9	Oct. 18, 1940	--	S	
E-56	7.4	May 14, 1941	C,W	N	
E-57	3.9	do.	C,W	S	
E-58	4.6	May 16, 1941	C,W	D,S	
E-59	1.8	Aug. 19, 1940	None	N	
E-60	17.6	do.	None	N	See log.
E-61	--	--	None	N	Do.
E-62	21.1	Feb. 12, 1941	None	N	Do.
E-63	--	--	--	Irr	Casing: 20 inch to 105 feet, slotted from 35 to 45 feet; 16 inch from 0 to 213 feet, slotted from 95 to 105 and 153 to 213 feet. Deepening well in Apr. 1947. See log.

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
E-64	3¾ miles southwest	John Ivy No. 1	Lang Buchanan	Old	380	15½	e/2,622
E-65	3¼ miles southwest	Neal S. Thompson	do.	1936	319	16½, 12½	--
E-66	2¾ miles southwest	Stanley Poer and J. W. Hudgens	do.	1940	183	10, 8	--
E-67	2½ miles southwest	L. G. Shepherd	Tom Simmonds	1945	277	10	--
E-68	1½ miles southwest	-- Drake	L. F. Buchanan	1942	318	10,8, 6	--
E-69	3¼ miles southwest	J. E. Propp	C. C. & H. Drilling Co.	1947	207	15, 12	--
E-70	3¾ miles southwest	J. W. Brooks No. 1	-- Capps	1912	185	9-5/8	e/2,639
E-71	do.	J. W. Brooks No. 2	C. C. & H. Drilling Co.	1947	225	16, 12½	--
E-72	4¼ miles southwest	Mrs. B. G. Smith	Bill Oden	1912	212	15, 6-7/8	e/2,647
E-73	do.	Harold Wendt No. 2	Austin Jones	1947	220	15, 12	--
E-74	do.	Harold Wendt No. 1	J. H. Hardaway	1946	228	12,10 8	--
E-75	4¾ miles southwest	R. H. Brown No. 2	C. C. & H. Drilling Co.	1947	225	16, 12½	--
E-76	do.	R. H. Brown No. 1	--	1910	209	24, 9-5/8	e/2,658
E-77	5 miles west	R. H. Brown No. 3	C. C. & H. Drilling Co.	1947	215	16, 12	--
E-78	5½ miles west	R. H. Brown No. 4	do.	1947	215	20, 12½	--

(Most wells draw water from alluvium)

Well	WATER LEVEL: Below or above land surface (ft.) a/	WATER LEVEL: Date of measurement	Method of lift b/	Use of water c/	Remarks g/
E-64	26.9	Jan. 27, 1947	T,0, 40	Irr	Pump set at 60 feet. Yield measured 1,215 gpm Apr. 17, 1947.
E-65	23.8	Nov. 4, 1946	T,G, 65	Irr	Casing: 16½ inch to 50 feet; 12½ inch from about 50 to 319 feet. Pump set at 110 feet. Yield measured 1,120 gpm after pumping about 72 hours Apr. 17, 1947.
E-66	10.4	Nov. 8, 1946	T,G, --	Irr	Casing: 10 inch to 50 feet; 8 inch from about 50 to 183 feet, slotted from 163 to 183 feet. Pump set at 40 feet. Yield reported 800 gpm.
E-67	19.3	Nov. 4, 1946	T,G, 55	Irr	Pump set at 60 feet.
E-68	8.5	Apr. 12, 1947	T,G, --	Irr	Casing: 10 inch to 260 feet, slotted from 240 to 260 feet; 8 inch from 242 to 302 feet, slotted from 242 to 302 feet, 6 inch from 297 to 318 feet, slotted from 306 to 318 feet. See log.
E-69	37.6	Apr. 11, 1947	T,E, 20	Irr	Casing: 15 inch to 80 feet; 12 inch from 67 to 207 feet, slotted from 157 to 207 feet. Pump set at 70 feet. See log.
E-70	33.7	Jan. 28, 1947	T,G, 50	Irr	Casing: 9-5/8 inch to 165 feet, screen from 165 to 185 feet. Pump set at 50 feet. Yield reported 1,200 gpm.
E-71	26.5	Apr. 24, 1947	T,G, 55	Irr	Casing: 16 inch to 106 feet, 12½ inch from 85 to 212 feet. Pump set at 70 feet. Drawdown 30 feet while pumping 1,296 gpm Apr. 28, 1947. See log.
E-72	34.3	Jan. 28, 1947	T,0, 25	Irr	Dug to 50 feet. Casing: 15 inch from 25 to 80 feet; 6-7/8 inch from about 80 to 212 feet, slotted from 42 to 212 feet. Pump set at 50 feet. Yield measured 500 gpm after pumping about 5 hours Apr. 16, 1947.
E-73	48.2	Apr. 16, 1947	T,E, 30	Irr	Casing: 15 inch to 60 feet; 12 inch from 33 to 220 feet, slotted from 180 to 220 feet. Pump set at 80 feet. Drawdown 19 feet while pumping 1,066 gpm Apr. 24, 1947. See log.
E-74	36.4	Nov. 6, 1946	T,E, 40	Irr	Casing: 12 inch to 157 feet; 10 inch from about 157 to 197 feet; 8 inch from about 197 to 228 feet. Pump set at 100 feet. Yield measured 874 gpm Apr. 16, 1947. See log.
E-75	38.6	Apr. 11, 1947	T,G, 135	Irr	Casing: 16 inch to 151 feet; 12½ inch from 139 to 225 feet. Pump set at 79 feet. See log.
E-76	47.8	Nov. 6, 1946	T,0, 85	Irr	Casing: 24 inch to 42 feet; 9-5/8 inch from about 42 to 209 feet. Pump set at 85 feet. Yield measured 900 gpm Apr. 16, 1947.
E-77	57.0	Apr. 11, 1947	T,E, 30	Irr	Casing: 16 inch to 118 feet; 12 inch from 104 to 215 feet. Pump set at 80 feet. See log.
E-78	44.9	do.	T,E, 30	Irr	Casing: 20 inch to 94 feet; 12½ inch from about 94 to 215 feet. Pump set at 80 feet. See log.

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
E-79	$4\frac{3}{4}$ miles west	Jack Wendt	Lang Buchanan	1942	222	12, 9-5/8, 8	--
E-80	$4\frac{1}{2}$ miles west	L. D. McNeil	--	1909	217	9-5/8, 8	e/2,643
E-81	do.	do.	E. E. Scarbrough	1942	217	15, 12, 10	--
E-82	$3\frac{3}{4}$ miles west	Cal Wilson	Lang Buchanan	1942	180	8	--
E-83	$3\frac{1}{2}$ miles west	Neal S. Thompson	Lang Buchanan	1936	180	16, $12\frac{1}{2}$	e/2,632
E-84	$4\frac{1}{4}$ miles west	L. D. McNeil	Tom Simmonds	1940	217	14, $12\frac{1}{2}$, 10	e/2,637
E-85	$4\frac{1}{2}$ miles west	W. B. Evans	E. E. Scarbrough	1943	217	$15\frac{1}{2}$, $12\frac{1}{2}$, 10	--
E-86	$4\frac{1}{4}$ miles northwest	O. J. Bryan	Lang Buchanan	1939	170	8	e/2,642
E-87	$4\frac{1}{2}$ miles northwest	H. C. Bryan	Mel Davis	1910	162	8	e/2,642
E-88	$4\frac{3}{4}$ miles northwest	H. H. Bryan	Lang Buchanan	1945	182	10	--
E-89	do.	H. H. & O. J. Bryan	S. P. Honeycutt	1946	188	10, 8	--
E-90	6 miles northwest	Jack Williams	Tom Simmonds	1946	208	$12\frac{1}{2}$, 10	--
E-91	6 miles west	do.	Austin Jones	1947	134	12	--

(Most wells draw water from alluvium)

Well	WATER LEVEL: Below or above land surface (ft.) a/	WATER LEVEL: Date of measurement	Method of lift b/	Use of water c/	Remarks g/
E- 79	43.2	Nov. 6, 1946	T,O, 60	Irr	Casing: 12 inch to 124 feet; 9-5/8 inch from about 124 to 184 feet; 8 inch from about 184 to 222 feet; slotted from 100 to 120 and 164 to 222 feet. Pump set at 100 feet. Drawdown 48 feet after 8 hours pumping at 815 gpm Apr. 14, 1947.
E- 80	39.0	Jan. 28, 1947	T,E, 30	Irr	Casing: 9-5/8 inch to 197 feet; 8-inch from about 197 to 217 feet. Pump set at 60 feet. Yield, see Well E-81.
E- 81	39.9	Nov. 5, 1946	T,O, --	Irr	Casing: 15-inch to 93 feet; 12 inch from about 93 to 195 feet; 10 inch from about 195 to 217 feet. Pump set at 80 feet. Drawdown 44 feet Apr. 16, 1947. Combined yield of wells E-80 and E-81, measured 1,880 gpm Apr. 16, 1947.
E- 82	33.3	do.	T,E, 15	Irr	Casing: 8-inch to 180 feet, slotted from 160 to 180 feet. Pump set at 90 feet. Yield measured 368 gpm Jan. 28, 1947 by S.C.S.
E- 83	29.7	Jan. 28, 1947	T,G, 44	Irr	Casing: 16 inch to 80 feet; 12½ inch from 80 to 180 feet. Pump set at 80 feet. Drawdown 36 feet while pumping 1,071 gpm Apr. 17, 1947. See log.
E- 84	31.5	Nov. 5, 1946	T,O, --	Irr	Casing: 14 inch to 70 feet; 12½ inch from about 70 to 190 feet; 10 inch from about 190 to 217 feet. Pump set at 80 feet. See log.
E- 85	37.0	do.	T,O, 50	Irr	Casing: 15½ inch to 100 feet; 12¼ inch from about 100 to 180 feet; 10 inch from about 180 to 217 feet; slotted from 127 to 131, 167 to 169, 188 to 194, and 197 to 212 feet. Pump set at 84 feet. Drawdown 56.7 feet after 9½ hours pumping at 855 gpm Apr. 14, 1947.
E- 86	40.6	do.	T,G, --	Irr	Pump set at 60 feet. Yield reported 900 gpm. See log.
E- 87	35.0	Jan. 28, 1947	C,W	D,S	Dug and drilled. Formerly used for irrigation.
E- 88	44.5	Nov. 6, 1946	T,G, 50	Irr	See log.
E- 89	45.8	Dec. 16, 1946	T,G, --	Irr	Casing: 10 inch to 177 feet; 8 inch from 173 to 188 feet; slotted from 117 to 188 feet. Pump set at 90 feet. Yield measured 630 gpm by S.C.S. See log.
E- 90	61.0	Jan. 28, 1947	T,G, 32	Irr	Casing: 12½ inch to 165 feet; 10 inch from about 165 to 208 feet; slotted from 70 to 208 feet. Pump set at 100 feet. See log.
E- 91	66.6	Apr. 11, 1947	T,G, 32	Irr	Casing: 12 inch to 120 feet, slotted from 80 to 120 feet. Pump set at 100 feet. See log.

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
E- 92	6 miles west	Jack Williams	Lang Buchanan	1943	182	13, 8	--
E- 93	$6\frac{1}{2}$ miles west	do.	do.	1940	170	15, 12	--
E- 94	do.	M. H. McKinney	Austin Jones	1947	285	[illegible], 8	--
E- 95	$6\frac{1}{2}$ miles northwest	E. M. Brown	Sid Richardson	1938	4,640	--	f/2,686
E- 96	9 miles west	E. D. Godbey	C. C. & H. Drilling Co.	1947	285	$12\frac{1}{2}$, 10	--
E- 97	9 miles southwest	State of Texas	--	Old	153	6	e/2,712
E- 98	$9\frac{1}{2}$ miles southwest	Billie Frewit	F. McDaniels	1938	105	4	e/2,716
E- 99	10 miles southwest	Ord Gary	J. O. Jarman	1945	168	16, $12\frac{3}{4}$	--
E-100	do.	do.	Austin Jones	1947	190	18	--
E-101	8 miles southwest	Billie Prewit	--	Old	107	5	e/2,680
E-102	7 miles southwest	State of Texas	--	1938	97	6	e/2,688
E-103	$5\frac{1}{2}$ miles southwest	Bell and Reagan	--	1939	226	11	d/2,665.32
E-104	6 miles southwest	Balmorhea Livestock Co.	--	--	96	36	d/2,625.10
E-105	6 miles south	Day Monroe & Balmorhea Livestock Co.	--	--	Spring	--	--
E-106	$3\frac{3}{4}$ miles south	Tatum Eisenwine	--	--	--	--	d/2,595.99
E-107	$3\frac{1}{2}$ miles south	do.	--	--	--	6	--
E-108	$3\frac{3}{4}$ miles south	do.	--	--	--	6	--
E-109	do.	do.	--	--	--	6	--
E-110	4 miles south	do.	--	--	--	6	--
E-111	do.	J. W. Watson	--	--	--	6	--
E-112	4 miles southeast	do.	--	--	--	--	d/2,584.39
E-113	$3\frac{1}{4}$ miles southeast	Frank Joplin	--	1900	220	5	d/2,574.06

(Most wells draw water from alluvium)

Well	WATER LEVEL: Below or above land surface (ft.) a/	Date of measurement	Method of lift b/	Use of water c/	Remarks g/
E- 92	72.6	Nov. 6, 1946	T,G, 32	Irr	Casing: 13 inch to 140 feet; 8 inch from about 140 to 182 feet. Pump set at 100 feet. Drawdown 25.0 feet while pumping 680 gpm Apr. 11, 1947.
E- 93	71.7	Jan. 28, 1947	T,O, 50	Irr	Casing: 15 inch to 120 feet; 12 inch from about 120 to 170 feet; slotted from 70 to 170 feet. Pump set at 100 feet. See log.
E- 94	83.9	Apr. 27, 1947	T,O, 45	Irr	Casing: 14 inch to 239 feet; 8 inch from 235 to 285 feet; slotted from 215 to 285 feet. Pump set at 120 feet. See log.
E- 95	--	--	--	--	Rustler formation at 1,180 feet; flow of water under pressure of 60 lbs. per sq. in. when drilled.
E- 96	109.4	Apr. 30, 1947	T,G, 110	Irr	Casing: 12½ inch to 236 feet; 10 inch from 219 to 285 feet; slotted from 136 to 278 feet. Pump set at 160 feet. See log.
E- 97	93.5	Feb. 26, 1940	None	N	
E- 98	99.4	May 10, 1941	C,W	S	
E- 99	117.8	Feb. 3, 1947	T,G, 89	Irr	Casing: 16 inch to 98 feet; 12¾ inch from about 98 to 168 feet. Pump set at 140 feet. Yield measured 662 gpm Apr. 17, 1947. See log.
E-100	119.0	Apr. 28, 1947	--	Irr	Casing: 18 inch to 190 feet, slotted from 120 to 190 feet. Pump not installed in Apr. 1947. See log.
E-101	68.2	Sept. 12, 1940	C,W	S	
E-102	71.5	Dec. 21, 1939	C,W,G, --	--	
E-103	52.2	Dec. 31, 1941	None	N	
E-104	20.0	May 14, 1941	C,W	S	Dug.
E-105	--	--	Flows	S	Irving Springs.
E-106	+ 2.0	Oct. 18, 1940	Flows	S	
E-107	+10.0	Apr. 29, 1947	Flows	--	
E-108	--	--	Flows	--	
E-109	--	--	Flows	--	
E-110	--	--	None	N	
E-111	--	--	Flows	--	
E-112	+ 7.0	Apr. 29, 1947	Flows	S	
E-113	3.9	June 4, 1942	None	N	

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
E-114	$3\frac{1}{4}$ miles southeast	Onnie Moorehead	--	1930	80	8	--
E-115	$4\frac{3}{4}$ miles southeast	J. W. Watson	--	Old	106	7	d/2,589.86
E-116	$6\frac{1}{2}$ miles southeast	Carl Johnson	--	--	60	60	--
E-117	$7\frac{1}{2}$ miles southeast	H. L. Perkins	Roy Johnson	1940	--	--	d/2,589.34
E-118	$9\frac{1}{2}$ miles southeast	Jack Warsham	Tom Simmonds	1935	140	10	--
E-119	do.	Port Daggett	--	--	88	6	e/2,632
E-120	11 miles southeast	R. D. Irion	Tom Simmonds	1937	125	6	e/2,652
E-121	do.	City of Pecos No. 1	do.	1933	187	10	e/2,630
E-122	do.	City of Pecos No. 2	do.	1935	211	10	e/2,630
E-123	$11\frac{1}{2}$ miles southeast	City of Pecos No. 3	do.	1935	300	10	e/2.630
E-124	11 miles southeast	City of Pecos No. 4	D. M. Bassett	1942	191	10	--
E-125	$10\frac{1}{2}$ miles southeast	City of Pecos No. 5	do.	1942	170	10	--
F- 1	$13\frac{1}{2}$ miles southeast	H. F. Anthony	Earl Fisher	1939	80	6	e/2,554
F- 2	$16\frac{1}{2}$ miles southeast	Onnie Moorehead	--	Old	--	--	--
F- 3	20 miles southeast	S. E. Ligon	S. E. Ligon	1915	180	6	--
F- 4	23 miles southeast	Eddins Estate	do.	1913	44	--	--
G- 1	$30\frac{1}{2}$ miles southeast	C. M. Caldwell	--	Old	40	6	e/3,301
G- 2	39 miles southwest	Ligon Bros.	--	1938	530	--	--
G- 3	$38\frac{1}{2}$ miles southwest	do.	--	1937	700	--	--
H- 1	$28\frac{1}{2}$ miles southwest	C. M. Caldwell	--	--	Spring	--	--
H- 2	$26\frac{1}{2}$ miles southwest	T. A. Cheeves	The Texas Co.	1912	2,960	--	f/3,164
H- 3	$29\frac{1}{2}$ miles southwest	C. M. Caldwell	--	Old	27	48	e/3,195
H- 4	27 miles southwest	do.	Hille-Barnett Oil Co.	1938	350	10	f/3,166
H- 5	$26\frac{1}{2}$ miles southwest	do.	--	Old	106	--	e/3,166
H- 6	22 miles southwest	do.	--	Old	91	6	e/3,159

(Most wells draw water from alluvium)

Well	WATER LEVEL Below or above land surface (ft.) a/	WATER LEVEL Date of measurement	Method of lift b/	Use of water c/	Remarks g/
E-114	0.8	Feb. 16, 1941	C,W	S	
E-115	19.8	May 13, 1941	None	N	
E-116	35.8	Feb. 16, 1941	C,W	S	Dug. Known as "China Bear" well.
E-117	--	--	Flows	--	Water from Rustler formation.
E-118	31.8	Jan. 28, 1947	T,E, 20	Irr	
E-119	63.[illegible]	Oct. 26, 1940	C,W	S	Water from Triassic sandstone.
E-120	75.9	Mar. 5, 1940	C,W	S	Do.
E-121	87.8	Oct. 10, 1940	T,E, 20	P	Water from Triassic sandstone. Pump set at 115 feet. Yield reported 250 gpm. See log.
E-122	--	--	T,E, 20	P	Water from Triassic sandstone. Pump set at 90 feet. Yield reported 300 gpm. See log.
E-123	--	--	T,E, 20	P	Water from Triassic sandstone. Pump set at 120 feet. Yield reported 200 gpm. See log.
E-124	--	--	T,E, 20	P	Water from Triassic sandstone. Pump set at 90 feet. Yield reported 300 gpm. See log.
E-125	--	--	T,E, 20	P	Water from Triassic sandstone. Pump set at 90 feet. Yield reported 300 gpm. See log.
F- 1	39.1	Apr. 9, 1941	C,W	S	Water from Triassic sandstone. See log.
F- 2	--	--	C,W	D,S	Water from Triassic sandstone.
F- 3	--	--	C,W	D,S	Struck water at 37 feet.
F- 4	27.1	July 24, 1940	C,W	S	Water from Triassic sandstone.
G- 1	16.8	May 28, 1940	C,W	S	
G- 2	--	--	C,W	D,S	Water from Cretaceous rocks. Well at Davis Mountain Service Station.
G- 3	200+	Oct. 3, 1939	C,W	S	Water from Cretaceous rocks.
H- 1	--	--	Flows	S	Liege Spring. Flow estimated 10 gpm.
H- 2	--	--	--	--	Oil test.
H- 3	17.3	Sept.21, 1940	C,W	S	Dug.
H- 4	81.6	Sept.20, 1940	C,W	S	Water probably from Cretaceous rocks. Oil test plugged back for water well.
H- 5	83.6	do.	C,W	D,S	Known as "Headquarters well".
H- 6	63.1	do.	C,W	S	

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
H- 7	23 miles southwest	C. M. Caldwell	--	Old	110	5	e/3,053
H- 8	22 miles southwest	W. D. Johnson	--	Old	125	5	e/3,019
H- 9	20½ miles southwest	do.	--	--	66	14	--
H-10	20 miles southwest	do.	--	Old	75	--	--
H-11	19½ miles southwest	R. L. Parker	--	--	68	7	--
H-12	18½ miles southwest	W. R. Britt	--	--	55	5	--
H-13	18 miles southwest	J. F. Rogers	Tom Simmonds	1946	927	10, 8	--
H-14	19 miles southwest	D. H. Mitchell	-- Hopper	1909	860	2½	--
H-15	19½ miles southwest	W. M. Wright	Rita Oil Co.	--	--	--	f/2,961
H-16	18 miles southwest	Toyah High School	-- Ross	1908	813	10	--
H-17	18½ miles southwest	T. & P. R.R. Co.	--	1882	832	6	--
H-18	do.	E. B. Daniels	Owen Wilson	--	700	4	--
H-19	16 miles southwest	W. R. Britt	--	--	--	--	e/2,827
H-20	13 miles southwest	Billie Prewit	--	--	130	6	--
H-21	15 miles southwest	S. M. Prewit	Clyde Simmonds	1940	120	5	e/2,776
H-22	17 miles southwest	do.	--	--	148	6	--
H-23	do.	do.	--	--	122	6	--
H-24	19 miles southwest	do.	--	--	181	6	--
H-25	22 miles southwest	E. S. Martin	--	--	70	8	--
H-26	23 miles southwest	Carrie Eisenwine	--	Old	149	8	--
H-27	28½ miles southwest	W. D. Johnson	--	Old	159	8	--
H-28	31½ miles southwest	do.	--	1927	271	7	--
H-29	33½ miles southwest	C. Splittgarber	--	-- Spring		--	--
H-30	32½ miles southwest	W. D. Johnson	--	Old	300+	7	e/3,396
H-31	do.	C. Splittgarber	--	Old	33	6	--

(Most wells draw water from alluvium)

Well	WATER LEVEL Below or above land surface (ft.) a/	Date of measurement	Method of lift b/	Use of water c/	Remarks g/
H- 7	87.7	Sept. 20, 1940	C,W	S	Known as "Humphrey well".
H- 8	79.5	do.	C,W	S	
H- 9	54.9	May 29, 1940	C,W	S	
H-10	58.1	do.	None	N	Dug.
H-11	22.9	Apr. 16, 1940	C,W	S	
H-12	44.2	do.	C,W	S	
H-13	35.9	Feb. 3, 1947	None	N	Casing: 10 inch to 224 feet; 8 inch from about 224 to 624 feet. See log.
H-14	+44	Dec. 15, 1939	Flows	S	Reported to be leaking through casing into gravel.
H-15	--	--	--	--	Flow of water reported from Rustler formation and Castile formation when drilled. Oil test.
H-16	+44.5	Apr. 28, 1947	Flows	--	
H-17	+73	Dec. 15, 1939	Flows	--	
H-18	--	--	C,W	S	
H-19	--	--	C,W, Flows	S	Water probably from Rustler formation.
H-20	--	--	C,W	S	
H-21	107.7	Sept. 14, 1940	C,W	S	
H-22	136.9	July 31, 1940	C,W	S	
H-23	100.3	do.	C,W	S	
H-24	176.5	do.	C,W	S	
H-25	49.2	May 29, 1940	C,W	N	
H-26	46.6	do.	C,W	N	
H-27	147.1	do.	C,W	S	West well of two wells.
H-28	233.4	Sept. 7, 1940	C,W	D,S	South well of two wells.
H-29	--	--	Flows	S	Flow estimated 15 gpm.
H-30	34.3	Sept. 17, 1940	C,W	S	
H-31	22.9	Nov. 2, 1940	C,W	S	Dug and drilled.

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
H-32	31½ miles southwest	W. E. Gould	-- Norfleet	1930	58	6	e/3,135
H-33	do.	do.	do.	1930	60	6	e/3,135
H-34 %	31 miles southwest	O. M. Hodges	--	Old	40	10	--
H-35	24 miles southwest	W. D. Johnson	--	--	43	6	e/3,026
H-36	do.	J. L. Moore	--	Old	158	7	e/2,952
H-37	25 miles southwest	do.	--	Old	158	6	e/2,959
H-38	26½ miles southwest	Sol Mayer	--	1922	165	10	e/2,975
H-39	27 miles southwest	do.	--	1922	184	5	e/2,995
H-40	27½ miles southwest	Saragosa School	--	Old	160	--	e/2,996
H-41	29 miles southwest	R. Q. Salters	W. W. Hollis	1940	84	8	e/3,072
H-42	29½ miles southwest	Sol Mayer	-- Hughes	1940	212	6	e/3,050
I- 1	11½ miles southwest	Ord Gary	Tom Simmonds	1942	187	14, 11	--
I- 2	do.	do.	do.	1946	203	20, 14	--
I- 3	10 miles southwest	Billie Prewit	F. McDaniels	1938	78	4	e/2,682
I- 4	9 miles southwest	Elmer Wadley	--	Old	84	--	e/2,666
I- 5	8 miles south	Port Daggett	--	--	--	6	--
I- 6	8 miles southeast	do.	--	Old	--	5	--
I- 7	9 miles southeast	Carrie Eisenwine	--	Old	149	8	--
I- 8	11½ miles southeast	Port Daggett	--	--	60	6	e/2,604
I- 9	13½ miles southeast	do.	Forest Development Co.	1939	910	4	e/2,648
I-10	11½ miles southeast	do.	--	1913	180	24, 9-5/8	e/2,622
I-11	10 miles southeast	do.	--	Old	--	9	e/2,587
I-12	12 miles south	S M. Prewit	--	Old	1,200	10	e/2,620
I-13	10 miles south	Billie Prewit	Forest Development Co.	1939	1,360	--	f/2,603
I-14	9 miles south	S. M. Prewit	Earl Fisher	1940	163	6	e/2,602

(Most wells draw water from alluvium)

Well	WATER LEVEL Below or above land surface (ft.) a/	WATER LEVEL Date of measurement	Method of lift b/	Use of water c/	Remarks g/
H-32	33.5	Sept.11, 1940	C,E, 2	P	Balmorhea public water supply. See log.
H-33	39.2	do.	C,E, 2	P	Balmorhea public water supply. Yield estimated 10 gpm Sept. 11, 1940.
H-34	32.1	Sept. 7, 1940	C,W	D,S	
H-35	17.9	Sept.25, 1940	C,W	S	
H-36	151.2	July 30, 1940	C,W	S	
H-37	138.0	Sept.25, 1940	C,W	N	
H-38	134.6	May 15, 1941	C,W	D,S	
H-39	155.7	July 30, 1940	C,W	D	See log.
H-40	137.6	Aug. 19, 1940	C,W	P	
H-41	---	--	None	N	Caved and abandoned. See log.
H-42	192.7	Sept.25, 1940	C,W	D,S	See log.
I- 1	98.3	Nov. 7, 1946	T,O, 65	Irr	Pump set at 130 feet. Yield measured 1,386 gpm Apr. 16, 1947.
I- 2	98.3	do.	T,O, 65	Irr	Casing: 20 inch to 165 feet; 14 inch from about 165 to 203 feet; slotted from 100 to 203 feet. Pump set at 180 feet. Drawdown 27.2 feet while pumping 944 gpm Apr. 17, 1947.
I- 3	62.2	June 3, 1942	C,W	S	
I- 4	42.9	Sept.12, 1940	C,W	S	
I- 5	--	--	Flows	S	
I- 6	--	--	Flows	S	
I- 7	46.6	May 29, 1940	C,W	N	
I- 8	37.9	Apr. 2, 1941	C,W,G, --	S	Water from Triassic sandstone. Known as "X well".
I- 9	14.5	May 13, 1941	None	N	Water from Rustler formation. Core test.
I-10	30.8	Jan. 24, 1947	None	N	Casing: 24 inch to 60 feet; 9-5/8 inch from 60 to 180 feet. Formerly used for irrigation.
I-11	--	--	Flows	S	Flow estimated 10 gpm in 1939.
I-12	8.4	Nov. 22, 1940	C,W	S	
I-13	--	--	Flows	S	Water from Rustler formation. Core test now used as water well. See log.
I-14	25.9	Mar. 3, 1942	C,W	S	See log.

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
I-15	9½ miles south	S. M. Prewit	--	1900	74	8	e/2,610
I-16	10½ miles south	do.	--	1939	125	5	--
I-17	12 miles south	do.	Earl Fisher	1940	71	6	--
I-18	11 miles south	do.	--	1910	125	7	e/2,646
I-19	11½ miles southwest	J. W. Pratt	Lang Buchanan	1945	120	13	--
I-20	do.	do.	do.	1942	193	13	--
I-21	12 miles southwest	Kyle Watts	John Wendt	1918	195	15, 11	--
I-22	12½ miles southwest	O. T. Caldwell	J. H. Hardaway	1947	150	16	--
I-23	13 miles southwest	O. D. Johnson	-- Grogan	1918	136	18, 12, 9-5/8	--
I-24	do.	do.	Tom Simmonds	1942	135	20	--
I-25	13½ miles southwest	do.	W. J. King	1915	120	18	--
I-26	13 miles southwest	J. H. Watts	J. H. Hardaway	1945	153	13	--
I-27	13½ miles southwest	Pat B. Watts	Tom Simmonds	1940	137	15	e/2,674
I-28	do.	S. M. Watts	-- Coleman	1946	148	12½	--
I-29	14½ miles southwest	E. H. Hannon and A. Gardner	J. H. Hardaway	1947	140	16	--
I-30	14 miles southwest	J. H. Hardaway	do.	1947	224	10, 8	--

(Most wells draw water from alluvium)

Well	WATER LEVEL: Below or above land surface (ft.) a/	WATER LEVEL: Date of measurement	Method of lift b/	Use of water c/	Remarks g/
I-15	15.0	Apr. 2, 1941	C,W	S	
I-16	1.2	May 20, 1940	C,W	S	See log.
I-17	--	--	C,W	S	Do.
I-18	7.1	Mar. 3, 1942	C,W	S	Dug and drilled.
I-19	--	--	T,G, 55	Irr	Pump set at 54 feet. Yield measured 815 gpm Apr. 7, 1947.
I-20	12.6	Nov. 8, 1946	T,G, 55	Irr	Pump set at 50 feet. Yield measured 896 gpm Apr. 17, 1947. See log.
I-21	13.9	Jan. 27, 1947	T,G, 40	Irr	Casing: 15 inch to 20 feet; 11 inch from about 20 to 195 feet. Pump set at 22 feet. Drawdown 10.4 feet while pumping 1,323 gpm Apr. 17, 1947. See log.
I-22	20.9	Apr. 25, 1947	T,G, 55	Irr	Casing: 16 inch to 150 feet, slotted from 73 to 147 feet. Pump set at 60 feet. Drawdown 24.0 feet while pumping 1,890 gpm Apr. 25, 1947. See log.
I-23	15.6	Nov. 8, 1946	T,O, 37½	Irr	Casing: 18 inch to 28 feet; 12 inch from about 28 to 98 feet; 9-5/8 inch from about 98 to 136 feet. Pump set at 35 feet. Drawdown 21.5 feet after 30 minutes pumping at 1,660 gpm Apr. 19, 1947.
I-24	14.6	Nov. 12, 1946	T,G, 45	Irr	Casing: 20 inch to 136 feet, slotted from 40 to 136 feet. Pump set at 40 feet. Drawdown 21.2 feet after about 1 hour pumping at 1,642 gpm Apr. 19, 1947. See log.
I-25	16.2	Jan. 27, 1947	T,G, 165	Irr	Dug and drilled. Casing: 18 inch from 17 to 120 feet. Pump set at 70 feet. Yield measured 1,314 gpm Apr. 25, 1947.
I-26	17.9	Nov. 6, 1946	T,G, 55	Irr	Casing: 13 inch to 153 feet, slotted from 20 to 30 and 70 to 148 feet. Pump set at 50 feet. Yield measured 1,426 gpm Apr. 17, 1947. See log.
I-27	19.5	Nov. 8, 1946	T,G, 55	Irr	Casing: 15 inch to 137 feet, slotted from 59 to 77 and 97 to 137 feet. Drawdown 37.8 feet while pumping 1,161 gpm Apr. 17, 1947. See log.
I-28	20.3	Nov. 12, 1946	T,G, 55	Irr	Casing: 12½ inch to 148 feet, slotted from 60 to 75 and 100 to 143 feet. Pump set at 60 feet. See log.
I-29	28.1	Jan. 28, 1947	T,G, 50	Irr	Casing: 16 inch to 140 feet, slotted from 60 to 72 and 80 to 140 feet. Pump set at 60 feet. Drawdown 39.1 feet after 5 hours pumping at 805 gpm during development Apr. 25, 1947. See log.
I-30	29.0	Apr. 25, 1947	T,G, 55	Irr	Casing: 10 inch to 130 feet; 8 inch from about 130 to 224 feet; slotted from 80 to 130 and 184 to 224 feet. Pump set at 70 feet.

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
I-31	14 miles southwest	J. H. Hardaway	J. H. Hardaway	1946	142	12	--
I-32	13½ miles southwest	-- Barnowsky	Tom Simmonds	1940	217	6	d/2,685.35
I-33	14 miles southwest	C. O. Finley	--	Old	82	--	d/2,729.11
I-34	15½ miles southwest	S. M. Prewit	Clyde Simmonds	1940	116	6	e/2,730
I-35	17 miles southwest	do.	--	--	35	8	--
I-36	18 miles southwest	Carrie Eisenwine	--	Old	100	8	--
I-37	19½ miles southwest	J. P. Espy	-- Jones	Old	212	24, 9	--
I-38	20 miles southwest	do.	Tom Simmonds	1943	212	18, 14	--
I-39	20½ miles southwest	do.	Espy & Hannon	1943	214	15, 12	--
I-40	do.	do.	do.	1944	218	16	--
I-41	21 miles southwest	do.	J. H. Hardaway	1946	212	12	--
I-42	21½ miles southwest	J. L. Moore	--	1910	187	24	--
I-43	do.	R. L. Verhalen	--	Old	220	24	--
I-44	19 miles southwest	F. M. Reeves & Sons	Tom Simmonds	1942	200	16	--
I-45	17½ miles southwest	A. R. Eppenauer No. 4	Lang Buchanan	1940	218	14	--
I-46	do.	A. R. Eppenauer No. 2	do.	Old	210	16	--
I-47	17 miles southwest	A. R. Eppenauer No. 3	A. R. Eppenauer	1936	500	15½, 10	d/2,712.67
I-48	do.	A. R. Eppenauer No. 1	Lang Buchanan	Old	210	12½	d/2,706.61
I-49	16½ miles southwest	Mrs. H. T. Collier	Tom Simmonds	1938	80	--	--
I-50	14 miles southwest	Billie Prewit	do.	1939	400	12½, 8, 6	e/2,666
I-51	15 miles south	Carrie Eisenwine	--	1930	60	10	e/2,620

(Most wells draw water from alluvium)

Well	WATER LEVEL: Below or above land surface (ft.) a/	WATER LEVEL: Date of measurement	Method of lift b/	Use of water c/	Remarks g/
I-31	28.6	Jan. 27, 1947	T,G, 55	Irr	Casing: 12 inch to 142 feet, slotted from 72 to 142 feet. Pump set at 80 feet. See log.
I-32	48.7	May 14, 1941	C,W	S	See log.
I-33	66.6	do.	C,W	D,S	
I-34	46.4	Sept. 14, 1940	C,W	S	
I-35	28.8	July 31, 1940	C,W	S	
I-36	28.8	May 15, 1941	C,W	S	
I-37	45.4	Nov. 13, 1946	T,E, 40	Irr	Casing: 24 inch to 40 feet; 9 inch from about 40 to 212 feet. Pump set at 70 feet. Yield estimated 500 gpm in Apr. 1947.
I-38	72.8	Jan. 27, 1947	T,E, 60	Irr	Casing: 18 inch to 176 feet; 14 inch from about 176 to 204 feet. Pump set at 150 feet. Yield computed 1,900 gpm in Apr. 1947. See log.
I-39	--	--	T,E, 60	Irr	Casing: 15 inch to 15 feet; 12 inch from about 154 to 214 feet. Pump set at 130 feet. Yield estimated 900 gpm in Apr. 1947.
I-40	--	--	T,E, 75	Irr	Pump set at 150 feet. Pumping level 87.5 feet below land surface while pumping about 1,200 gpm in Apr. 1947.
I-41	--	--	T,E, 60	Irr	Pump set at 150 feet. Pumping level 60.7 feet below land surface while pumping about 850 gpm in Apr. 1947.
I-42	61.5	Oct. 2, 1940	None	N	Formerly used for irrigation.
I-43	19.1	Mar. 2, 1942	None	N	Do.
I-44	--	--	T,G, 100	Ind	Casing: 16 inch to 160 feet. Pump set at 100 feet. Water used for washing gravel.
I-45	--	--	T,O, 40	Irr	Pump set at 70 feet.
I-46	19.9	Jan. 27, 1947	T,O, 40	Irr	Pump set at 52 feet. Drawdown 34.1 feet while pumping 1,075 gpm Apr. 18, 1947.
I-47	--	--	T,O, 40	Irr	Casing: 15½ inch to 120 feet; 13 inch from about 120 to 500 feet. Pump set at 98 feet. Yield measured 1,100 gpm Apr. 18, 1947. See log.
I-48	16.3	Feb. 12, 1941	T,O, 40	Irr	Pump set at 50 feet. Pumping level 38.4 feet below land surface while pumping 1,135 gpm Apr. 18, 1947.
I-49	15.3	Nov. 12, 1946	T,G, 62	Irr	Pump set at 60 feet. Yield measured 1,150 gpm Apr. 18, 1947.
I-50	9.2	do.	T,O, 75	Irr	Casing: 12½-inch to 200 feet; 8 inch from about 200 to 300 feet; 6 inch from about 300 to 400 feet. Pump set at 100 feet. See log.
I-51	17.0	May 16, 1941	C,W	D,S	

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
I-52	17½ miles south	A. R. Eppenauer No. 5	J. H. Hardaway	1946	319	14	--
I-53	14½ miles southeast	Port Daggett	--	Old	79	--	--
I-54	16 miles southeast	do.	--	--	83	8	--
I-55	17 miles southeast	H. H. Hokey	L. F. Buchanan	1939	420	--	--
I-56	21 miles southeast	Port Daggett	--	--	153	5	--
I-57	25 miles southeast	H. T. Collier	--	Old	140	10	--
I-58	23½ miles southeast	do.	--	Old	106	--	--
I-59	22 miles southeast	Port Daggett	--	--	87	5	--
I-60	21½ miles southeast	Edgar Martin	R. P. Morrison	1937	1,405	12	--
I-61	do.	do.	do.	1939	460	12	--
I-62	do.	do.	do.	1936	1,400	8	--
I-63	do.	do.	Southern Crude Oil Co.	1931	5,216	12	f/2,784
I-64	21 miles southeast	do.	--	1929	1,525	12	f/2,784
I-65	do.	do.	Lee Bullock	1946	110	10	--
I-66	do.	do.	--	--	225	12	--
I-67	19½ miles southeast	do.	--	--	110	6	--
I-68	17½ miles southeast	North Texas Farms	--	Old	60	--	--
I-69	21 miles south	Edgar Martin	--	1939	200	6	--
I-70	23 miles south	H. T. Collier	--	--	110	5	--
I-71	22½ miles south	do.	--	Old	107	8	--
I-72	20 miles south	do.	--	--	39	6	--
I-73	22 miles south	do.	--	--	69	8	--
I-74	23 miles south	Rudolph Hoefs	--	Old	100	--	--
I-75	21 miles south	do.	--	Old	108	--	--

(Most wells draw water from alluvium)

Well	WATER LEVEL Below or above land surface (ft.) a/	Date of measurement	Method of lift b/	Use of water c/	Remarks g/
I-52	16.9	Nov. 13, 1946	--	Irr	Pump not installed in Apr. 1947. See log.
I-53	59.0	Mar. 1, 1941	C,W	S	Water from Cretaceous rocks.
I-54	59.1	Mar. 28, 1942	C,W	S	Water from Triassic sandstone. Known as "Draw well".
I-55	--	--	--	--	Water from Triassic sandstone. Oil test. Water samples from 158 feet. See log.
I-56	91.2	Mar. 1, 1941	C,W	S	Known as "Hollowbeak well".
I-57	115.8	Aug. 21, 1940	C,W	S	
I-58	97.3	Mar. 1, 1941	C,W	S	
I-59	71.7	do.	C,W,G,--	S	
I-60	--	--	Flows	S	Water from Rustler formation. Flow estimated 10 gpm in 1947.
I-61	56.1	Jan. 24, 1947	None	N	Water probably from Cretaceous rocks. Casing: 12 inch to 425 feet. Formerly used for irrigation.
I-62	--	--	Flows	Irr	Water from Rustler formation. Casing: 8 inch to 1,260 feet, cemented. Flow measured 234 gpm Apr. 19, 1947. See log.
I-63	--	--	Flows	S	Water from Rustler formation. Oil test now used as water well.
I-64	--	--	Flows, T,G,--	Irr	Water from Rustler formation. Pump set at 100 feet. Honeycombed limestone reported from 1,260 to 1,360 feet.
I-65	46.3	Feb. 11, 1947	None	N	Not cased. Owner may ream hole and use for irrigation.
I-66	49.0	Jan. 24, 1947	None	N	Casing: 12 inch to 15 feet. Owner may ream hole and use for irrigation.
I-67	58.9	Mar. 1, 1941	C,W	S	
I-68	43.6	do.	C,W	S	Water from Cretaceous rocks.
I-69	67.9	Aug. 21, 1940	C,W	S	
I-70	88.1	Aug. 20, 1940	C,W	S	
I-71	86.4	do.	C,W	S	
I-72	26.4	do.	C,W	S	
I-73	60.5	do.	C,W	S	
I-74	71.8	do.	C,W	S	
I-75	47.5	do.	C,W	S	

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
I-76	24 miles south	Davis and Weinacht	--	--	67	5	--
I-77	21½ miles south	J. Youngblood	--	--	10	4	--
I-78	do.	W. T. Church	--	--	Spring	--	--
I-79	22 miles south	do.	--	--	--	6	--
I-80	23½ miles south	John Bush	--	Old	50	60	--
I-81	26½ miles southwest	T. & P. R.R. Co.	Jake Portervant	--	200	14	e/2,906
I-82	28 miles southwest	Wynn Hamilton	E. D. Eaton	1940	155	5	e/2,978
I-83	28½ miles southwest	Sol Mayer	--	1922	142	5	e/2,968
I-84	do.	C. V. Cox	L. W. Pulley	1940	108	6	e/2,952
I-85	30 miles southwest	Rudolph Hoefs	Jack K. Smith	1946	515	7	--
I-86	30½ miles southwest	do.	do.	1946	200	18	--
I-87	27½ miles south	Davis and Weinacht	--	1940	119	6	--
I-88	29 miles south	do.	--	Old	141	6	--
I-89	26½ miles south	do.	--	--	128	4	--
I-90	29½ miles south	Rudolph Hoefs	L. F. Buchanan	1940	310	6	--
I-91	27½ miles south	Balmorhea Livestock Co.	--	Old	181	6	--
I-92	28 miles south	Popham Land and Cattle Co.	--	--	187	--	--
I-93	26 miles south	Balmorhea Livestock Co.	--	--	140	6	--
I-94	27 miles southeast	C. E. Criswell	Ben Bickley	1938	160	6	--
J- 1	14½ miles southeast	H. F. Anthony	--	Old	86	4	e/2,652
J- 2	18½ miles southeast	S. E. Ligon	--	--	101	5	--
J- 3	22 miles southeast	J. C. Trees	--	--	1,400	14	--
J- 4	22½ miles southeast	Anthony & Tubbs	L. F. Buchanan	1940	86	6	e/2,579
J- 5	21½ miles southeast	H. F. Anthony	--	Old	120	10	e/2,600
J- 6	23½ miles southeast	Eddins Estate	--	--	98	5	e/2,604

(Most wells draw water from alluvium)

Well	WATER LEVEL: Below or above land surface (ft.) a/	WATER LEVEL: Date of measurement	Method of lift b/	Use of water c/	Remarks g/
I-76	56.0	Apr. 18, 1940	C,W	S	
I-77	--	--	Flows	--	Water probably from Rustler formation. Flow of "sulphur water" estimated 25 gpm in 1940.
I-78	--	--	Flows	--	Water probably from Rustler formation. "Sulphur" water spring. Flow estimated 30 gpm in 1940.
I-79	--	--	Flows	--	Water probably from Rustler formation.
I-80	21.9	May 16, 1941	None	N	Dug. Formerly used for irrigation.
I-81	75.8	Dec. 5, 1941	C,W	S	
I-82	130.6	Aug. 19, 1940	J,E, $1\frac{1}{2}$	D	See log.
I-83	121.9	May 15, 1941	C,W	D,S	
I-84	88.3	May 17, 1941	C,W	D,S	See log.
I-85	--	--	C,W	D,S	Casing: 7 inch to 515 feet, slotted from 490 to 515 feet. Drawdown reported 36 feet after 12 hours pumping at 2,000 gpm in Jan. 1947. See log.
I-86	106.8	Jan. 27, 1947	--	Irr	Casing: 18 inch to 200 feet, slotted from 119 to 200 feet. Pump not installed in Apr. 1947.
I-87	71.6	May 17, 1941	C,W	S	Water from Cretaceous rocks. See log.
I-88	108.6	July 30, 1940	C,W	S	
I-89	100.7	May 17, 1941	C,W	S	
I-90	--	--	C,W	D,S	Water from Cretaceous rocks. See log.
I-91	159.1	Aug. 20, 1940	C,W	S	North well of two wells.
I-92	149.0	do.	C,W	S	
I-93	29.1	do.	None	N	Fifty feet south of windmill.
I-94	113.0	Sept. 5, 1940	C,W	S	
J- 1	70.8	May 5, 1940	C,W	S	Water from Triassic sandstone.
J- 2	76.6	July 23, 1940	C,W	S	Do.
J- 3	--	--	Flows	S	Water from Rustler formation. Flow reported 25 to 50 gpm.
J- 4	64.1	Oct. 5, 1940	C,W	S	West well of two wells. See log.
J- 5	111.6	July 24, 1940	C,W	S	
J- 6	66.4	Mar. 7, 1940	C,W	S	

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
J- 7	23 miles southeast	Eddins Estate	--	--	96	8	e/2,627
J- 8	21 miles southeast	C. M. Hall	--	Old	137	--	e/2,676
J- 9	20 miles southeast	A. A. Eddins	--	--	154	3	--
J-10	19½ miles southeast	do.	D. R. Thompson	--	5,664	--	f/2,721
J-11	18½ miles southeast	Eddins Estate	--	--	145	6	e/2,689
J-12	17 miles southeast	A. A. Eddins	--	Old	124	4	e/2,665
J-13	15 miles southeast	Port Daggett	--	--	151	4	e/2,662
J-14	19 miles southeast	do.	--	--	86	8	--
J-15	19½ miles southeast	E. G. Reynolds	Grisham-Hunter Oil Co.	--	5,227	8	f/2,756
J-16	21 miles southeast	J. R. Wilson	--	--	81	8	--
J-17	do.	Port Daggett	--	Old	98	7	--
J-18	23 miles southeast	W. W. Courtney	--	--	102	6	--
J-19	24 miles southeast	do.	--	--	119	4	--
J-20	22½ miles southeast	J. R. Wilson	--	1918	130	6	--
J-21	23 miles southeast	E. G. Bowles	--	Old	117	--	--
J-22	24 miles southeast	do.	R. R. Penn	--	5,615	--	f/2,793
J-23	25 miles southeast	C. E. Criswell	--	Old	130	--	--
K- 1	37½ miles southwest	--	--	--	Spring	--	--
K- 2	35 miles southwest	--	--	--	Spring	--	--
K- 3	do.	--	--	--	Spring	--	--
K- 4	32½ miles southwest	--	--	--	Spring	--	--
K- 5	31 miles southwest	--	--	--	Spring	--	--
K- 6	33 miles southwest	Hal Sprague	B. A. Shupe	1940	54	7	--
K- 7	do.	C. E. Payne	Sidney Hughes	1940	40	6	--
K- 8	33½ miles southwest	J. B. Coffey	E. T. Watkins	1940	34	7	--

(Most wells draw water from alluvium)

Well	WATER LEVEL Below or above land surface (ft.) a/	Date of measurement	Method of lift b/	Use of water c/	Remarks g/
J- 7	70.8	Mar. 7, 1940	C,W	S	
J- 8	120.6	May 31, 1940	C,W	S	
J- 9	131.1	May 13, 1941	None	N	Water from Triassic sandstone.
J-10	--	--	--	--	Water from Rustler formation. Oil test. Flow reported 2,500 bailers of water per hour when drilled.
J-11	109.7	May 13, 1941	C,W	S	
J-12	96.3	Aug. 29, 1942	None	N	Water from Triassic sandstone.
J-13	95.6	Sept.19, 1940	C,W	S	North well of two wells.
J-14	74.9	May 13, 1941	C,W	S	South well of two wells.
J-15	--	--	Flows	S	Water from Rustler formation.
J-16	71.1	Aug 29, 1942	None	N	
J-17	84.9	May 13, 1941	C,W	S	
J-18	95.8	Mar. 1, 1940	C,W	S	
J-19	90.8	Sept 5, 1940	C,W	S	
J-20	88+	Sept. 4, 1940	C,W	S	
J-21	105.0	do.	C,W	D,S	
J-22	--	--	Flows	S	Water from Rustler formation. Oil test completed as water well.
J-23	116.9	Sept. 5, 1940	None	N	
K- 1	--	--	Flows	Irr	Phantom Lake Spring. In Jeff Davis County.
K- 2	--	--	Flows	Irr	Giffin Springs.
K- 3	--	--	Flows	Irr	San Solomon Springs.
K- 4	--	--	Flows	Irr	Saragosa Springs.
K- 5	--	--	Flows	Irr	Sandia Springs.
K- 6	9.6	Sept.11, 1940	C,W	D,S	See log.
K- 7	--	--	C,W	D,S	Do.
K- 8	14.4	Nov. 2, 1940	C,W	D,S	Do.

Records of wells and springs in Reeves County -- Continued

Well	Distance from Pecos	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Altitude of land surface (ft.)
K- 9	35 miles southwest	Joe Odell	--	1939	26	--	--
K-10	37 miles southwest	C. Weinacht	--	--	Spring	--	--
K-11	38 miles southwest	Popham Land and Cattle Co.	Ohio Oil Co.	1939	5,985	--	--
L- 1	30 miles southwest	do.	Forest Development Co.	1938	1,434	--	f/2,967
L- 2	28½ miles south	Rudolph Hoefs	L. F. Buchanan	1940	200	6	--

a/ Figures preceded by a plus (+) sign represent water levels above land surface. All others are below land surface.

b/ Method of lift: C, cylinder; E, electric; G, gasoline or butane; O, oil or diesel; W, windmill; Cf, centrifugal; T, turbine; J, jet; H, hand. Number indicates horsepower.

(Most wells draw water from alluvium)

Well	WATER LEVEL: Below or above land surface (ft.) a/	WATER LEVEL: Date of measurement	Method of lift b/	Use of water c/	Remarks g/
K- 9	23.8	Oct. 4, 1940	None	N	
K-10	--	--	Flows	--	Water from Tertiary volcanic rocks. Weinacht Spring.
K-11	--	--	--	--	Flowed sulphur water from Delaware Mountain group when drilled. Oil test.
L- 1	--	--	--	--	Core test showed 570 feet of gravel from volcanic rocks.
L- 2	--	--	C,W	S	Water from Cretaceous rocks. See log.

c/ Use of water: P, public supply; Ind, industrial; Irr, irrigation; D, domestic; S, stock; N, not used.
d/ Altitude by instrumental leveling.
e/ Altitude by aneroid barometer.
f/ Altitude from oil company well log.
g/ GPM abbreviation for gallons per minute.

Table of drillers' logs, Reeves County, Texas 1/

	Thickness (feet)	Depth (feet)
Well A-1, partial log		
B. T. Biggs, 37 miles northwest of Pecos.		
Older alluvium:		
Gypsum	40	40
Yellow clay	20	60
Blue shale	310	370
Gray shale	25	395
Gray limestone	10	405
Gypsum	30	435
Blue shale	5	440
Gray limestone and gypsum	5	445
Anhydrite	15	460
Red shale	5	465
Sand and gravel, water	5	470
Permo-Trissic "Red beds":		
Red shale	5	475
Red beds	15	490
Red rock	110	600
Anhydrite	20	620
Red rock	10	630
Rustler and Castile formations:		
Anhydrite	85	715
Gray limestone	30	745
Anhydrite	15	760
Blue shale	10	770
Red shale	20	790
Anhydrite	20	810
Red shale	10	820
Anhydrite	45	865
Anhydrite and red shale	15	880
Anhydrite	30	910
Blue shale	80	990
Anhydrite	13	1003
Red rock	7	1010
Anhydrite	5	1015
Blue shale	15	1030
Anhydrite	510	1540
Show of oil from 1,500-1,515 feet		
Anhydrite and limestone	20	1560
Anhydrite	60	1620
Brown limestone	15	1635
Anhydrite	30	1665
Limestone	10	1675
Anhydrite	50	1725
White limestone	15	1740
TOTAL DEPTH		3006

	Thickness (feet)	Depth (feet)
Well B-4		
W. A. Tunstill, 35 miles northwest of Pecos.		
Rustler formation:		
Limestone, sand and gypsum	110	110
Gypsum, limestone and red shale	70	180
Sandstone and gypsum	60	240
Gypsum and limestone	100	340
Limestone	80	420
Gypsum, sandstone, limestone and red shale	180	600
Castile formation:		
Salt, anhydrite and limestone	2650	3250
Delaware formation:		
Black shaly limestone	30	3280
Sandstone	30	3310
Well B-5, partial log		
T. & P. Lands Trust, 34 miles northwest of Pecos.		
Alluvium:		
Sand	25	25
Sand and "shells"	115	140
Sand and gravel	60	200
Rustler formation:		
White limestone	10	210
Brown limestone and anhydrite	90	300
Brown sandstone and anhydrite	85	385
Red beds	20	405
Red beds and anhydrite	58	463
Castile formation:		
Limestone and salt	67	530
Anhydrite	180	710
Anhydrite and salt	300	1010
Red beds	25	1035
Salt	75	1110
Anhydrite	110	1220
Shale	38	1258
Salt	14	1272
Red beds	28	1300
Red beds and anhydrite	30	1330
Salt	30	1360

(Continued on next page)

1/ The geologic names used in the logs are those used in part by the drillers and have not been checked by the Committee on Geologic names of the Geological Survey.

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well B-5, partial log--continued		
Castile formation-continued:		
Red bed and anhydrite	12	1372
Blue shale and anhydrite	10	1382
Anhydrite	213	1595
Salt	150	1745
Anhydrite	97	1842
Salt	222	2064
Anhydrite	36	2100
Limestone and anhydrite	132	2232
Gray limestone	8	2240
Delaware formation:		
Black limestone	15	2255
Sandstone and limestone containing pyrite	37	2292
TOTAL DEPTH		3590

Well B-7

T. & P. Lands Trust, 36 miles northwest of Pecos.

	Thickness (feet)	Depth (feet)
Older alluvium:		
Caliche	12	12
Sand	16	28
Hard sand	19	47
Sand	93	140
Red sandy shale	25	165
Sand, water	60	225
Sand	35	260
Blue sandy shale	60	320
Sand, water	8	328
Gumbo	7	335
Brown shale	4	339
Blue shale	3	342
Gravel	6	348
Blue shale	2	350
Sand, water	3	353
Rustler formation or Permo-Triassic "Red beds":		
Anhydrite	47	400
Red shale	5	405
Anhydrite	1	406
Red rock	14	420
Anhydrite	90	510
Blue shale	5	515
Red shale	30	545
Anhydrite	5	550
Red rock	17	567
Well B-7--continued		
Rustler formation:		
Anhydrite	23	590
Sandy shale	10	600
Red shale and gypsum	6	606
Red rock	7	613
Anhydrite	17	630
Gray limestone, water	20	650
Anhydrite	7	657
Blue shale	5	662
Anhydrite	28	690
Red shale	10	700
Anhydrite	7	707
Castile formation:		
Salt	88	795
Limestone	5	800
Brown shale	10	810
Hard limestone	5	815
Hard sandy limestone, water	10	825
Anhydrite	35	860
Salt	170	1030
Anhydrite	15	1045
Salt	105	1150
Blue shale	25	1175
Hard sandy limestone	10	1185
Shale	15	1200
Gray limestone	15	1215
Brown limestone, water	25	1240
Limestone	90	1330
Anhydrite	105	1435
Blue shale	60	1495
Anhydrite	110	1605
Sandy limestone	10	1615
Sandy anhydrite, show of gas	30	1645
Anhydrite	315	1960
Black carbonaceous shale	60	2020
Anhydrite	175	2195
Hard sand, water	65	2260
Anhydrite	80	2340
Sandy limestone	20	2360
Anhydrite	288	2648
Salt	122	2770
Gray limestone	35	2805
Hard gray sandstone	10	2815
Gray limestone	132	2947
Delaware formation:		
Black limestone	26	2973
Sandy, calcareous shale, show of oil	12	2985

(Continued on next page)

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well B-7--continued		
Delaware formation--continued:		
Dark sandy shale	30	3015
Black limestone, show of oil	5	3020
Gray sand	50	3070
Blue sandy shale	25	3095
Hard sand	15	3110
Sandy shale, water	5	3115
Black limestone	24	3139
"Shells" and sandy shale	8	3147
Hard gray sand, show of gas	28	3175
Sandy shale and "shells"	25	3200
Sand, show of oil	13	3213
Blue sandy shale	7	3220
Gray sand, show of oil	15	3235
Sand and shale	25	3260
Black limestone	8	3268
Sand	11	3279
White calcareous sand, water	21	3300
Gray sandy limestone	15	3315
Sand, water	7	3322
Calcareous gray sandstone	21	3343
Sand, water	7	3350
Well B-11		
Herman Linley, 27 miles northwest of Pecos.		
Soil	12	12
Soft yellow sandstone	30	42
Yellow sand	48	90
White and yellow clay	60	150
Well D-14, partial log		
Artie Baker, 22½ miles west of Pecos.		
Younger alluvium:		
Buff gypsiferous silt	30	30
Water at 26 feet		
Cretaceous:		
Gray limestone	52	82
Gray marl	128	210
Heaving sand, water	10	220
Gray limestone	10	230
Well D-14, partial log--continued		
Cretaceous--continued:		
Heaving sand, water	35	265
Limestone	35	300
Fine-grained quartz sand	10	310
Heaving sand, water	50	360
Limestone	25	385
Sand, water	18	403
Buff to gray sandy limestone with pyrite crystals	7	410
Bright red fine-grained sand	20	430
TOTAL DEPTH		500
Well D-25		
R. L. Parker, 24 miles southwest of Pecos.		
Younger alluvium:		
Caliche	18	18
Cretaceous:		
Shaly blue limestone	7	25
Sandy shale	25	50
Limestone	10	60
Shale	15	75
Limestone	5	80
Sandy limestone	5	85
Limestone	3	88
Well D-28		
C. V. T. Montgomery, 17 miles southwest of Pecos.		
Younger alluvium:		
Gravel and shale	60	60
Older alluvium (and Cretaceous?):		
Limestone and shale	70	130
Gray and green shale	120	250
Shale, limestone and gypsum	275	525
Limestone	55	580
Sand, flowing sulphur water	10	590
Limestone	10	600
Sand, flowing sulphur water	8	608

(Continued on next page)

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well D-28--continued		
Older alluvium (and Cretaceous?)--continued:		
Limestone and anhydrite	77	685
Sand, flowing sulphur water	35	720
Limestone, shale and sand	70	790
Permo-Triassic "Red Beds":		
Red shale and "shells"	275	1065
Red shale and limestone	40	1105
Red shale	115	1220
Rustler and Castile formations:		
Anhydrite and shale	135	1355
Dolomite and anhydrite	510	1865
Limestone and anhydrite	645	2510
Gray shale, anhydrite and limestone	925	3435
Anhydrite and limestone	420	3855
Delaware formation:		
Black limestone	60	3915
Sandstone	150	4065

	Thickness (feet)	Depth (feet)
Well D-29		
W. H. Groves, 14½ miles southwest of Pecos.		
Older alluvium:		
Caliche	26	26
Gray shale	65	91
Sandy shale	25	116
Blue shale	64	180
Sandy shale, water	60	240
Blue shale	35	275
Gray sandy shale	35	310
Cretaceous:		
Brown limestone	124	434
Blue shale	216	650
Sand, water	3	653
Dark shale	25	678
Broken sand	8	686
Blue and white shale	38	724
Brown limestone	4	728
Brown sandstone	15	743
Brown limestone	2	745
Permo-Triassic "Red Beds":		
Red rock	115	860
Red shale	20	880
Red rock	220	1100
Well D-29--continued		
Rustler formation:		
Anhydrite and limestone	120	1220
Blue shale	5	1225
Anhydrite	50	1275
Blue shale	5	1280
Sand, flowing sulphur water	40	1320
Brown sandy limestone	18	1338
Limestone	27	1365
Anhydrite	55	1420
Sandy shale, sulphur water	15	1435
Sand, sulphur water	12	1447
Anhydrite	13	1460
Blue shale	40	1500
Sandy shale	10	1510
Red rock	2	1512
Anhydrite	63	1575
Blue shale	25	1600
Anhydrite	190	1790
Black shale	5	1795
Brown limestone	5	1800
Hard gray limestone	30	1830
Anhydrite	65	1895
Gray limestone	85	1980
Anhydrite	110	2090
Limestone	150	2240
Red anhydrite	35	2275
Limestone	30	2305
Limestone and sandst ne	20	2325
Castile formation:		
Anhydrite with thin limestone lenses	240	2565
Limestone	20	2585
Anhydrite	40	2625
Red shale	7	2632
Red anhydrite	8	2640
Gray limestone	95	2735
Brown shale	20	2755
Anhydrite	25	2780
Gray limestone	50	2830
Anhydrite and blue shale	15	2845
Gray limestone	45	2890
Sandy shale	20	2910
Gray limestone	900	3810
Brown sandy limestone	124	3934
Delaware formation:		
Black limestone	16	3950
Gray sandy limestone	25	3975
Sandy shale, water	30	4005

(Continued on next page)

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well D-29--continued		
Delaware formation:		
Gray sandy limestone	60	4065
Sandy shale	38	4103
Dark limestone	22	4125
Sandstone	8	4133

Well E-3

Nasario Lara, 13 miles northwest of Pecos.

	Thickness (feet)	Depth (feet)
Older alluvium:		
Gypsum; nearly pure granular fine to coarse with some large selenite crystals	40	40
Cream colored plastic clayey gypsum	15	55
Light blue-gray water-tight clay	13	68
Medium-grained light-gray sand, probably 80 percent or more is gypsum, frosted and well rounded character of gypsum grains suggests dune sand	17	85
Light blue-gray plastic clay	5	90
Coarse-grained gypsum sand. Most of grains flaky rather than rounded	8	98
Coarsely crystalline gypsum	19	117
No sample	5	122
Coarsely crystalline gypsum	58	180
Nearly white gypsiferous clay	18	198
Coarse-grained gray sand. Grains consist of chert, flint, quartz and gypsum	7	205

Well E-4

J. E. Couch, 12½ miles northwest of Pecos.

	Thickness (feet)	Depth (feet)
Well E-4--continued		
Older alluvium:		
Conglomerate	20	20
Buff gypsiferous silt	25	45
Gypsum?; salty water	5	50
White gypsum? and clay	45	95
Blue clay	45	140
Soft yellow siltstone or fine-grained sandstone	15	155
Sand and gravel	5	160

Well E-5

H. H. Johnson, et al, 8 miles northwest of Pecos.

	Thickness (feet)	Depth (feet)
Younger alluvium:		
Surface sand	14	14
Older alluvium:		
Sand and gravel	136	150
Sand	250	400
Sand and gravel	78	478
Blue shale	37	515
Sand	25	540
Blue shale and sand	280	820
Sand and gravel	40	860
Permo-Triassic "Red Beds?":		
White "slate"	130	990
Blue shale	260	1250
Red rock and "gyp"	90	1340
Blue shale	140	1480
Black limestone	5	1485
Red shale	15	1500
Sand and shale	20	1520
Shale and anhydrite	30	1550
Brown shale	15	1565
Red rock	164	1729
Rustler formation:		
Anhydrite	36	1765
Dolomite and anhydrite	170	1935
Anhydrite	10	1945
Dolomite	180	2125
Anhydrite and blue shale	645	2770
Anhydrite, water	50	2820
Limestone and anhydrite, water	72	2892
Castile formation:		
Salt, limestone and anhydrite	33	2925
Anhydrite and limestone	53	2978
Salt and anhydrite	122	3100

(Continued on next page)

Table of drillers' logs, Reeves County -- Continued

Well E-5-- continued

	Thickness (feet)	Depth (feet)
Castile formation:		
Limestone	15	3115
Salt	18	3133
Anhydrite and limestone	165	3298
Salt and anhydrite	198	3496
Anhydrite and limestone	45	3541
Salt and anhydrite	419	3960
Anhydrite and limestone	90	4050
Salt	100	4150
Anhydrite and limestone	179	4329
Delaware formation:		
Black limestone	25	4354
Sand and limestone	7	4361
Black calcareous shale	19	4380
Gray sand and shale	34	4414
Black sandy shale	6	4420
Gray sand	13	4433
Black sandy shale	59	4492
Gray sand, water	47	4539
Black sandy shale	25	4564
Gray sand, water	22	4586
Black shale	6	4592
Gray sand, water	96	4688
Show of gas and oil reported at numerous depths in the Delaware.		

Well E-15

J. E. Couch No. 2, $5\frac{1}{2}$ miles northwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	25	25
Coarse gravel, little water	5	30
Clay	15	45
Quicksand, water	18	63
Sand, water	10	73
Red clay	38	111
Sand and some gravel	20	131
Blue clay	18	149
Red clay	1	150

Well E-16

J. E. Couch No. 3, $5\frac{1}{2}$ miles northwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	25	25
Sand and gravel	5	30
Clay	34	64
Sand and gravel,water	6	70
Red clay	41	111
Sand and gravel,water	22	133
Blue clay	2	135
Sand and gravel	8	143
Blue clay	2	145
Plugged back to 143 feet.		

Well E-17

Paul Armstrong, 5 miles northwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	30	30
Quicksand	5	35
Clay	35	70
Sand and gravel,water	10	80
Clay	40	120
Sand and gravel,water	15	135

Well E-24

Carl Taylor No. 1, $3\frac{3}{4}$ miles northwest of Pecos.

	Thickness (feet)	Depth (feet)
Gypsiferous silt	3	3
Caliche	1	4
Red clay	11	15
Greenish-gray clay	8	23
Sand and gravel	6	29
Buff to yellow clay	24	53
Sand and gravel	3	56
Buff to yellow clay	59	115
Sand and gravel	9	124
Clay	2	126

Well E-27

W. H. Sherwood, $3\frac{1}{2}$ miles northwest of Pecos.

(Continued on next page)

Table of drillers' logs, Reeves County -- Continued

Well E-27--continued

	Thickness (feet)	Depth (feet)
Gypsum and gypsiferous silt	6	6
Buff silt and clay probably gypsiferous	34	40
Sand and gravel	10	50
Clay	12	62
Clay and gravel	5	67
Sand and gravel	7	74
Clay	2	76

Well E-50

W. H. Lee No. 4, $1\frac{1}{2}$ miles north of Pecos.

	Thickness (feet)	Depth (feet)
Soil	10	10
Sand and gravel, water	30	40
Clay	69	109
Black "oil" sand	25	134
Clay	23	157
Sand and gravel, water	13	170
Clay	7	177
Sand and gravel, water	22	199

Well E-60

R. D. Copeland, $2\frac{1}{2}$ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Buff gypsiferous clayey silt	30	30
Sand and gravel, water	10	40
Buff gypsiferous clayey silt	20	60
Sand and gravel, water	10	70
Clay and silt	38	108
Sand and gravel, water	8	116
Clay and silt	22	138
Sand and gravel, water	3	141
Buff to light-brown clay	17	158
Sand and gravel	10	168
Clay	20	188
Gravel and sand, artesian water	3	191
Buff to yellowish clay	27	218
Blue shale	32	250

Well E-61

A R. Eppenauer, 3 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Gypsum	8	8
Sandy clay	33	41
Sand and coarse gravel, water	7	48
Yellow clay	28	76
Packsand with some clay	16	92
Yellow clay	11	103
Coarse gravel and sand, water	7	110
Yellow clay	14	124
Sand, little water	2	126
Yellow clay	29	155
Blue clay	20	175
Blue clay mixed with gravel	21	196
Gray clay	12	208
Yellow clay	29	237
Clay and sand	11	248
Yellow clay	37	285
Clay and sand	5	290
Yellow clay	10	300

Well E-62

W. A. Gardner, $3\frac{1}{4}$ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
White gypsum	30	30
Gravel, water	8	38
Clay, including 3 strata of sand and gravel carrying water	92	130
Gravel and sand, water	10	140
Clay	3	143

Well E-63

John Ivy No. 2, $3\frac{3}{4}$ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	6	6
Clay	19	25
Boulders and gravel	10	35

(Continued on next page)

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well E-63--continued		
Gravel	7	7
Red sticky clay	18	60
Clay	10	70
Sand	4	74
Clay	16	90
Pea gravel	8	98
Clay	22	120
Sand	20	140
Clay	35	175
Sand	5	180
Clay	15	195
Sand	8	203
Clay	10	213
Well E-68		
-- Drake, 1½ miles southwest of Pecos.		
Soil, gypsite, and caliche	25	25
Sand and gravel, water	6	31
Coarse, poorly-cemented conglomerate	5	36
Gypsite and clay	134	170
Fine-grained sand	4	174
Gypsite and clay	76	250
Sand and gravel, water	12	262
Conglomerate, water	10	272
Clay	1	273
Sand and gravel, water	2	275
Clay	30	305
Sand and gravel, water	13	318
Well E-69		
J. E. Propp, 3¼ miles southwest of Pecos.		
Soil	4	4
Clay	54	58
Sand	14	72
Clay	43	115
Sand	18	133
Clay	25	158
Gravel	25	183
Clay	15	198
Gravel	6	204
Clay	3	207

	Thickness (feet)	Depth (feet)
Well E-71		
J. W. Brooks No. 2, 3¾ miles southwest of Pecos.		
Soil	3	3
Clay	37	40
Sand	10	50
Clay	20	70
Sand	20	90
Clay	5	95
Sand	10	105
Clay	58	163
Gravel	27	190
Clay	8	198
Gravel	17	215
Clay	2	217
Gravel	2	219
Clay	6	225
Well E-73		
Harold Wendt No. 2, 4½ miles southwest of Pecos.		
Soil	5	5
Caliche	30	35
Sand and gravel, water	20	55
Clay	136	191
Gravel, water	6	197
Hard rock	4	201
Gravel, water	6	207
Clay	2	209
Gravel, water	8	217
Clay	3	220
Well E-74		
Harold Wendt No. 1, 4¼ miles southwest of Pecos.		
Clay	28	28
Sand and gravel	27	55
Clay	48	103
Sand and gravel	11	114
Red clay	56	170
Clay	20	190
Gravel	10	200
Rock	8	208
Gravel	20	228

Table of drillers' logs, Reeves County -- Continued

Well E-75

R. H. Brown No. 2, 4¾ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	10	10
Gray clay	20	30
Yellow clay	30	60
Sand and gravel, water	7	67
Blue and yellow clay	53	120
Sand	10	130
Yellow clay	55	185
Gravel, water	20	205
Clay	20	225

Well E-77

R. H. Brown No. 3, 5 miles west of Pecos.

	Thickness (feet)	Depth (feet)
Soil	3	3
Clay	42	45
Sand and gravel, water	10	55
Yellow clay	20	75
Sand and clay	43	118
Gravel	7	125
Clay	31	156
Gravel	14	170
Sand	4	174
Sand and gravel	8	182
Gravel	6	188
Clay	12	200
Gravel	14	214
Clay	1	215

Well E-78

R. H. Brown No. 4, 5½ miles west of Pecos.

	Thickness (feet)	Depth (feet)
Soil	3	3
Clay	47	50
Sandy clay	10	60
Sand, water	15	75
Clay	27	102
Sand, water	4	106
Clay	12	118
Gravel, water	6	124
Clay	11	135
Gravel, water	10	145
Clay	10	155
Gravel, water	53	208
Clay	7	215

Well E-83

Neal S. Thompson, 3½ miles west of Pecos.

	Thickness (feet)	Depth (feet)
Clay	38	38
Sand and gravel	10	48
Clay	67	115
Gravel	13	128
Clay	2	130
Gravel	5	135
Clay	20	155
Gravel	4	159
Clay	21	180

Well E-84, partial log

L. D. McNeil, 4¼ miles west of Pecos.

	Thickness (feet)	Depth (feet)
Soil	3	3
Buff silt and clay	54	57
Gravel, water	11	68
Buff clay and silt	67	135
Small gravel and sand, water	16	151
Buff clay	23	174
Gravel, water	7	181
Buff clay	11	192
Gravel and sand, water	9	201
Blue shale	1	202
TOTAL DEPTH		217

Well E-86

O. J. Bryan, 4¼ miles northwest of Pecos.

	Thickness (feet)	Depth (feet)
Sandy topsoil	5	5
Coarse-grained sand and gravel	4	9
Clay, sandy clay, and gypsum	67	76
Coarse-grained sand and gravel, water	9	85
Yellow clay	26	111
Coarse-grained sand and gravel	4	115
Clay and streaks of sand and gravel	40	155
Sand and gravel	4	159
Clay	4	163
Sand and gravel	7	170

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well E-88		
H. H. Bryan, 4¾ miles northwest of Pecos.		
Soil	36	36
Caliche and shale	39	75
Sand and gravel, water	1	76
Yellow shale	34	110
Sand and gravel, water	4	114
Blue and brown shale	51	165
Large gravel, water	7	172
Blue shale	2	174
Large gravel, water	11	185
Well E-89		
H. H. and O. J. Bryan, 4¾ miles northwest of Pecos.		
Soil	50	50
Clay	68	118
Gravel, water	9	127
Gray clay	23	150
Sand	5	155
Red clay	5	160
Gravel, water	7	167
Clay	10	177
Coarse gravel, water	11	188
Well E-90		
Jack Williams, 6 miles northwest of Pecos.		
Soil and clay	75	75
Sand and gravel, water	5	80
Clay	15	95
Gravel, water	5	100
Clay	6	106
Sand and gravel, water	22	128
Clay	2	130
Gravel, water	2	132
Clay	23	155
Gravel, little water	19	174
Blue shale	21	195
Sand and gravel, water	13	208
Clay	1	209
Gravel, water	3	212
Clay	12	224

	Thickness (feet)	Depth (feet)
Well E-91		
Jack Williams, 6 miles west of Pecos.		
Soil and caliche	53	53
Brown sand	7	60
Sand and gravel, little water	7	67
Gravel, water	10	77
Clay	7	84
Gravel, water	15	99
Brown sand	6	105
Clay	9	114
Sand, water	11	125
Gravel	9	134
Well E-93 (Log of nearby test hole)		
Jack Williams, 6½ miles west of Pecos.		
Buff gypsite	17	17
Angular sand and small gravel	23	40
Buff gypsite	14	54
Angular sand and small gravel	5	59
Buff silty fine-grained sand	9	68
Sand and gravel, water	6	74
Sand, mostly well-rounded quartz grains	3	77
Light gray clay	24	101
Coarse-grained gray sand	6	107
Silty clay	10	117
Sand and gravel, dry	23	140
Gravel, 1 inch in diameter	5	145
Light brown silty clay	15	160
Small gravel, well assorted, mostly volcanics, water	3	163
Clay	24	187
Small gravel, well assorted, mostly volcanics, water	1	188
Buff clay	39	227
Sand and gravel	2	229
Clay	7	236
Sand and gravel	4	240
Caliche-cemented gravel	17	257
Gypsum	28	285
Sand and gravel, water	10	295
Yellow clay	5	300

Table of drillers' logs, Reeves County -- Continued

Well E-94

M. H. McKinney, 6½ miles west of Pecos.

	Thickness (feet)	Depth (feet)
Soil and dry gravel	95	95
Sand	5	100
Gravel	35	135
Clay	7	142
Gravel	5	147
Clay	44	191
Gravel, water	5	196
Clay	3	199
Gravel	3	202
Red clay	37	239
Yellow clay	11	250
Clay and streaks of gravel	35	285

Well E-96

E. D. Godbey, 9 miles west of Pecos.

	Thickness (feet)	Depth (feet)
Soil	6	6
Large gravel	3	9
Clay	6	15
Gravel	3	18
Clay	74	92
Gravel, dry	13	105
Clay	25	130
Gravel, water	40	170
Clay	42	212
Sand and gravel	6	218
Clay	2	220
Gravel	5	225
Clay	2	227
Gravel	11	238
Clay	12	250
Gravel	9	259
Clay	2	261
Gravel	9	270
Clay	3	273
Gravel	3	276
Clay	9	285

Well E-99

Ord Gary, 10 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	7	7
Sandy gypsum	34	41
Gravel, dry	21	62
Yellow clay	34	96

Well E-99--continued

	Thickness (feet)	Depth (feet)
Sand and gravel, water	2	98
Red shale	1	99
Gravel, water	69	168
Red shale	4	172
Sand, water	18	190
Plugged back to 168 feet.		

Well E-100

Ord Gary, 10 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	5	5
Sandy clay	30	35
Gravel, dry	77	112
Red clay	8	120
Yellow clay	18	138
Gravel, some water	8	146
Red clay	32	178
Gravel	11	189
Clay	1	190

Well E-121

City of Pecos No. 1, 11 miles southeast of Pecos.

	Thickness (feet)	Depth (feet)
Younger alluvium:		
Soil	10	10
Triassic:		
Red sandstone	20	30
Conglomerate	10	40
Red sandstone	5	45
Conglomerate	20	65
Yellow clay	5	70
Conglomerate	14	84
Sand, "honeycombed", water	19	103
Yellow clay	16	119
Red sandy shale	17	136
Red sand, water	6	142
Light sand	5	147
Dry sand	13	160
Red sandstone and clay	17	177
Sand, "honeycombed", water	6	183
Red sandstone	4	187

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well E-122		
City of Pecos No. 2, 11 miles southeast of Pecos.		
Younger alluvium:		
Top soil, sand and caliche	24	24
Triassic:		
Brown sandstone and clay	6	30
Hard white sandstone	23	53
Yellow clay	27	80
Red sand, water	13	93
Yellow sand	14	107
Yellow clay and rock	3	110
Red sandstone, water	44	154
Red shale	11	165
Red sandstone, water	26	191
Red sand and clay	20	211
Bottom 20 feet filled and cemented.		
Well E-123		
City of Pecos No. 3, 11½ miles southeast of Pecos.		
Younger alluvium:		
Top soil and caliche	30	30
Triassic:		
Red sandstone and yellow clay	6	36
Brown rock and clay	44	80
Red sandstone	10	90
Red sandstone and gravel	20	110
Red sandstone	8	118
Red clay	1	119
Red sandstone, water	29	148
Red clay	8	156
Very hard red sandstone	10	166
Red clay	3	169
Red sandstone, water	9	178
Red clay	26	204
Sand and black gravel, water	6	210
Red clay	4	214
Red sanstone and gravel, water	5	219
Red sandstone	11	230
Red clay	2	232
Red sandstone	13	245
Well 123--continued		
Triassic--continued:		
Red clay	2	247
Red sandstone	28	275
Red clay	25	300
Well E-124		
City of Pecos No. 4, 11 miles southeast of Pecos.		
Soil	3	3
Caliche	25	28
Red shale	44	72
Red sandy shale	13	85
Gray sand, water	10	95
Sandy shale	35	130
Red shale	61	191
Well E-125		
City of Pecos No. 5, 10½ miles southeast of Pecos.		
Caliche gravel	30	30
Yellow sand	10	40
Red shale	50	90
Red sand, water	5	95
Red shale	2	97
Red sand, water	28	125
Red shale	2	127
Sand, water	23	150
Sticky red shale	5	155
Broken sand	8	163
Sandy red shale	7	170
Well F-1		
H. F. Anthony, 13½ miles southeast of Pecos.		
Younger alluvium:		
Gypsiferous sand and gravel	10	10
Older alluvium:		
Yellowish-red medium grained sandstone	10	20
Buff fine-grained sand	5	25
Triassic:		
Red sandstone and thin beds of red clay	51	76
Red sandstone and fine-grained conglomerate	4	80

Table of drillers' logs, Reeves County -- Continued

Well H-13

J. F. Rogers, 18 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Caliche	20	20
Yellow clay	60	80
Blue shale	80	160
Sand, water	5	165
Blue shale	54	219
Sand, water	3	222
Shale, show of gas at 232 feet	14	236
Lime rock	76	312
Blue shale	177	489
Hard blue rock	16	505
Blue shale	15	520
Hard blue rock	3	523
Blue shale	87	610
Hard rock	6	616
Dry gravel and yellow clay	9	625
Broken lime	35	660
Hard blue rock	35	695
Hard brown rock	17	712
Soft yellow rock	38	750
Yellow rock and clay	18	768
Blue shale	159	927

Well H-32

W. E. Gould, 31½ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Coarse volcanic gravel and boulders	16	16
Lava, water at 30 feet	42	58

Well H-39

Sol Mayer, 27 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	10	10
Gravel	10	20
Boulders	30	50
Gray silt or clay	100	150
White limestone (caliche?)	7	157
Gravel	33	190

Well H-41

R. Q. Salters, 29 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	18	18
Loose, well rounded, coarse volcanic gravel	23	41
Caliche-cemented gravel	11	52
Fine-grained well assorted sand	3	55
Caliche-cemented gravel	5	60
Loose gravel	12	72
"Rock" (large boulder?)	4	76
Angular small volcanic gravel	10	86
Cemented gravel and boulders	10	96
Loose gravel	12	108
Greenish-colored lava, in part lightly weathered	10	118
Coarse gravel and boulders	39	157

Hole abandoned at 157 feet, caving sand.

Well H-42

Sol Mayer, 29½ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil and gravel	6	6
Volcanic gravel	109	115
Buff silty clay	25	140
Loose volcanic gravel	37	177
Clay and gravel	8	185
Buff silty clay	5	190
Cemented gravel	10	200
Coarse volcanic gravel, water	12	212

Well I-13

Billie Prewit, 10 miles south of Pecos.

	Thickness (feet)	Depth (feet)
Younger alluvium:		
Gray calcareous shale	10	10
Gray shale	10	20
Buff calcareoussandy shale	10	30

(Continued on next page)

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well I-13--continued		
Older alluvium:		
Conglomerate	30	60
Buff gypsiferous shale	10	70
Buff shale	50	120
Conglomerate	40	160
Buff shaly sandstone	20	180
Conglomerate	20	200
Calcareous argillaceous conglomerate, re-worked Cretaceous fossils	10	210
Sandy conglomerate	30	240
Gravel	20	260
Pink to buff shale	50	310
Gravel	10	320
Buff to pink sandy shale	30	350
Gravel	20	370
Triassic:		
Red shale	130	500
Red sandy shale	20	520
Red and gray sandy shale	50	570
Red shale	30	600
Red sandy shale	30	630
Permo-Triassic "Red Beds":		
Buff to red shale	30	660
Gray, buff and red shale	20	680
Red and buff shale and anhydrite	30	710
Red and buff shale, thin beds of gray shale	70	780
Gravel and red shale	10	790
Buff shale	20	810
Buff shale and anhydrite	10	820
Buff and red sandy shale	240	1060
Red shale	60	1120
Dense gray limestone	5	1125
Red and gray shale	25	1150
Buff and red shale and anhydrite	70	1220
Rustler formation:		
Anhydrite, buff and red shale	110	1330
Tan dolomite, flowing sulphur water	30	1360

	Thickness (feet)	Depth (feet)
Well I-14		
S. M Prewit, 9 miles south of Pecos.		
Buff fine-grained sandy silt	2	2
Buff silty gypsiferous clay	8	10
Buff clay, selenite crystals	22	32
Buff to gray silt and fine-grained sand containing gravel lenses, water	73	105
Silty to clayey fine-grained gypsiferous sand	35	140
Blue-gray clay, calcareous fragments	25	165
Small angular to rounded gravel, flint and chert, water	3	168
Well I-16		
S. M. Prewit, 10½ miles south of Pecos.		
Silty gypsiferous fine-grained sand	14	14
Gypsum	6	20
Gypsiferous fine to medium-grained sand, water	1	21
Reddish-buff fine-grained sandy clay	21	42
Gray clay	16	58
Buff clayey silt	8	66
Greenish-gray clay	9	75
Gray gypsiferous clay	20	95
Medium-grained gypsum sand	8	103
Gypsiferous medium-grained sand, water rose to within 12 feet of surface	7	110
Buff clay	14	124
Brown medium to coarse-grained sand, water	1	125

Table of drillers' logs, Reeves County -- Continued

Well I-17

S. M. Prewit, 12 miles south of Pecos.

	Thickness (feet)	Depth (feet)
Buff gypsiferous silt	2	2
Gypsum, seeps of water at 14 feet	34	36
Gravel	1	37
Fine-grained sand	8	45
Buff gypsiferous silt	17	62
Yellow clay	8	70
Medium-grained sand, water	1	71

Well I-20

J. W. Pratt, 11½ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil, caliche, and clay	50	50
Gravel, water	5	55
Clay	11	66
Gravel, water	4	70
Clay	25	95
Sand and gravel, water	19	114
Clay	66	180
Gravel, water	10	190
Clay	3	193

Well I-21

Kyle Watts, 12 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Silt and gypsite	36	36
Gravel, water	35	71
Clay	74	145
Gravel, water	45	190
Clay	5	195

Well I-22

O. T. Caldwell, 12½ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	5	5
Caliche	10	15
Clay	15	30
Sand and gravel, water	1	31
Clay	20	51
Sand and small gravel, water	17	68
White clay	5	73
Gravel, water	7	80

Well I-22--continued

	Thickness (feet)	Depth (feet)
Sand and gravel, water	20	100
Clay	3	103
Sand and gravel, water	22	125
Gravel, water	22	147
Clay	3	150

Well I-24

O. D. Johnson, 13 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil and clay	25	25
Gravel, water	5	30
Clay	50	80
Gravel, water	15	95
Clay	10	105
Gravel, water	30	135
Yellow clay	1	136

Well I-26

J. H. Watts, 13 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil and clay	25	25
Gravel, water	5	30
Clay	31	61
Dry sand	7	68
Clay	7	75
Gravel, water	7	82
Clay	35	117
Gravel, water	23	140
Clay	13	153

Well I-27

Pat B. Watts, 13½ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Gypsite and clay	24	24
Light clay	23	47
Brown sand, water	10	57
Light clay	13	73
Sand and gravel, water	10	80
Buff clay	12	92
Sand and gravel, water	6	98
Buff clay	19	117
Sand and gravel	15	132
Light red clay	5	137

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well I-28		
S. M. Watts, 13½ miles southwest of Pecos.		
Soil and clay	35	35
Gravel, water	3	38
Clay	22	60
Gravel, water	15	75
Clay	35	110
Gravel, water	10	120
Clay	28	148
Well I-29		
E. H. Hannon and A. Gardner, 14½ miles southwest of Pecos.		
Soil	5	5
Red clay	15	20
Gray clay	8	28
White clay	32	60
Sand and some gravel, water	7	67
Clay	26	93
Gravel, water	8	101
Clay	2	103
Sand and gravel, water	18	121
Red clay	29	150
Sand	5	155
Plugged back to 140 feet.		
Well I-31		
J. H. Hardaway, 14 miles southwest of Pecos.		
Soil	4	4
Caliche	4	8
Clay	30	38
Gravel, water	12	50
Clay	54	104
Sand, water	34	138
Clay	4	142
Well I-32		
--Barnowsky, 13½ miles southwest of Pecos.		
Soil	8	8
Clay and gypsite	43	51

	Thickness (feet)	Depth (feet)
Well I-32--continued		
Sand and gravel, water	11	62
Clay	3	65
Sand and gravel, water	5	70
Clay	62	132
Gravel and sand, water	8	140
Clay	66	206
Sand and gravel, water	7	213
Clay	4	217
Well I-38		
J. P. Espy, 20 miles southwest of Pecos.		
Soil	14	14
Boulders	56	70
Sand and gravel, water	8	78
Clay	3	81
Sand and gravel, water	7	88
Coarse-grained sand, water	9	97
Gravel, water	4	101
Clay	33	134
Sand and gravel, water	2	136
Clay	17	153
Sand and gravel, water	2	155
Clay	5	160
Sand and gravel, water	12	172
Clay	32	204
Sand and gravel, water	6	210
Clay	4	214
Well I-47		
A. R. Eppenauer No. 3, 17 miles southwest of Pecos.		
Alluvium:		
Sand and caliche	20	20
Sand and clay	17	37
Shale and sand, water	51	88
Boulders, shale and shells	105	193
Shale	42	235
Calcareous sand	25	260
Sand and gravel	150	410
Cretaceous:		
Sandy limestone and marl	170	580
Argillaceous sandstone, rounded and frosted sand grains	50	630
Sandy limestone and marl	100	730

(Continued on next page)

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well I-47--continued		
Cretaceous--continued:		
Red, brown and green gravel	80	810
Calcareous sand and gravel	160	970
Light colored shale	90	1060
Calcareous shale	80	1140
Limestone and marl	40	1180
Sandy limestone	50	1230
Permo-Triassic "Red Beds?":		
Red shaly limestone	50	1280
Greenish-gray sandy shale	50	1330
Red and gray sandy to gravelly shale	90	1420
Calcareous sandy gray shale	100	1520
Rustler formation:		
Gypsum and red shale	120	1640
Cream-colored dolomite	40	1680
Dolomite and red sandstone	10	1690
Dolomite, anhydrite and red shale	140	1830
Castile formation:		
Anhydrite and gypsum	170	2000
Plugged back to 500 feet.		

Well I-50

Billie Prewit, 14 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	9	9
Sand, water	11	20
Sand and gravel, water	19	39
Yellow clay	19	58
Sand and gravel	5	63
Yellow clay	45	108
Pinkish red clay	22	130
Light yellow clay	23	153
Gypsite	1	154
Light red clay	11	165
Gravel, water	3	168
Red clay	3	171
Sand, water	7	178
Clay	7	185
Sand and gravel, water	9	194
Clay	9	203
Sand and gravel	9	212
Clay	18	230
Blue shale	100	330

Well I-50--continued

	Thickness (feet)	Depth (feet)
Yellow clay	9	339
Gravel	2	341
Yellow clay	4	345
Gravel	8	353
Yellow clay	1	354
Gravel and sand	4	358
Yellow clay	25	383
Gravel and sand	4	387
Yellow clay	13	400

Well I-52

A. R. Eppenauer No. 5, 17½ miles south of Pecos.

	Thickness (feet)	Depth (feet)
Soil	7	7
Gravel	5	12
Sand rock	7	19
Red clay	9	28
Gravel	2	30
Gravel, water	9	39
Red clay	29	68
Gravel, water	2	70
Sandstone	12	82
Sand	16	98
Red clay	37	135
Sand and gravel, water	15	150
Red clay	30	180
Blue shale	128	308
Coarse gravel, water	9	317
Yellow clay	2	319

Well I-55

H. H. Hokey, 17 miles southeast of Pecos.

	Thickness (feet)	Depth (feet)
Loose sand and caliche	17	17
Red sandstone and shale	403	420

Well I-62

Edgar Martin, 21½ miles southeast of Pecos.

	Thickness (feet)	Depth (feet)
Younger alluvium:		
Clay	70	70
Sand and gravel, water	5	75
Clay	25	100
Quicksand and gravel, water	6	106

(Continued on next page)

Table of drillers' logs, Reeves County -- Continued

	Thickness (feet)	Depth (feet)
Well I-62--continued		
Older alluvium:		
Clay	44	150
Quicksand and gravel, water	4	154
Clay and gumbo	96	250
Blue gumbo	50	300
Quicksand and gravel	10	310
Yellow clay	35	345
Sand, water	5	350
Yellow clay	60	410
Quicksand and gravel, water	30	440
Yellow clay	7	447
Sand, show of oil and gas	2	449
Yellow clay	11	460
Permo-Triassic "Red Beds":		
Red rock	25	485
Lime shell	5	490
Red gumbo	20	510
Brown gumbo and shell	50	560
Hard sandy lime	4	564
Soft sand, water	26	590
Red gumbo and shells	39	629
Hard red sand, streaks of soft red mud	466	1095
Hard lime shell	8	1103
Lime and anhydrite	81	1184
Soft red bed	34	1218
Rustler formation:		
Lime and anhydrite	53	1271
Broken sandy limestone (flowing water at 1,276 feet)	69	1340
Lime and anhydrite	12	1352
Broken lime, sand and red rock	13	1365
Hard broken lime	7	1372
Sand (small increase in flow of water)	8	1380
Blue shale	6	1386
Anhydrite	14	1400

Well I-82

Wynn Hamilton, 28 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Gypsiferous silt	4	4
Coarse gravel	16	20
Cemented gravel	3	23
Coarse gravel	17	40
Cemented gravel	6	46
Well I-82--continued		
Boulders	24	70
Lime rock (caliche?)	10	80
Gravel, little water	68	148
Lime rock (caliche?)	6	154
Yellow clay	2	156
Sand, water	2	158
Gravel	2	160

Well I-84

C. V. Cox, 28½ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Soil	3	3
Volcanic gravel	45	48
Cemented volcanic gravel	7	55
Buff silty fine-grained sandy clay	9	64
Cemented volcanic gravel	3	67
Buff silty clay	4	71
Cemented volcanic gravel	3	74
Sand and volcanic gravel	6	80
Cemented volcanic gravel	20	100
Coarse-grained sand	5	105
Cemented volcanic gravel	3	108

Well I-85

Rudolph Hoefs, 30 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Boulders and gravel	119	119
Sand and gravel, water	22	141
Yellow clay and gravel	8	149
Sand and gravel, water	122	271
Yellow clay and gravel	227	498
Sand and gravel, water	17	515

Well I-86

Rudolph Hoefs, 30½ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Gravel and boulders	119	119
Sand and gravel, water	22	141
Yellow clay and gravel	8	149
Sand and gravel, water	51	200

Table of drillers' logs, Reeves County -- Continued

Well I-90

Rudolph Hoefs, 29½ miles south of Pecos.

	Thickness (feet)	Depth (feet)
Younger alluvium:		
Top soil	15	15
Boulders	63	78
Buff calcareous silt	7	85
Cretaceous:		
Light-gray to cream-colored limestone	9	94
Gray limestone	108	202
Limestone, marly and sandy in part, water	7	209
Brown sand	3	212
Gray limestone and thin sandy beds	98	310

Well J-4

Anthony and Tubbs, 22½ miles southeast of Pecos.

	Thickness (feet)	Depth (feet)
Caliche	8	8
Conglomerate	17	25
Light reddish-brown sands, silt, and some gravel	46	71
Reddish-brown sand and gravel	15	86

Well K-6

Hal Sprague, 33 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Younger alluvium:		
Gravel	16	16
Chalk rock (caliche)	3	19
Gravel	8	27
Conglomerate, water	7	34
Cretaceous:		
Marly limestone	20	54

Well K-7

C. E. Payne, 33 miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Younger alluvium:		
Soil	5	5
Volcanic gravel	15	20
Hard gray limestone (travertine or caliche)	18	38
Volcanic gravel	2	40
Cretaceous:		
Limestone	1	41

Well K-8

J. B. Coffey, 33½ miles southwest of Pecos.

	Thickness (feet)	Depth (feet)
Younger alluvium:		
Black soil	1	1
Clay and loose boulders	13	14
Sandstone	14	28
Sand and gravel	5	33
Cretaceous:		
Limestone	1	34

Well L-2

Rudolph Hoefs, 28½ miles south of Pecos.

	Thickness (feet)	Depth (feet)
Younger alluvium:		
Gray loamy soil	4	4
Red clay with pebbles	7	11
Clay and coarse gravel	54	65
Yellow clay	5	70
Cretaceous:		
Limestone and marl, water	130	200

Partial analyses of water from wells and springs in Reeves County, Texas

Analyzed by the U. S. Geological Survey, Austin, Texas, under the direction os W. W. Hastings, District Chemist. Results are in parts per million. Well numbers correspond to numbers in table of well records.

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
B- 1	H. T. Collier	147	June 18, 1940	8,170	750	308	1,441	153	2,412	2,570	12	3,140
B- 6	Hall Olds	84	June 14, 1940	4,200	524	245	253	154	2,520	76	8.3	2,320
B- 8	John Camp	173	do.	4,260	556	144	454	89	2,375	298	0.5	1,980
B- 9	J. Y. Crum	105	June 24, 1940	2,850	445	95	248	180	1,579	172	7.2	1,500
B-12	W. B. Burchard	229	Jan. 2, 1940	2,147	248	85	313	165	1,315	103	-	968
B-15	L. W. Anderson	75	June 23, 1940	2,770	571	54	125	90	1,598	128	1.8	1,650
C- 1	L. Ford	68	Oct. 5, 1939	2,830	558	69	220	157	1,798	109	-	1,680
C- 2	A. B. Tinnin	31	Sept. 21, 1940	1,730	265	119	49	234	957	34	25	1,150
D- 1	W. A. Burchard	113	Mar. 14, 1940	1,769	374	49	125	248	930	167	-	1,140
D- 3	do.	268	do.	3,160	442	123	374	175	1,991	146	-	1,610
D- 4	W. B. Burchard	300	Mar. 13, 1940	1,994	430	62	103	205	1,202	94	-	1,330
D- 7	Wanda Hanks	300+	Aug. 8, 1940	2,376	297	64	342	143	1,333	172	0.75	1,000
D- 8	F. C. Hyde	74	June 23, 1940	6,550	270	243	1,621	538	2,143	1,790	0.75	1,670
D- 9	Wanda Hanks	227	Feb. 12, 1940	1,067	238	24	79	334	534	25	-	693
D-10	Elmer Wadley	207	Sept. 13, 1940	3,700	517	150	381	139	1,871	475	3.5	1,910
D-13	A. B. Burchard	75	May 16, 1940	3,550	588	138	220	125	1,982	242	7.3	2,040
D-14	Artie Baker	500	Mar. 14, 1940	3,890	585	144	431	67	2,361	338	-	2,050
D-15	A. B. Burchard	178	do.	3,060	480	125	303	99	1,814	284	-	1,710
D-19	do.	Spring	May 28, 1940	3,850	577	187	243	112	2,230	265	0.0	2,210
D-20	E. Bernsteine	Spring	do.	3,670	560	182	207	112	2,093	231	0.0	2,150
D-21	Tri-State Credit Men's Association	Spring	do.	3,570	563	186	182	156	2,166	130	0.0	2,170
D-22	E. Bernsteine	Spring	do.	3,090	506	163	120	170	1,901	54	0.0	1,930
D-23	M. B. James	Spring	do.	2,630	375	104	285	148	1,253	394	2.5	1,360
D-24	R. J. Burr	Spring	do.	2,540	372	103	250	122	1,224	368	2.0	1,350
D-27	R. N. Burchard	60	Mar. 13, 1940	3,200	514	124	343	172	1,672	465	-	1,790
D-30	F. B. Daniel	60	Oct. 3, 1939	5,230	576	239	762	138	2,940	640	-	2,420
D-31	R. S. Burchard	51	Aug. 8, 1940	5,280	782	193	521	59	2,520	855	1.8	2,750
D-32	E. B. Daniel	190	do.	4,530	620	186	465	130	2,024	775	21	2,310
D-33	R. S. Burchard	185	May 16, 1940	3,490	658	96	211	104	1,751	385	55	2,040
D-34	E. B. Daniel	156	Aug. 8, 1940	3,980	598	134	416	121	1,848	650	11	2,040

Partial analyses of water from wells and springs in Reeves County -- Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
D-35	Elmer Wadley	139	Sept.13, 1940	3,600	530	134	371	126	1,700	565	13	1,870
E- 1	L. W. Anderson	186	May 16, 1940	4,220	401	90	830	131	1,877	790	0.5	1,370
E- 3	Nasario Lara	198	Dec. 21, 1939	9,930	1,066	254	2,141	84	2,111	4,320	-	3,700
E- 4	J. F. Couch	160	Dec. 11, 1939	7,580	1,030	186	1,394	118	1,796	3,120	-	3,340
E- 6	T. S. Ingle	77	Feb. 12, 1940	3,240	487	140	371	142	1,551	615	-	1,790
E- 7	L. W. Anderson	101	Oct. 6, 1940	3,300	456	105	404	158	1,571	482	3.0	1,570
E- 8	S. M. Prewit	2,900	Sept.16, 1940	3,610	497	129	399	136	1,829	440	3.3	1,770
E- 9	do.	29	do.	3,330	622	106	168	161	1,783	229	53	1,990
E-11	do.	-	Nov. 17, 1939	3,180	446	128	403	135	1,639	495	-	1,640
E-12	T. S. Ingle	51	May 15, 1940	5,010	710	167	594	187	1,758	1,240	23	2,460
E-13	Mrs. M. S. Grissom	55	Jan. 4, 1940	8,910	752	369	1,844	256	2,750	3,070	-	3,390
E-18	John Lopoo	96	Dec. 19, 1939	2,850	423	118	355	170	1,247	620	-	1,540
E-25	G. G. Breen	74	Apr. 11, 1940	2,790	364	101	450	214	995	770	5.0	1,320
E-25	do.	74	Jan. 25, 1947	2,510	360	115	330	150	930	700	2.5	1,370
E-27	W. H. Sherwood	76	Jan. 6, 1940	3,410	543	113	429	198	1,499	730	-	1,820
E-30	Ronald Roberson	135	Nov. 17, 1939	2,311	284	87	395	240	760	665	-	1,070
E-32	Reba Morgan	165	Dec. 21, 1939	2,282	297	93	355	172	791	660	-	1,120
E-42	William Rossman	246	Nov. 22, 1939	4,580	222	70	1,318	170	1,368	1,520	-	842
E-45	W. H. Boyd No. 1	211	Feb. 8, 1947	2,350	322	93	357	226	798	670	1.5	1,190
E-46	W. H. Boyd No. 2	210	do.	2,360	306	92	381	240	781	680	1.5	1,140
E-47	W. H. Lee No. 1	200	Dec. 9, 1946	2,320	286	89	384	155	828	655	0.8	1,080
E-50	W. H. Lee No. 4	199	Apr. 28, 1947	2,410	326	84	385	224	817	680	4.0	1,160
E-52	A. Schmid	308	Oct. 9, 1939	4,070	320	97	932	142	1,705	945	-	1,200
E-55	S. M. Prewit	-	Oct. 10, 1939	2,346	298	92	380	136	784	724	-	1,120
E-57	Mrs. V. B. Mays	225	do.	2,850	279	84	605	132	852	966	-	1,040
E-58	Port Daggett	114	June 27, 1940	2,980	432	117	239	109	1,168	625	1.2	1,560
E-59	R. D. Copeland	-	Aug. 19, 1940	2,570	295	94	366	183	769	686	1.0	1,120
E-64	John Ivy No. 1	380	Nov. 7, 1946	2,390	280	92	423	250	770	700	3.5	1,080
E-65	Neal S. Thompson	319	Apr. 17, 1940	2,416	302	91	406	239	801	695	1.5	1,130
E-65	do.	319	Nov. 14, 1946	-	-	-	-	206	785	715	-	-
E-66	Stanley Poer and J. W. Hudgens	183	Nov. 8, 1946	-	-	-	-	248	782	685	-	-

Partial analyses of water from wells and springs in Reeves County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
E-67	L. G. Shepherd	277	Nov. 7, 1946	2,610	372	95	377	150	999	690	3.5	1,320
E-70	J. W. Brooks No. 1	185	Apr. 16, 1940	2,306	276	90	397	234	753	670	3.0	1,060
E-70	do.	185	Nov. 1, 1946	2,350	284	92	402	248	780	670	2.0	1,090
E-71	J. W. Brooks No. 2	225	Apr. 28, 1947	2,320	278	82	413	216	757	680	5.5	1,030
E-72	Mrs. B. G. Smith	212	Apr. 16, 1947	2,310	300	95	361	196	769	680	3.5	1,140
E-73	Harold Wendt No. 2	220	Apr. 11, 1947	2,320	316	85	368	250	752	670	5.0	1,140
E-74	Harold Wendt No. 1	228	Nov. 13, 1946	4,560	800	123	549	202	1,590	1,240	159	2,500
E-76	R. H. Brown No. 1	209	Mar. 28, 1940	2,300	278	89	394	239	761	656	3.0	1,060
E-76	do.	209	Dec. 2, 1946	2,270	285	87	374	192	772	650	3.5	1,070
E-80	L. D. McNeil	217	Apr. 16, 1940	2,340	289	89	395	235	773	670	5.6	1,090
E-80	do.	217	Nov. 6, 1946	3,980	740	127	375	164	1,780	810	69	2,370
E-82	Cal Wilson	180	do.	2,310	300	92	368	242	765	660	3.0	1,130
E-83	Neal S. Thompson	180	Apr. 16, 1940	2,500	309	97	416	224	826	714	31	1,170
E-83	do.	180	Nov. 14, 1946	-	-	-	-	146	1,680	1,310	-	-
E-85	W. B. Evans	217	Apr. 11, 1947	2,870	446	96	379	198	1,010	730	110	1,510
E-90	Jack Williams	208	do.	2,790	424	86	397	172	1,070	720	6.0	1,410
E-91	do.	134	Apr. 27, 1947	3,470	532	136	445	132	1,160	1,040	90	1,890
E-92	do.	182	Apr. 11, 1947	3,000	472	106	380	148	1,200	750	15	1,610
E-93	do.	170	do.	3,040	472	109	385	154	1,300	690	11	1,630
E-99	Ord Gary	168	Nov. 7, 1946	2,320	296	86	385	230	787	650	5.0	1,090
E-105	Day Monroe and Balmorhea Livestock Co. Spring		Apr. 11, 1940	2,640	312	97	467	247	854	780	2.0	1,540
E-107	Tatum Eisenwine	-	Oct. 1, 1940	2,088	151	67	453	72	681	616	0.25	652
E-112	J. W. Watson	-	do.	2,496	290	88	376	216	750	670	0.75	1,090
E-114	Onnie Moorehead	80	Oct. 9, 1939	3,630	438	121	665	282	1,056	1,210	-	1,590
E-116	Carl Johnson	60	Oct. 10, 1939	3,270	746	65	229	163	1,445	702	-	2,130
E-117	H. L. Perkins	-	July 13, 1940	4,030	598	254	124	111	2,442	122	0.75	-
E-118	Jack Warsham	140	Aug. 10, 1940	2,650	410	89	239	202	1,161	420	63	1,390
E-120	R. D. Irion	125	Mar. 5, 1940	1,013	201	31	88	218	492	92	-	629
E-121	City of Pecos No. 1	187	Dec. 5, 1939	648	96	25	82	199	204	90	8.6	342
E-121	do.	187	Aug. 6, 1942	605	86	24	73	212	175	77	9.6	313
E-121	do.	187	Feb. 27, 1943	651	93	24	77	202	196	82	11	330
E-121	do.	187	Sept. 14, 1943	716	107	27	79	204	226	95	13	378

Partial analyses of water from wells and springs in Reeves County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
E-121	City of Pecos No. 1	187	May --, 1944	616	98	26	80	205	219	92	-	352
E-121	do.	187	Sept. 4, 1946	-	-	-	-	212	200	78	11	330
E-122	City of Pecos No. 2	211	Dec. 5, 1939	550	78	22	72	211	149	69	7.5	285
E-122	do.	211	Feb. 27, 1943	502	80	21	68	210	153	66	11	286
E-122	do.	211	Sept. 4, 1946	-	-	-	-	216	155	72	9.6	338
E-123	City of Pecos No. 3	300	Dec. 5, 1939	581	86	22	73	210	168	72	7.5	305
E-123	do.	300	Feb. 27, 1943	495	80	21	66	218	147	63	11	286
E-123	do.	300	Sept. 4, 1946	-	-	-	-	216	175	72	7.8	330
E-124	City of Pecos No. 4	191	Sept.14, 1943	584	86	20	64	217	149	65	9.2	296
E-124	do.	191	May --, 1944	-	-	-	-	214	170	66	-	-
E-124	do.	191	Sept. 4, 1946	-	-	-	-	218	145	70	7.6	300
E-125	City of Pecos No. 5	170	Sept.14, 1943	553	79	20	73	219	146	67	10	279
E-125	do.	170	May --, 1944	-	-	-	-	216	170	66	-	-
E-125	do.	170	Sept. 4, 1946	-	-	-	-	216	149	72	9.0	300
F- 2	Onnie Moorehead	-	July 23, 1940	768	113	33	81	190	291	93	4.8	418
F- 3	S. E. Ligon	180	do.	554	97	26	48	264	142	61	4.0	349
F- 4	Eddins Estate	44	July 24, 1940	1,156	182	48	102	188	486	145	9.8	652
G- 1	C. M. Caldwell	40	May 28, 1940	2,710	449	103	192	150	1,429	245	6.5	1,540
G- 3	Ligon Bros.	700	Oct. 3, 1939	2,043	190	83	413	284	626	588	-	815
H- 1	C. M. Caldwell	Spring	May 28, 1940	2,820	454	105	248	167	1,385	372	1.0	1,560
H- 2	T. A. Cheeves	2,960	do.	3,220	579	132	142	138	1,796	223	0.0	1,990
H- 3	C. M. Caldwell	27	Sept.21, 1940	3,690	552	135	473	315	1,776	605	0.25	1,930
H- 4	do.	350	Sept.20, 1940	2,110	-	-	-	-	-	441	-	-
H- 5	do.	106	do.	678	55	11	160	226	240	51	29	182
H- 6	do.	91	do.	2,292	176	78	458	215	1,024	360	7.6	760
H- 8	W. D. Johnson	125	Apr. 17, 1940	2,076	238	43	382	201	1,105	197	10	771
H- 9	do.	66	do.	1,444	154	33	287	186	583	244	50	520
H- 11	R. L. Parker	68	Apr. 16, 1940	1,152	118	31	226	185	548	136	0.5	422
H- 12	W. R. Britt	55	do.	2,740	357	93	394	190	1,528	270	4.5	1,270
H- 17	T. & P. R.R. Co.	832	Nov. 14, 1939	2,042	344	87	176	194	1,213	125	-	1,220
H- 19	W. R. Britt	-	Sept.20, 1940	2,180	305	89	233	182	1,203	164	0.25	1,130
H- 21	S. M. Prewit	120	Sept.14, 1940	2,488	256	88	457	269	733	715	3.8	1,000
H- 22	do.	145	Apr. 16, 1940	2,068	255	80	344	236	727	538	6.2	965
H- 23	do.	122	July 31, 1940	2,100	227	111	603	215	894	870	0.25	1,020

Partial analyses of water from wells and springs in Reeves County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
H-24	S. M. Prewit	181	July 31, 1940	2,180	240	80	316	171	700	526	4.5	928
H-28	W. D. Johnson	271	Sept. 7, 1940	570	54	24	112	140	171	130	2.2	233
H-30	do.	300	Sept.17, 1940	904	120	39	142	282	247	199	0.0	460
*H-32	W. F. Gould	-	Dec. 11, 1946	1,450	178	29	281	376	517	220	12	563
H-33	do.	60	Sept.11, 1940	868	60	12	241	219	302	153	17	199
H-34	O. M. Hodges	40	Sept. 7, 1940	4,210	326	150	838	187	1,409	1,130	48	1,430
H-35	W. D. Johnson	43	July 31, 1940	3,270	406	118	465	323	1,196	705	7.4	1,500
H-36	J. L. Moore	158	July 30, 1940	2,720	221	95	536	276	760	735	4.5	942
H-39	Sol Mayer	184	Apr. 18, 1940	3,330	352	155	589	301	1,035	1,035	15	1,520
H-40	Saragosa School	160	Apr. 19, 1940	3,980	423	163	631	296	1,141	1,170	21	1,730
I- 2	Ord Gary	203	Nov. 7, 1946	2,660	342	104	425	258	919	730	10	1,280
I- 4	Elmer Wadley	84	Feb. 26, 1940	2,850	348	112	496	251	780	985	-	1,330
I- 8	Port Daggett	60	Jan. 16, 1940	2,411	308	114	386	150	543	985	-	1,240
I- 9	do.	910	Oct. 7, 1939	3,220	590	236	31	110	2,281	32	-	2,440
I-10	do.	180	Mar. 8, 1940	1,490	228	67	178	204	610	304	1.5	844
I-12	S. M. Prewit	1,200	May 20, 1940	2,118	206	68	354	95	771	482	3.0	794
I-13	Billie Prewit	1,360	June 7, 1940	3,970	595	227	170	77	2,482	99	0.75	2,420
I-16	S. M. Prewit	125	Oct. 22, 1939	3,020	260	123	622	224	986	920	-	2,210
I-18	do.	125	Jan. 13, 1940	3,540	282	139	765	321	1,127	1,065	-	1,280
I-19	J. W. Pratt	120	Nov. 8, 1946	5,020	480	213	972	294	1,550	1,650	8.0	2,070
I-20	do.	193	Feb. —, 1944	3,200	264	123	684	326	1,070	900	1.5	1,160
I-20	do.	193	Nov. 8, 1946	3,210	272	116	843	328	925	890	2.0	656
I-21	Kyle Watts	195	Dec. 3, 1946	5,070	538	204	911	168	1,830	1,500	6.5	2,180
I-22	O. T. Caldwell	150	Apr. 25, 1947	3,060	284	105	642	310	968	900	7.0	1,140
I-24	O. D. Johnson	136	Nov. 8, 1946	4,460	356	182	936	318	1,540	1,280	4.5	1,640
I-25	do.	120	Feb. 10, 1940	2,970	269	118	606	337	959	850	-	1,160
I-25	do.	120	Apr. 25, 1947	3,170	300	113	655	348	1,010	920	3.5	1,210
I-26	J. H. Watts	153	Nov. 8, 1946	2,860	312	116	517	288	945	820	3.5	1,260
I-27	Pat B. Watts	137	Nov. 12, 1946	-	-	-	-	296	734	700	-	-
I-29	E. H. Hannon and A. Gardner	140	Jan. 28, 1947	2,160	240	18	489	29	683	710	1.2	673
I-35	S. M. Prewit	35	July 31, 1940	2,740	218	90	492	283	727	705	0.5	914
I-36	Carrie Eisenwine	100	Oct. 2, 1940	2,530	214	89	485	264	727	696	0.5	900

*Composite sample of wells 32 and 33.

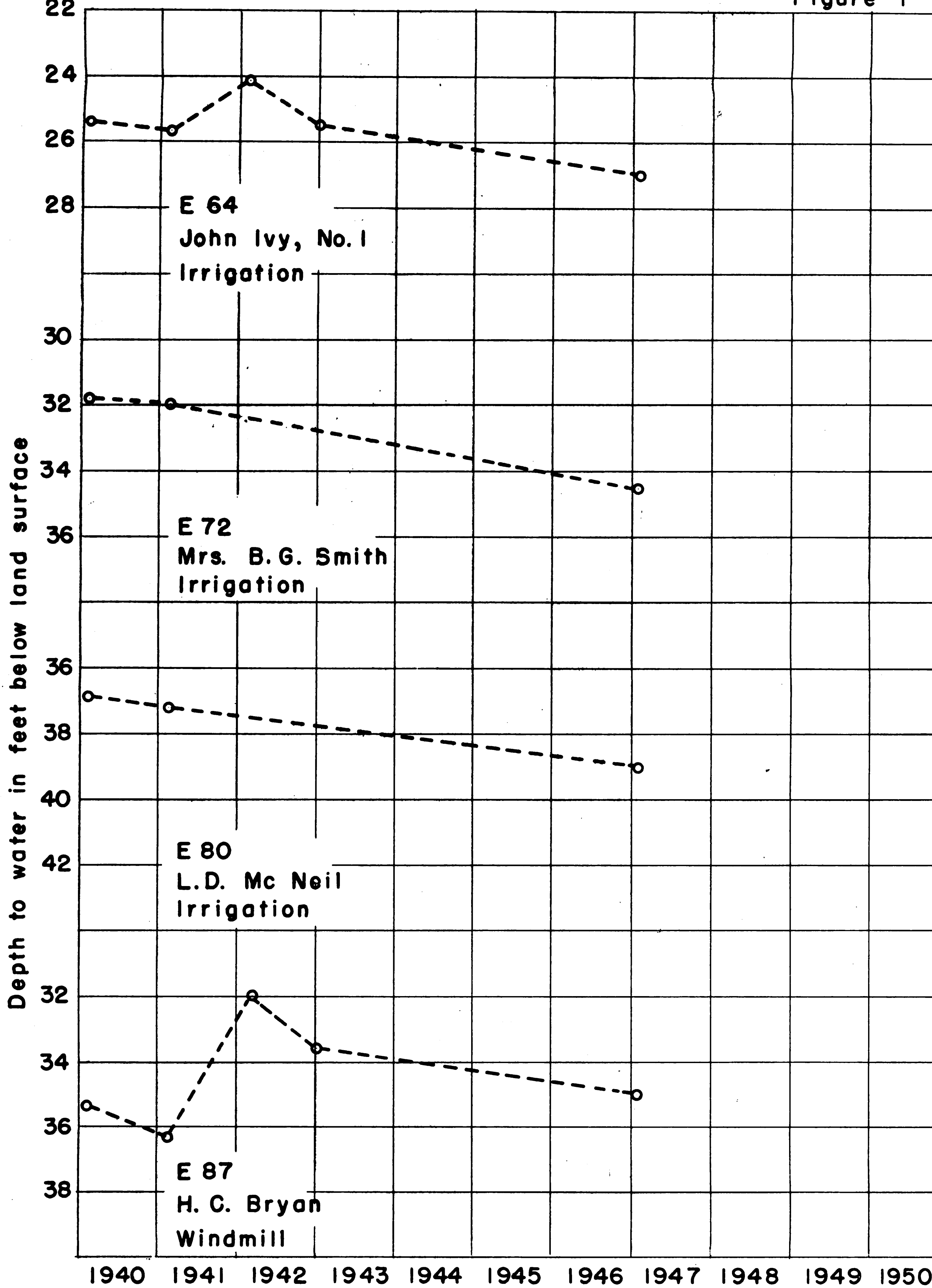
Partial analyses of water from wells and springs in Reeves County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
I-37	J. P. Espy	212	July 9, 1943	2,310	202	91	485	290	709	678	2.0	878
I-38	do.	212	Nov. 11, 1943	2,560	232	97	530	293	823	730	6.0	978
I-38	do.	212	Nov. 13, 1946	2,380	264	108	426	314	654	770	6.5	1,100
I-39	do.	214	Nov. 5, 1943	2,300	212	92	468	289	711	670	4.6	908
I-40	do.	218	Nov. 13, 1946	-	-	-	-	300	751	705	-	-
I-41	do.	212	do.	2,530	256	104	484	272	788	760	5.0	1,070
I-44	F. M. Reeves & Sons	200	Jan. 25, 1947	3,080	304	90	659	346	914	940	2.0	1,130
I-45	A. R. Eppenauer No. 4	218	Nov. 13, 1946	2,840	282	124	541	340	848	870	3.0	1,210
I-46	A. R. Eppenauer No. 2	210	Feb. 19, 1940	2,540	188	97	574	279	775	765	1.8	868
I-47	A. R. Eppenauer No. 3	500	Nov. 12, 1946	2,490	276	88	475	298	777	730	0.5	1,050
I-48	A. R. Eppenauer No. 1	210	do.	-	-	-	-	324	782	755	-	-
I-49	Mrs. H. T. Collier	80	do.	2,800	266	116	553	338	872	820	3.5	1,140
I-53	Port Daggett	79	Aug. 21, 1940	1,200	187	53	66	146	573	78	2.2	685
I-55	H. H. Hokey	420	July 15, 1940	4,110	308	156	743	74	2,004	620	5.5	1,410
I-56	Port Daggett	153	Jan. 17, 1940	681	126	38	60	223	183	162	-	471
I-57	H. T. Collier	140	Aug. 21, 1940	652	108	29	43	191	192	84	10	389
I-58	do.	106	do.	556	84	32	71	239	160	87	13	341
I-59	Port Daggett	87	Jan. 17, 1940	863	160	41	79	178	276	218	-	568
I-60	Edgar Martin	1,405	Aug. 21, 1940	3,540	605	216	5	130	2,178	24	2.5	2,400
I-62	do.	1,400	Jan. 24, 1947	3,180	608	212	40	146	2,210	40	0.0	2,390
I-64	do.	1,525	Jan. 17, 1940	3,200	599	218	46	143	2,230	37	-	2,390
I-64	do.	1,525	Jan. 24, 1947	3,230	612	210	58	148	2,220	60	1.0	2,390
I-67	do.	110	Aug. 21, 1940	720	125	31	83	180	209	180	1.5	439
I-68	North Texas Farms	60	do.	1,376	242	67	135	293	440	336	2.5	879
I-69	Edgar Martin	200	do.	1,060	198	35	62	202	221	274	1.2	639
I-70	H. T. Collier	110	Aug. 20, 1940	858	182	25	96	286	233	204	0.25	557
I-71	do.	107	do.	926	144	31	141	194	268	252	1.2	487
I-72	do.	39	do.	1,386	196	44	179	180	377	368	1.5	670
I-73	do.	69	do.	1,328	201	37	202	287	358	344	0.25	654
I-76	Davis & Weinacht	67	Apr. 18, 1940	2,055	190	72	420	82	711	620	1.0	770
I-77	J. Youngblood	10	Oct. 2, 1940	2,570	396	93	235	182	1,210	336	0.0	1,450
I-79	W. T. Church	-	do.	2,580	—	-	-	-	-	342	-	-
I-81	T. & P. R.R. Co.	200	Mar. 11, 1940	2,800	266	118	555	311	825	880	-	1,150

Partial analyses of water from wells and springs in Reeves County -- Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
I-83	Sol Mayer	142	Apr. 18, 1940	2,940	312	140	515	286	891	920	17	1,350
I-87	Davis & Weinacht	119	July 30, 1940	2,472	228	107	384	178	662	715	0.75	1,010
I-88	do.	141	do.	1,968	168	51	209	202	267	454	0.75	629
I-89	do.	128	Apr. 18, 1940	1,229	188	40	206	247	374	346	1.5	634
I-90	Rudolph Hoefs	310	Mar. 11, 1940	491	99	11	45	120	109	71	96	292
I-91	Balmorhea Livestock Co.	181	Aug. 20, 1940	542	126	17	48	235	113	96	28	384
I-92	Popham Land & Cattle Co.	187	do.	396	94	22	38	245	117	54	11	325
I-93	Balmorhea Livestock Co.	140	do.	580	122	26	76	207	211	126	12	411
I-94	C. E. Criswell	160	Sept. 5, 1940	436	84	20	26	194	114	16	16	292
J- 1	H. F. Anthony	86	Mar. 5, 1940	718	106	30	96	212	306	74	-	388
J- 2	S. E. Ligon	101	July 23, 1940	666	123	30	35	234	170	94	5.2	430
J- 3	J. C. Trees	1,400	July 24, 1940	4,390	627	259	208	114	2,510	266	0.25	2,630
J- 4	Anthony & Tubbs	86	Oct. 5, 1940	574	88	21	125	382	170	59	4.5	306
J- 5	H. F. Anthony	120	July 24, 1940	552	93	24	42	171	189	54	12	331
J-11	Eddins Estate	145	Jan. 16, 1940	1,151	210	50	90	195	609	94	-	730
J-14	Port Daggett	86	Jan. 17, 1940	534	79	31	72	281	127	84	-	325
J-17	do.	98	Mar. 1, 1940	584	96	26	73	204	160	115	12	346
J-19	W. W. Courtney	119	Sept. 5, 1940	376	89	20	43	242	96	70	1.5	304
J-20	J. R. Wilson	130	Sept. 4, 1940	520	84	24	49	222	137	59	8.8	308
J-21	E. G. Bowles	117	do.	464	58	15	72	210	79	54	40	206
J-22	do.	5,615	do.	3,570	611	224	44	143	2,210	87	0.75	2,450
K- 1	--	Spring	Oct. 28, 1930	2,260	191	86	473	285	691	655	0.6	830
K- 2	--	Spring	Dec. 6, 1930	2,090	189	80	437	284	635	608	0.0	800
K- 3	--	Spring	Oct. 28, 1930	2,140	190	80	448	286	651	610	0.9	803
K- 3	--	Spring	June 20, 1942	2,020	188	76	419	292	615	575	2.5	782
K- 3	--	Spring	Aug. 8, 1942	2,080	199	78	424	287	634	598	0.8	817
K- 3	--	Spring	Jan. 27, 1943	1,970	185	76	404	278	598	568	1.5	774
K- 4	--	Spring	Dec. 7, 1930	2,840	272	102	584	332	868	842	5.0	1,100
K- 6	Hal Sprague	54	Aug. 26, 1940	3,170	315	109	580	285	971	885	3.6	1,230

Figure 1



FLUCTUATIONS OF WATER LEVELS IN WELLS
IN REEVES COUNTY, TEXAS